



OCCUPATIONAL ANALYSIS ELECTRICAL AND ELECTRONICS INDUSTRY



**JABATAN PEMBANGUNAN KEMAHIRAN
KEMENTERIAN SUMBER MANUSIA**

Department of Skills Development
Ministry of Human Resources, Malaysia

ABSTRACT

An Occupational Analysis (OA) is the process of identifying the work scope of the occupational area in terms of competencies. It is used to analyze skilled human resource competency requirement for the industry. The development of the Occupational Structure is a preliminary process in developing relevant National Occupational Skills Standard (NOSS). The NOSS in turn will be developed to be used as the basis to conduct skills training and certification of competent personnel. In order to complete the Occupational Analysis on the Electrical and Electronic Industry job areas, all the information related to the job area was gathered through literature survey and interviews with the experts from the public and private sectors. A workshop was held in an attempt to get a better understanding of the organizational structure, job titles, hierarchy objectives and primary activities of the job titles. This document is divided into several chapters, the first being an industry overview highlighting the definition and scope of the industry, the current analysis of the local industry and its skilled worker requirements, Government bodies and development plans supporting the growth of the industry, then the next chapter will explain the methodology of the Occupational Analysis development. The final chapters will present the findings of the Occupational Analysis that is translated into the Occupational Structures, levels of competencies and critical areas. These findings will in turn be the basis of reference for the development of the National Occupational Skills Standard (NOSS) document. The NOSS will serve not only as a reference of skills standards for certification but also as a guide to develop the skills training curriculum. In order to conduct the Occupational Analysis on the Electric and Electronic Industry job areas, all the information related to the aforesaid industry was gathered through literature survey and further discussed in workshop sessions with experts from the industry. During the development workshops, the panel members had identified **several sub sectors, job areas, sub areas and job titles** that reflect the main category of Electrical and Electronic Industry in Malaysia. In Malaysia, this sector has great employment opportunities. Furthermore, with strong support from the government and private sectors, these areas could expand further in the future.



TABLE OF CONTENTS

CONTENTS	PAGES
ABSTRACT	i
TABLE OF CONTENTS	ii
LIST OF FIGURES	v
LIST OF TABLES	vi
LIST OF ABBREVIATIONS	vii
1. INTRODUCTION	
1.1 Chapter Introduction	1
1.2 Background Study Of The Industry	1
1.3 Objectives	7
1.4 Scopes	7
1.5 Problem Statement	8
1.6 Conclusion	8
2. LITERATURE REVIEW	
2.1 Introduction	9
2.2 Current NOSS	9
2.3 Main Stakeholders/ Key Player/ Training Provider	10
2.4 Current Analysis, Industrial Demand & Statistic	11
2.5 Supply and Demand of Skill Worker	16
2.6 International Benchmarking	18
2.7 Statutory, Regulatory Bodies, Associations And Relevant Organisations	19
2.8 Related Policies, Act, Regulation And Standard For Industry	20
2.9 Conclusion	21



3. METHODOLOGY

3.1	Introduction	22
3.2	Research Design	22
3.3	Research Methodology	25
3.4	Data Analysis	25
3.5	Limitations	27
3.6	Conclusion	27

4. FINDING AND DISCUSSION

4.1	Introduction	28
4.2	Occupational Structure (OS)	30
4.3	Occupational Definition (OD)	43
	Electrical Sector	44
	Electronics Sector	125
4.4	Occupational Area Analysis (OAS)	364
4.5	List of Critical Job Titles & Summary of Job Titles	377

5. CONCLUSION & RECOMMENDATION

5.1	Conclusion	387
5.2	Recommendation	387



BIBLIOGRAPHY	389
ANNEXURES	
ANNEX 1 : MOSQF LEVEL DESCRIPTORS	390
ANNEX 2 : LIST OF DEVELOPMENT PANEL,FACILITATORS, PROOFREADER	393



LIST OF FIGURES

FIGURES	TITLE	PAGE
Figure 1.1	Difference Between Electrical & Electronics	6
Figure 1.2	Percentage Distribution of Vacancies & Placement 2012	18



LIST OF TABLES

TABLES	TITLE	PAGE
Table 1.1	Overall Existing Electrical & Electronics Industry NOSS	9
Table 1.2	Main Stakeholders for the Electrical and Electronics Industry	10
Table 1.3	Vacancies in the Manufacturing Industry	17
Table 1.4	Placements in the Manufacturing Industry	17
Table 2.1	The identified sub-sectors, areas and job areas in Electrical sector	28
Table 2.2	The identified sub-sectors, areas and job areas in Electronic sector	29
Table 2.3	Occupational Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Thermal Plant Operation	31
Table 2.4	Occupational Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Hydro Plant Operation	32
Table 2.5	Occupational Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Internal Combustion Engine, Solar Photovoltaic & Wind Turbine	33
Table 2.6	Occupational Structure of Electrical Sector, Job Area Electrical Installation & Maintenance and Cable Jointing	34
Table 2.7	Occupational Structure of Electronics Sector, Sub Sector Electronics Components	35
Table 2.8	Occupational Structure of Electronics Sector, Sub Sector Wafer Fabrication Production	36
Table 2.9	Occupational Structure of Electronics Sector, Sub Sector Semiconductor Component Manufacturing	37
Table 2.10	Occupational Structure of Electronics Sector, Sub Sector Electronics Component & Consumer Electronics	38
Table 2.11	Occupational Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Medical Electronics	39
Table 2.12	Occupational Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Telecommunication Electronics	40
Table 2.13	Occupational Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Automotive Electronics	41



Table 2.14	Occupational Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area ICT Electronics	42
Table 4.1	Occupational Area Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Thermal Plant	365
Table 4.2	Occupational Area Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Hydro Plant	366
Table 4.3	Occupational Area Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Internal Combustion Engine, Solar Photovoltaic & Wind Turbine	367
Table 4.4	Occupational Area Structure of Electrical Sector, Job Area Electrical Installation & Maintenance and Cable Jointing	368
Table 4.5	Occupational Area Structure of Electronics Sector, Sub Sector Electronics Components	369
Table 4.6	Occupational Area Structure of Electronics Sector, Sub Sector Wafer Fabrication Production	370
Table 4.7	Occupational Area Structure of Electronics Sector, Sub Sector Semiconductor Component Manufacturing	371
Table 4.8	Occupational Area Structure of Electronics Sector, Sub Sector Electronics Component & Consumer Electronics	372
Table 4.9	Occupational Area Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Medical Electronics	373
Table 4.10	Occupational Area Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Telecommunication Electronics	374
Table 4.11	Occupational Area Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area Automotive Electronics	375
Table 4.12	Occupational Area Structure of Electronics Sector Sub Sector Industrial Electronics, Job Area ICT Electronics	376
Table 5.1	Brief Description of Methods Employed	22
Table 5.2	Focus Group Session	23
Table 5.3	List of Critical Job Title for Electrical Industry	379
Table 5.4	List of Critical Job Title for Electronic Industry	382
Table 5.5	Summary of Job Titles	386



LIST OF ABBREVIATIONS

DESCUM	Development of Standard and Curriculum
DSD	Department of Skill Development
ETP	Economic Transformation Programme
EU	European Union
GDP	Gross Domestic Product
OA	Occupational Analysis
OAA	Occupational Area Analysis
OD	Occupational Description
OS	Occupational Structure
OAS	Occupational Area Structure
MOSQF	Malaysian Occupational Skills Qualification Framework
MQA	Malaysia Qualification Agency
MSC	Malaysian Skills Certificate
NOSS	National Occupational Skills Standard



1. INTRODUCTION

1.1 Chapter Introduction

This chapter focusses on the background of electrical and electronic industry which explains the objectives, scope and problem statement for the Occupational Analysis for the said Industry. The background of Occupational Analysis and its function in skills training and curriculum development is also elaborated in this chapter.

1.2 Background Study of Electrical and Electronics Industry

Definitions:

Electrical industry refers to all producers and distributors of electric energy. This includes all electric systems serving the public: regulated shareholder-owned electric utility companies; federal power projects, state, municipal, and other government-owned systems, including electric public utility districts, electric cooperatives, jointly owned electric facilities, electric utility facilities leased to an electric utility, power marketers, non-utility generators, exempt wholesale generators, retail electric providers, alternative energy suppliers and regional transmission organizations¹. Electric industry, also known as electric power industry or electric utility industry is an electric power company (often a public utility) that engages in the generation, transmission, and distribution of electricity for sale generally in a regulated market. The electrical utility industry is a major provider of energy in most countries. It is indispensable to factories, commercial establishments, homes, and even most recreational facilities. Lack of electricity causes not only inconvenience, but also economic loss due to reduced industrial production. Electric industries include investor owned, publicly owned, cooperatives, and nationalized entities. They may be engaged in all or only

¹ -. (2005). Glossary of Electric Industry Terms. Edison Electric Institute, Philadelphia.



some aspects of the industry. Electricity markets are also considered electric utilities--these entities buy and sell electricity, acting as brokers, but usually do not own or operate generation, transmission, or distribution facilities. Utilities are regulated by local and national authorities. Electric utilities are facing increasing demands according to Black & Veatch's annual utility survey, based on input from 700 utility participants, for 2011 the top-three concerns were aging infrastructure, reliability (no. 1 in 2010) and regulation (no. 2 in 2010)².

Electrical industry generally deals with the application of electricity, electronics and electromagnetism. The **electrical engineering** is a field of engineering that first became an identifiable occupation in the latter half of the 19th century after commercialization of the electric telegraph, the telephone, and electric power distribution and use. Subsequently, broadcasting and recording media made electronics part of daily life. The invention of the transistor, and later the integrated circuit, brought down the cost of electronics to the point where they can be used in almost any household object.

Electrical engineering has now subdivided into a wide range of subfields including electronics, digital computers, power engineering, telecommunications, control systems, radio-frequency engineering, signal processing, instrumentation, and microelectronics.

Electrical engineers work in a very wide range of industries and the skills required are equally variable. These range from basic circuit theory to the management skills required of project manager. The tools and equipment that an individual engineer may need are similarly variable, ranging from a simple voltmeter to a top end analyzer to sophisticated design and manufacturing software.

Electronics is the science of how to control electric energy, energy in which the electrons have a fundamental role. Electronics deals with electrical circuits that involve active electrical components such as vacuum

² Black and Veatch, (2010)



tubes, transistors, diodes and integrated circuits, and associated passive electrical components and interconnection technologies. Commonly, electronic devices contain circuitry consisting primarily or exclusively of active semiconductors supplemented with passive elements; such a circuit is described as an electronic circuit.

The nonlinear behaviour of active components and their ability to control electron flows makes amplification of weak signals possible, and electronics is widely used in information processing, telecommunication, and signal processing. The ability of electronic devices to act as switches makes digital information processing possible. Interconnection technologies such as circuit boards, electronics packaging technology, and other varied forms of communication infrastructure complete circuit functionality and transform the mixed components into a regular working system.

Electronics is distinct from electrical and electro-mechanical science and technology, which deal with the generation, distribution, switching, storage, and conversion of electrical energy to and from other energy forms using wires, motors, generators, batteries, switches, relays, transformers, resistors and other passive components. This distinction started around 1906 with the invention by Lee De Forest of the triode, which made electrical amplification of weak radio signals and audio signals possible with a non-mechanical device. Until 1950 this field was called "radio technology" because its principal application was the design and theory of radio transmitters, receivers, and vacuum tubes.

Today, most electronic devices use semiconductor components to perform electron control. The study of semiconductor devices and related technology is considered a branch of solid-state physics, whereas the design and construction of electronic circuits to solve practical problems come under electronics engineering. This article focuses on engineering aspects of electronics.



Electronics has branches as follows:

- i. Digital electronics – are electronics that represent signals by discrete bands of analogue levels, rather than by continuous ranges (as used in analogue electronics). All levels within a band represent the same signal state. Because of this discretization, relatively small changes to the analogue signal levels due to manufacturing tolerance, signal attenuation or parasitic noise do not leave the discrete envelope, and as a result are ignored by signal state sensing circuitry. In most cases the number of these states is two, and they are represented by two voltage bands: one near a reference value (typically termed as "ground" or zero volts), and the other a value near the supply voltage. These correspond to the "false" ("0") and "true" ("1") values of the Boolean domain, respectively, yielding binary code. Digital techniques are useful because it is easier to get an electronic device to switch into one of a number of known states than to accurately reproduce a continuous range of values. Digital electronic circuits are usually made from large assemblies of logic gates, simple electronic representations of Boolean logic functions³.
- ii. Analogue electronics - are electronic systems with a continuously variable signal, in contrast to digital electronics where signals usually take only two levels. The term "analogue" describes the proportional relationship between a signal and a voltage or current that represents the signal.
- iii. Microelectronics – is a subfield of electronics that relates to the study and manufacture (or microfabrication) of very small electronic designs and components. Usually, but not always, this means micrometre-scale or smaller. These devices are typically made from semiconductor materials. Many components of normal electronic design are available in a

³ Null, L & Lobur, J. (2006). The essentials of computer organization and architecture. Jones & Bartlett Publishers, p 121.



microelectronic equivalent. These include transistors, capacitors, inductors, resistors, diodes and insulators and conductors can all be found in microelectronic devices. Unique wiring techniques such as wire bonding are also often used in microelectronics because of the unusually small size of the components, leads and pads. This technique requires specialized equipment and is expensive. Digital integrated circuits (ICs) consist mostly of transistors. Analog circuits commonly contain resistors and capacitors as well. Inductors are used in some high frequency analogue circuits, but tend to occupy large chip area if used at low frequencies; gyrators can replace them in many applications. As techniques improve, the scale of microelectronic components continues to decrease. At smaller scales, the relative impact of intrinsic circuit properties such as interconnections may become more significant. These are called **parasitic effects**, and the goal of the microelectronics design engineer is to find ways to compensate for or to minimize these effects, while always delivering smaller, faster, and cheaper devices.

- iv. Fuzzy electronics - is an electronic technology that uses fuzzy logic, instead of the two-state Boolean logic more commonly used in digital electronics. It has a wide range of applications, including control systems and artificial intelligence⁴.
- v. Circuit Design
- vi. Integrated circuit
- vii. Optoelectronics
- viii. Semiconductor
- ix. Semiconductor device

⁴ Ahmad M Ibrahim. (1996). Introduction to Applied Fuzzy Electronics.



Difference between electrical industry and electronic industry

As stated earlier, electrical industry generally deals with the application of electricity, electronics and electromagnetism, whereas electronic industry deals with non-linear and active electrical and electronic components and devices such as electron tubes, and semiconductor devices, especially transistors, diodes and integrated circuits are utilized to design electronic circuits, devices and systems. To give a clearer picture, the difference between electrical and electronic is shown below.

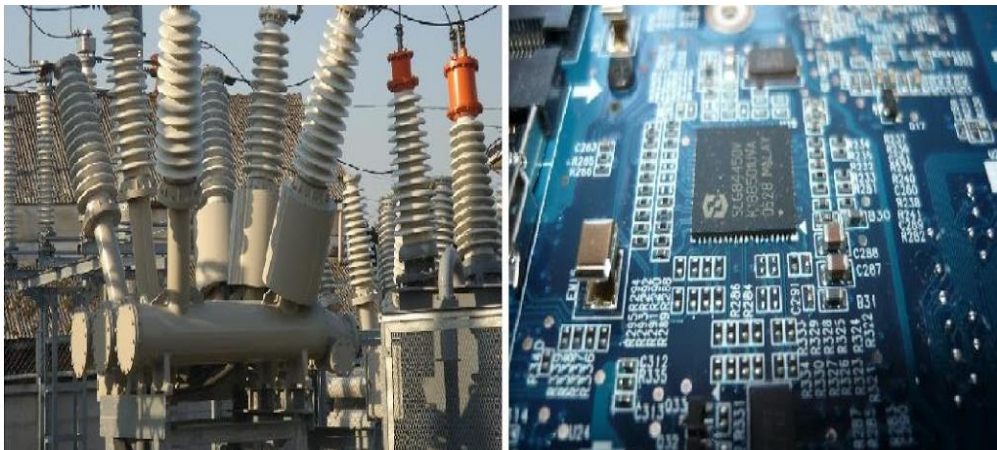


Figure 1.1: Difference between electrical and electronic industry

Although equipment may be peppered with electronic components, it's considered food for electronic engineers if power is the focus of its use. To make it clear, looking at a piece of equipment, consider whether it could work without chips or a motherboard. Cell phones could not possibly work without these components, so that would be in the jurisdiction of electronics industry. On the other hand, a hydro-electric power plant can be filled with electronic controlling and monitoring panels, but since it can run without these gadgets, the plant falls into the electrical industry category.



1.3 Objectives Of Electrical And Electronic Industry Occupational Analysis

The objectives of this Occupational Analysis are as below:

- i. To identify the Occupational Structure and Occupational Area Structure of Electrical and Electronic Industry
- ii. To identify critical and non-critical occupations within the employment structure of Electrical and Electronic Industry based on the supply and demand data to be obtained from secondary databases.

1.4 Scope of Occupational Analysis

The scope of this particular Occupational Analysis is focused on the Electrical and Electronic Industry and all areas that are defined to be under the Electrical and Electronic Industry. The Occupational Analysis on Electrical and Electronic Industry is relevant to the above objectives as follows:

- i. Objective 1: To identify the Occupational Structure and Occupational Area Structure of Electrical and Electronic Industry.

The scope of this Occupational Analysis is focused on Electrical and Electronic Industry and all sub-sectors that are defined to be under Electrical and Electronic Industry in terms of manufacturing of Electrical and Electronics Industry and the manufacturing of Electrical and Electronic components.

- ii. Objective 1: To identify critical and non-critical occupations within the employment structure of Electrical and Electronic Industry based on the supply and demand data to be obtained from secondary bases.

With regard to this objective, the scope of this Occupational Analysis is on identifying critical and non-critical job titles within areas of subsectors. This initiative is expected to assist government authorities to formulate appropriate corresponding job training programs to create optimum



employment environment where supply matches demand in accordance to its priority hierarchy.

1.5 Problem Statement

There have been various National Occupational Skills Standard (NOSS) documents developed for the Electric and Electronic Industry covering areas of cable jointing, low voltage electrical, electrical lighting, CCTV system, electrical precision instruments, industrial electronics, electronic audio-visual, semi-conductor production, back-end process, consumer electronics design, buffer storage, embedded system design, optical electronic display, EMI/EMC, consumer electronics power management, integrated system design, electronic system design, interface and security (design). The challenge of this practice is to continue updating the Electrical and Electronic Industry and bring it up to current status. The continuous initiative is expected to develop better career paths in the industry.

1.6 Conclusion

In the light of continuous economic development in the Electrical & Electronics Industry, the demand for skilled personnel has increased thus the development programs for skilled manpower is timely. By going through the mechanism provided by the Skills Training system in Malaysia, one of the important steps is to identify the Occupational Structure of the E&E Industry. With the Occupational Structure clearly defined, the industry stakeholders will be able to identify areas that will require more intensive efforts in human capital development. Although there have been past efforts in National Standards Development for the industry, the need for an Occupational Analysis is required to determine the overall areas that may not yet have been focused on. Occupational Analysis is expected to serve as the 'blueprint' of the manpower planning for the industry.



2. LITERATURE REVIEW

2.1 Introduction

This chapter will explain the current situation of the industry through literature research as to substantiate facts and figures related to this industry. This chapter deals with general performance of the industry, workforce supply and demand, shakers and movers of the industry, related acts and regulatory bodies and international benchmarking.

2.2 Current NOSS

In order to analyse the industry, the existing National Occupational Skills Standard (NOSS) and Occupational Structure documents were referred. In the DSD's NOSS Registry, the existing Occupational Analysis Matrices can be seen in the following figure.

Table 1.1: Overall Existing Electric and Electronic Industry NOSS

Bil./ No.	Sub-Sektor/ Sub-Sector	Kod/ Code	T1/ L1	T2/ L2	T3/ L3	T4/ L4	T5/ L5	Jumlah (Total)
1.1	Elektrik/Electric	C, EE	1	2	9	1	1	14
1.2	Elektronik/Electronics	E, EE	0	11	13	8	9	41
1.3	Telekomunikasi/Telecommunication	D, EE	2	18	16	7	6	49
1.4	Penyiaran/Broadcasting	EE	0	0	2	2	2	6
1.5	Penjanaan Kuasa/Power Generation	EE	1	2	4	3	3	13
1.6	Kawalan Proses/Process Control	CM,S	0	1	2	2	2	7
	Jumlah / Total		4	34	46	23	23	130

Source: Department of Skills Development NOSS Registry (March 2015)

Details of the existing NOSS relevant to Electrical and Electronic Industry can be accessed at [http://www.dsd.gov.my/Daftar NOSS versi31_Mac_2015.pdf](http://www.dsd.gov.my/Daftar%20NOSS%20versi31_Mac_2015.pdf).



2.3 Main Stake Holder/ Key Player/ Training Provider

Some of the main stakeholders for the Electrical and Electronic Industry are identified in Table 1.2 below:

Stakeholders	
Electrical Industry	Electronic Industry
1. Ministry of Energy, Green Technology and Water Malaysia 2. Ministry of Rural Development 3. Energy Commission 4. Board of Engineers, Malaysia 5. Tenaga Nasional Berhad 6. Sabah Electricity Sdn Bhd 7. Sarawak Electricity Sdn Bhd 8. Independent Power Producers	1. MIMOS 2. Board of Engineers, Malaysia 3. Malaysian American Electronics Industry 4. Melaka World Solar Valley

Table 1.2: Main stakeholders for the Electrical & Electronic Industry

Key players in this Industry include:

- i. Freescale Semiconductor
- ii. Intel
- iii. AMD
- iv. ASE
- v. Infineon
- vi. STMicroelectronics
- vii. Renesas
- viii. Silterra
- ix. Globetronics
- x. Unisem
- xi. Inari
- xii. MyMs
- xiii. Symmid
- xiv. First Solar
- xv. AUO-Sunpower



- xvi. Texas Instruments
- xvii. Agilent Technologies
- xviii. Western Digital
- xix. High Ace Industries
- xx. ACEI Sustems
- xxi. IRIS Corporation

The main training providers are listed below:

- i. National Institute for Occupational Safety and Health
- ii. Public and Private Universities and Colleges
- iii. Skills Training Centres

2.4 Current Analysis, Industrial Demand and Statistics of the Industry in Malaysia

The Electrical and Electronics Industry is one of the leading industries, contributing 24.5% to the manufacturing sector in Malaysia's Gross Domestic Product (GDP). Electrical and Electronic products have been the largest traded items for Malaysia. The industry's growth until today has turned Malaysia as one of the leading points in the global Electrical and Electronic value chain.

According to the Investment Profile⁵, electrical and electronic sector has been Malaysia's industrial bread and butter. The electrical and electronic sector begins as a foundation sector in the 1960's has grown in importance as Malaysia marches toward its goal of becoming a high-income economy by 2020. Along the way, the government has cultivated this sector in such a way that it keeps pace with investing companies higher-value electrical and electronic activities, including research and design, and integrated circuit design and development, thus keeping them in Malaysia.

⁵ Arend, M. Investment Profile. www.mida.gov.my



According to Malaysian American Electronics Industry (MAEI), many MAEI companies have expanded their operations in Malaysia, noting that Design and Development investments have expanded from RM1billion in 2007 to RM2billion in 2012. Many companies have set up business process operations in human resource, information technology, logistics finance and procurement either to serve the region or the world. MAEI members in Malaysia include the Malaysian divisions of such electronic giants such as Texas Instruments, Agilent Technologies, Intel and Western Digital. With just five years to the 2020 national Economic Transformation Programme date line, will these and other electrical and electronic companies in Malaysia be producing products and components deemed to be cutting edge at that time.

The obvious issue here is human resources. Malaysia has a competitive edge which can be brought to greater heights if human resources can be maximized. For example, the Centre of Electrical and Electronics is a government-supported initiative set up by the Northern Corridor Implementation Authority and operated by USains Infotech Sdn Bhd that supports SMEs and start-up companies through talent development, research collaboration and access to resources, sophisticated equipment and expertise.

Electrical and Electronic start-up benefitted from the government's formation of Collaborative Research in Engineering, Science and Technology Center (CREST) in 2012, which fosters Malaysia's Electrical and Electronic ecosystem by investing in facilities and equipment, cultivating the talent pool with skills development and serving as a bridge between university research and industrial commercialization. In 2013, the National Key Economic Area (NKEA) has move towards "E&E 2.0" where a re-clustering of the existing Entry Point Projects (EPPs) and new EPPs were introduced. The main reason for this development is in order for the



Electrical and Electronic sector to thrive, it needs to move from merely manufacturing activities to include higher-value activities, like design, assembly, packaging and becoming a total solutions provider. By moving up the value chain, Electrical and Electronic industry will propel Malaysia forward through the creation of new jobs, increase Gross Domestic Products (GDP) and Gross National Income (GNI), thus attracting more Foreign Direct Investments.

In 2014, Malaysia's exports of Electrical and Electronic products was valued at RM231.23 billion, with 49.2% share of manufactured goods exports and 32.9% share of Malaysia's total exports. Major exports destinations are China, USA, Singapore, Hong Kong and Japan. Electrical and Electronic products were also the largest imports amounted to RM175 billion, representing a share of 27.8% of manufactures goods imports and 28.8% of Malaysia's total imports. Malaysia top import sources for Electrical and Electronics products are China, Singapore, USA, Japan and Taiwan.

The industry is classified into two sectors, namely, the electrical sector and the electronic sector.

i. Electrical sector

The electrical sector had its beginnings in the 1960s with the establishment of manufacturing plants for the import substitution of household appliances, electrical fittings, wires and cables, and automotive batteries. The industry has grown over the years with the capability to supply high-end electrical products including electrical components to both domestic and international markets.

The major electrical products produced are lightings, solar related products and household appliances such as air conditioners, refrigerators, washing machines and vacuum cleaners. In 2013, this sector has a total investments



of RM5.3 billion in which solar industry contributed 75.6% of the total investments approved in the electrical sector.

Malaysia is home to many of the largest and renowned solar players such as First Solar and AUO-Sunpower. The presence of these multinational companies has contributed to the development of various products under the solar cluster.

The growing awareness of the importance of green technology including renewable energy has led to the introduction of the LED and Solar roadmap by the Malaysia government. This has encouraged the growth of the LED and Solar Industry and opens up new opportunities for local and international investors in developing Malaysia's LED and Solar Industry.

The introduction of Feed-in-Tariff (FiT) in 2011 has also encouraged the usage of renewable energy in Malaysia. This mechanism allows electricity produced from indigenous renewable energy resources to be sold to power utilities at a fixed premium price for a specific duration.

ii. Electronic sector

The electronic sector leads the Electrical and Electronic Industry whereby over 38% of electronics exports is contributed by semi-conductor devices, integrated circuits, transistors and valves. Multinational companies continue to be the main catalyst in the development of this sector. Malaysian companies involved in this sector have been able to develop significant capabilities and skills in manufacturing a wide range of electronic products.



The electronic sector is categorized into three sub sectors, namely:

a. Consumer electronics

This sub-sector includes the manufacture of LED television receivers, audio visual products such as Blu-ray disc players/recorders, digital home theatre systems, mini discs, electronic games consoles and digital cameras. This sub-sector is currently represented by many renowned Japanese and Korean companies which have contributed significantly towards the rapid growth of this sub-sector. These leading companies are now undertaking research and development activities in Malaysia to support their global and Asian markets. Exports of consumer electronic products amounted to RM22.36 billion.

b. Electronic components

Products or activities that fall under this sub-sector include semiconductor devices, passive components, printed circuits and other components such as media, substrates and connectors. Within the electronic components sub-sector, the semi-conductor devices have been the leading contributor in the performance of exports for Electrical and Electronic Industry. Exports of semi-conductor devices were RM111.19 billion or 47% of the total Electrical and Electronic products exported in 2013.

The presence of major multinational companies such as Intel, AMD, Freescale Semiconductor, ASE, Infineon, STMicroelectronics, Texas Instruments, Fairchild Semiconductor, Renesas and major Malaysian-owned companies such as Silterra, Globetronics, Unisem and Inari have contributed to the steady growth of the semiconductor industry in Malaysia. To date, there are more than 50 companies, mainly multinational companies producing semiconductor devices in Malaysia.



The presence of Integrated Circuit (IC) designs firms strengthen the semiconductor ecosystem by providing IC design services for their own products or outsourced. Today, IC design firms have added more value to their capabilities. Companies such as MyMs and Symmid have diversified their products base to feed the needs of the financial, Halal and LED markets. More IC design firms and companies are needed to create a wider set-up of new technology and products.

c. Industrial electronics

This sub-sector consists of multimedia and information technology products such as computers, computer paraphernalia, telecommunication products and office equipment. The industrial electronic sub-sector is the second largest sub-sector comprising 27% of the total investments approved in the Electrical and Electronic sector in 2013.

2.5 Supply and Demand of Skill Workers in Electrical and Electronics Industry

The following tables show the supply and demand of skill workers in the manufacturing industry which encompasses the Electrical and Electronics industry. Table 1.3 shows the vacancies; Table 1.4 shows the placement while Figure 2 shows the percentage distribution for placement and vacancies.



Table 1.3: Vacancies in the manufacturing industry

Vacancies Reported to the Labour Department by Industry 2008– 2012 (MSIC-2008)

Industri Industry	Tahun / Year				
	2008	2009	2010*	2011*	2012
Pertanian, Perhutanan dan Perikanan <i>Agriculture, Forestry and Fishing</i>	-	-	189,037	399,522	337,468
Perombongan dan pengkuarian <i>Mining and Quarrying</i>	-	-	21.3	17.7	20.9
Pembuatan <i>Manufacturing</i>	-	-	1,142	3,389	2,180
Bekalan Elektrik, Gas, Wap dan Pending Udara <i>Electricity, Gas, Steam and Air Conditioning Supply</i>	-	-	0.1	0.2	0.1
Bekalan Air, Pembentungan, Pengurusan Sisa dan Aktiviti Pemulihan <i>Water Supply; Sewerage, Waste Management and Remediation Activities</i>	-	-	296,749	689,422	598,890
Pembinaan <i>Construction</i>	-	-	37.3	30.5	37.0
Perdagangan Borong dan Runcit, Pembaikan Kenderaan Bermotor dan Motosikal <i>Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles</i>	-	-	1,080	4,285	2,107
Pengangkutan dan Penyimpanan <i>Transportation and Storage</i>	-	-	0.1	0.2	0.1
Penginapan dan Aktiviti Perkhidmatan Makanan dan Minuman <i>Accommodation and Food Service Activities</i>	-	-	2,631	10,806	4,414
Maklumat dan Komunikasi <i>Information and Communication</i>	-	-	0.3	0.5	0.3
Aktiviti Kewangan dan Insurans/ Takaful <i>Financial and Insurance/ Takaful Activities</i>	-	-	117,801	388,241	310,954
Aktiviti Hartanah <i>Real Estate Activities</i>	-	-	14.8	17.2	19.3
	-	-	15,616	49,724	30,955
	-	-	2.0	2.2	1.9
	-	-	3,283	11,553	11,184
	-	-	0.4	0.5	0.7
	-	-	51,919	135,853	78,162
	-	-	6.5	6.0	4.8
	-	-	5,456	8,547	6,737
	-	-	0.7	0.4	0.4
	-	-	35,892	254,656	62,156
	-	-	4.5	11.3	3.8
	-	-	1,122	1,921	1,296
	-	-	0.1	0.1	0.1

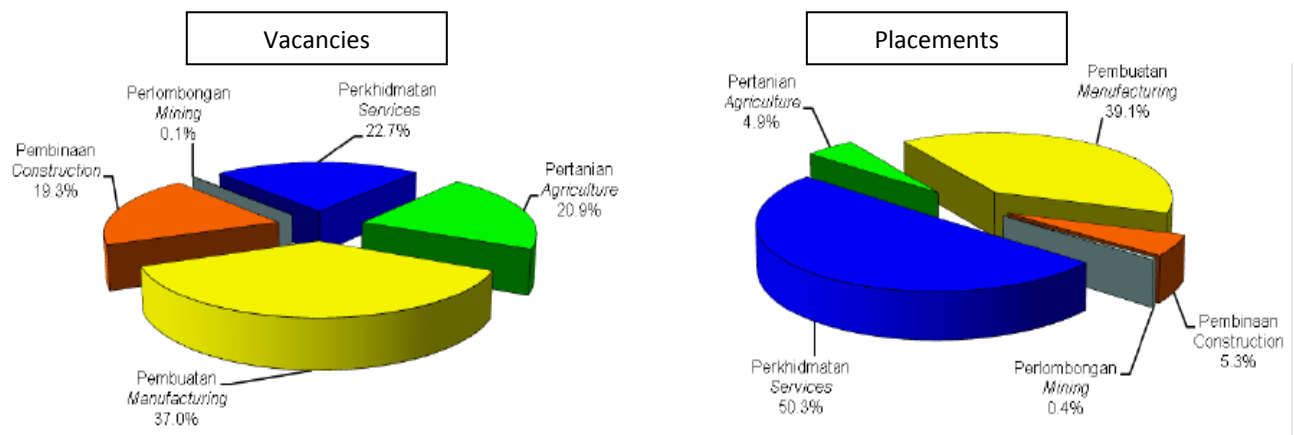
Table 1.4: Placements in the manufacturing industry

Placements Reported to the Labour Department by Industry 2008-2012 (MSIC-2008)

Industri Industry	Tahun / Year				
	2008	2009	2010	2011	2012
Pertanian, Perhutanan dan Perikanan <i>Agriculture, Forestry and Fishing</i>	-	-	246	410	554
Perombongan dan pengkuarian <i>Mining and Quarrying</i>	-	-	3.3	2.0	4.9
Pembuatan <i>Manufacturing</i>	-	-	5	11	46
Bekalan Elektrik, Gas, Wap dan Pending Udara <i>Electricity, Gas, Steam and Air Conditioning Supply</i>	-	-	0.1	0.1	0.4
Bekalan Air, Pembentungan, Pengurusan Sisa dan Aktiviti Pemulihan <i>Water Supply; Sewerage, Waste Management and Remediation Activities</i>	-	-	2,680	9,595	4,346
Pembinaan <i>Construction</i>	-	-	35.7	45.8	39.1
Perdagangan Borong dan Runcit, Pembaikan Kenderaan Bermotor dan Motosikal <i>Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles</i>	-	-	13	201	15
Pengangkutan dan Penyimpanan <i>Transportation and Storage</i>	-	-	0.2	1.0	0.1
Penginapan dan Aktiviti Perkhidmatan Makanan dan Minuman <i>Accommodation and Food Service Activities</i>	-	-	21	56	10
Maklumat dan Komunikasi <i>Information and Communication</i>	-	-	0.3	0.3	0.1
Aktiviti Kewangan dan Insurans/ Takaful <i>Financial and Insurance/ Takaful Activities</i>	-	-	433	480	587
Aktiviti Hartanah <i>Real Estate Activities</i>	-	-	5.8	2.3	5.3
	-	-	391	1,090	1,587
	-	-	5.2	5.2	14.3
	-	-	56	43	164
	-	-	0.8	0.2	1.5
	-	-	79	761	570
	-	-	1.1	3.6	5.1
	-	-	61	124	64
	-	-	0.8	0.6	0.6
	-	-	1,356	3,891	1,180
	-	-	18.2	18.6	10.4
	-	-	1	1	5
	-	-	0.0	0.0	0.0

Source: Jobs Malaysia, Ministry of Human Resources Malaysia





Source: Jobs Malaysia, Ministry of Human Resources Malaysia

Figure 1.2 : Percentage Distribution of Vacancies and Placements (2012)

2.6 International Benchmarking

Benchmark is a standard, or a set of standards, used as a point of reference for evaluating performance or level of quality. Benchmarks may be drawn from an industry's own experience, from the experience of other similar industries, or from legal requirements such as environmental and safety regulations. Meanwhile, benchmarking is a measurement of the quality of an industry's policies, products, programs, strategies, etc., and their comparison with standards measurements, or similar measurements of its peers.

The objectives of benchmarking are:

- i. To determine what and where improvements are needed
- ii. To analyse how other similar industries achieve their high performance levels
- iii. To use this information to improve own performance.



2.7 Statutory And Regulatory Bodies For Electrical And Electronic Industry

i. Environmental Protection Agency (EPA)

The United States Environmental Protection Agency⁶ (EPA) is an agency of the United States federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress⁷. The Environmental Protection Agency began operation in December 1970.

The agency conducts environmental assessment, research, and education. It has the responsibility of maintaining and enforcing national standards under a variety of environmental laws, in consultation with state, tribal, and local governments. The agency also works with industries and all levels of government in a wide variety of voluntary pollution prevention programs and energy conservation efforts. The agency has approximately 15,193 full-time employees⁸ and engages many more people on a contractual basis. More than half of Environmental Protection Agency human resources are engineers, scientists, and environmental protection specialists; other groups include legal, public affairs, financial, and information managers.

ii. Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor established in December 1970. OSHA's mission is to "assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance"⁹. The agency is also charged with enforcing a variety of statutes and regulations.

OSHA has developed a number of training, compliance assistance, and health and safety recognition programs throughout its history. The OSHA

⁶ US Environmental Protection Agency. Retrieved 6 June 2014.

⁷ "Our Mission and What We Do". US EPA. Retrieved 6 June 2014

⁸ US Cencures Burea Spreadsheet. Retrieved 7 June 2014

⁹ About OSHA. Retrieved 7 June 2014



Training Institute, which trains government and private sector health and safety personnel, began in 1972¹⁰. In 1978, the agency began a grantmaking program, now called the Susan Harwood Training Grant Program, to train workers and employers in reducing workplace hazards. OSHA started the Voluntary Protection Programs in 1982, which allows employers to apply as "model workplaces" to achieve special designation if they meet certain requirements.

iii. The Electrical and Electronics Association of Malaysia (TEEAM)

This association established in 1952 is a representative body of the electrical and electronic industry in Malaysia. It work closely with all government departments, statutory bodies and the private sector to ensure and encourage growth of electrical and electronic industries.

2.8 Related Policies, Act, Regulation And Standards For Electrical and Electronics Industry

Policies, acts, regulation and standards related to Electric and Electronic Industry is listed below:

- i. National Energy Policy 1979
- ii. Electricity Supply Act 1990
- iii. Energy Commission Act 2001 (Ammendment 2010)
- iv. Sustainable Energy Development Authority Act 2011
- v. Renewable Energy Act 2011

¹⁰ "OSHA History". Department of Labor, US. Retrieved 7 June 2014



2.9 Conclusion

The strong Electrical and Electronic industry in Malaysia is a result of the government's initiatives in promoting labour-intensive and export-oriented industries. Malaysia has become a major global manufacturing hub for the Electrical and Electronic industry, as attested by the large number of multinational companies from USA, Japan, Europe, Taiwan and Korea which have chosen Malaysia as their base. Unsurprisingly, the Electrical and Electronic industry has grown into Malaysia's largest contributor to output, employment, investments and exports¹¹.

The key to sustaining a healthy growth within this industry is automation and harnessing talents in innovation that can take the Electrical and Electronic industry to a higher level. Malaysia's success can be attributed to a winning combination of pull factors: a stable government, good economic policies, top notch infrastructures, and a skilled knowledge workforce. As a result, Malaysia has developed significant expertise for the manufacture of a wide range of semiconductor devices, high-end consumer electronic, and, information and communication technology products¹². Based on Malaysian Investment Development Authority's (MIDA) records, from a total of just four companies with 577 employees and a total output value of RM25 million in 1970, today the Electrical and Electronic industry has expanded to more than 1,695 companies with a total investment of RM108 billion and a workforce of more than 600,000 people¹³. With an excellent track record of nearly four decades, the future of Electrical and Electronic industry in Malaysia looks promising for skilled and knowledgeable workforce.

¹¹ Malaysia External Trade Development Corporation (MATRADE), Electrical and Electronic Directory 2011-2013

¹² Ibid

¹³ Malaysian Investment Development Authority (MIDA).www.mida.gov.my accessed 02.06.2015



3. METHODOLOGY

3.1 Introduction

This chapter describes the methodology of the overall Occupational Analysis process that was conducted throughout the E&E Industry Occupational Analysis.

3.2 Research Design

The research design that consists of the research method, data analysis methods and output required is as shown in the table below:

Table 5.1: Brief description of methods employed

Objectives	Research Approach	Data Analysis	Output
<u>Objective I:</u> To identify the Occupational Structure and Occupational Area Structure of Electrical and Electronic Industry <u>Objective II:</u> To identify critical and non-critical occupations within the employment structure of Electrical and Electronic Industry based on the supply and demand data to be obtained from secondary databases.	<ul style="list-style-type: none">• Literature review• Focus group consisting of members representing different areas in the industry	<ul style="list-style-type: none">• Thematic analysis• Mapping of the industry job areas	<ul style="list-style-type: none">• Scope of the industry and its sub-sectors• Occupational groups of the sub-sectors• Critical job title• Competency level (Level 1- 8)

Research initially consists of analysing available information on the Electrical and Electronic Industry, followed by direct contact with those in the industry to obtain a general idea of the industry sub-sectors. A supply and demand analysis is then conducted to identify current and projected supply and demand including supply



and demand gap analysis. Below is description of each activity conducted in the process of completing this occupational analysis.

i. Literature review

A literature review on the Electrical and Electronic industry was carried out to get some insight of this industry in the context of the Malaysian scenario. The scope covered under this search includes definitions, the current analysis of the industry sub-sectors/areas and international examples of industry segmentation of its sub-sectors.

ii. Focus Groups with industry members

The literature review findings were used as a guide to identify the scope of study and analysis. Experts from the Electrical and Electronic Industry were identified for further communication and contact. The lists of experts are included in the list of development panel members in Annex 2: List of Development Panel Members. However, there were also several references made by expert panels to industry experts that were not in the workshop.

The Focus Groups consisted of industry members, two (2) methods were adopted, namely; brainstorming and Development of Standard & Curriculum (DESCUM) session. The focus group workshop sessions are described in the following table.

Table 5.2: Focus Group Session

No.	Date	Location	Activity	Method Used
1.	13-14 June 2015	Ibis Styles KL	OS & OAS Development Workshop	Focus Group Discussion



2.	18-19 July 2015	Ibis Styles KL	Literature Review Workshop	Focus Group Discussion
3.	29-30 Aug 2015	Ibis Styles KL	Occupational Definition Development Workshop	Focus Group Discussion
4.	5-6 Sep 2015	Ibis Styles KL	Occupational Definition Development Workshop	Focus Group Discussion

Facts obtained during the literature review were also discussed and presented to the development panel members. The presence of the key persons or experts ensured that the development of the Occupational Analysis is current and relevant. The Electrical and Electronic Industry was analysed using the above methodology to identify the following:

- (a) Scope of the Industry and its sub-sectors;
- (b) Main areas;
- (c) Occupational groups of the sub-sector;
- (d) Job title;
- (e) Critical job title; and
- (f) Competency levels (Level 1 – 8).



3.3 Research Methodology

In meeting both objectives set forth in this study, the data was analysed through mapping, synthesis of discussion group findings and comparison of benchmarking samples.

Qualitative Analysis: Occupational Structure and Occupational Area Structure Development

Thematic analysis was used in qualitative research and focused on examining themes within data. This method emphasizes organization and rich description of the data set. Thematic analysis goes beyond simply counting phrases or words in a text and moves on to identifying implicit and explicit ideas within the data. Coding is the primary process for developing themes within the raw data by recognizing important moments in the data and encoding it prior to interpretation. The interpretation of these codes can include comparing theme frequencies, identifying theme co-occurrence, and graphically displaying relationships between different themes. Most researchers consider thematic analysis to be a very useful method in capturing the intricacies of meaning within a data set.

The thematic approach was applied throughout the process of analysing the Occupational Structure of the industry.

3.4 Data Analysis

The Occupational Structure was analysed and defined based on the following processes:

- (a) Identification of industry scope and boundaries with other relevant industries

The identification of the industry scope is important so that when identifying the relevant sub-sectors and areas under the industry, it will define the segmentation of the particular industry to other relevant



industries. This will eliminate the possibility of duplication between common areas.

(b) Identification of sub-sector/area/sub-area

The coverage of a sub-sector should be able to accommodate a number of areas and sub-areas where applicable. Sub-sectors are identified as being components of an industry and can be clustered in terms of classification, segmentation or process driven.

(c) Identification of job titles

In order to identify job titles, it is important to obtain consensus from expert panel members so that the job title is common between organizations: Small, Medium Enterprise (SME) or Multi National Corporations and is easily accepted by practitioners in the industry.

(d) Identification of Levelling

Levelling of a job title is done based on the level of competency required as competent at a specific designation. The level descriptors in Annex 1 is used as reference when determining the different levels relevant to a specific job title.

(e) Occupational Area Analysis

The Occupational Structure can be further analysed to produce its Occupational Area Structure (OAS) through Occupational Area Analysis (OAA). The occupational area analysis is a process of analysing the job scope of a particular area. This will help to ensure that the job titles are described not only based on common use in the industry but also by their job scope. These OAS will be taken into consideration to be developed into NOSS sub-areas. Therefore the process of merging and shrinking must be done with keeping in mind of the mechanisms of training and certification based on the NOSS. Ultimately, we are able to produce multi-skilling and



multi-tasking workers required by the industry in line with the high-income economy policy. Nevertheless, in certain cases, due to the requirement of industry or regulations, merging is not necessarily required.

3.5 Limitations

(a) Data and Information

Given the broad-base nature of electrical and electronic industry, which are broadly divided into electrical and electronic sectors, having list of panellists proficient in both areas, were a challenge. Even with participation of such eminent persons still doesn't steer the discussion clear from biased views and opinions. Those from different standpoints might have different view on the same subject typically influences by their own practice orientation.

(b) International Benchmarking

International benchmarking was done thoroughly through library research. Interpretation on data and information presented in either website or PDF documents lack the detail explanation based on the background story such as culture and economic level origins of related sources to the referred topics. Hence possible skewed understanding of related topics, which could potentially lead to inaccurate inferences of, related benchmarking.

3.6 Conclusion

This chapter has elaborated on the methodology used in the study which is through literature review, focus group discussion sessions, DESCUM (Development of Standard and Curriculum) and focus groups. The development of the Occupational Structure obtained via brainstorming sessions and supply and demand findings will be presented in the next chapter.



4. FINDINGS AND DISCUSSION

4.1 Introduction

The identified sub-sectors for the Electrical and Electronics industry were obtained through literature research and discussions with industry experts during the development workshop sessions and interviews. Based on the discussions held during development workshops and approval sessions, the development and approval panel members had identified that the 2 sectors, 5 sub-sectors, 17 areas and 51 job areas under the Electrical and Electronic industry in Malaysia as shown in Table 2.1 and Table 2.2.

Table 2.1: The identified sub-sectors, areas and job areas in Electrical sector

SECTOR	SUB-SECTORS	AREAS	JOB AREAS
Electrical	Power Plant Operation	Thermal Plant Operation	Process Treatment
			Operation Control
			Plant Maintenance
		Hydro Plant Operation	Process Treatment
			Operation Control
			Ground Maintenance
	Power Plant Operation	Internal Combustion Engine (ICE) Plant Operation	
		Solar Photovoltaic Plant Operation	Solar Photovoltaic Design Operation
			Solar Photovoltaic Installation & Maintenance
		Wind Turbine Plant Operation	
	Electrical Installation & Maintenance	Electrical Installation & Maintenance	
		Cable Jointing	



Table 2.2: The identified sub-sectors, areas and job areas in Electronic sector

SECTOR	SUB-SECTORS	AREAS	JOB AREAS	
Electronics	Electronic Components	Ingot & Raw Wafer Fabrication	Material Preparation	Material Preparation
				Chemical Preparation
			Ingot & Raw Wafer Processing	Ingotting
				Crystal Growth
				Dicing & Polishing
			Quality Management	Quality Control
				Quality Assurance
		Wafer Fabrication Production	Material Preparation	Material Preparation
				Chemical Preparation
			Circuit Impregnation	Oxidation
				Diffusion
				Lithography
				Etching
				Deposition
				Chemical Mechanical Planarisation (CMP)
			Quality Management	Quality Control
				Quality Assurance
		Semiconductor Component Manufacturing	Material Preparation	Material Preparation
				Chemical Preparation
			Front of Line Assembly	Screen Printing
				Die Attached
				Wire Bonding
				Encapsulation
			End of Line Process	Surface Finish
				Forming & Trimming
				Environmental Testing
				Final Testing
			Quality Management	Quality Control
				Quality Assurance
		Discreet Component Manufacturing	Material Preparation	Material Preparation
				Chemical Preparation
			Discreet Component Production	
			Quality Management	Quality Control
				Quality Assurance



Table 2.2: The identified sub-sectors, areas and job areas in Electronic sector (cont.)

SECTOR	SUB-SECTORS	AREAS	JOB AREAS
		Electronic Component Research & Development	
	Consumer Electronics	Consumer Electronic Product Assembly	Printed Circuit Board Assembly
			Product Assembly
			Quality Management
			Quality Control
			Quality Assurance
		Medical Electronic	Material Preparation
			Medical Equipment Assembly Process
			Medical Electronic Research & Development
			Mechatronic
			Electrical
			Electronic
			Medical Equipment Application Support
	Industrial Electronics	Telecommunication Electronic	Material Preparation
			Telecommunication Equipment Assembly Process
			Telecommunication Electronic Research & Development
			Mechatronic
			Electrical
			Electronic
		Automotive Electronic	Material Preparation
			Automotive Equipment Assembly Process
			Telecommunication Electronic Research & Development
			Mechatronic
			Electrical
			Electronic
			Automotive Equipment Application Support
		Information Communication Technology (ICT) Electronics	Material Preparation
			ICT Equipment Assembly Process
			ICT Electronic Research & Development
			Mechatronic
			Electrical
			Electronic
			ICT Equipment Application Support

4.2 Electrical And Electronics Industry Occupational Structure (OS)

Based on the agreement among the industry panelists, it was concluded that the Electrical and Electronic industry is segregated into 2 sectors, Electrical Industry and Electronics Industry. Tables 2.3 to 2.14 further elaborates the sub-sectors, areas and job areas of these two sectors.



SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	THERMAL PLANT OPERATION					
	PROCESS TREATMENT	OPERATION CONTROL		PLANT MAINTENANCE		
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	- NO LEVEL -	THERMAL PLANT MANAGER				
LEVEL 6	- NO LEVEL -	OPERATION MANAGER		PRODUCTION MAINTENANCE MANAGER		
LEVEL 5	PROCESS TREATMENT CHEMIST	CONTROL ROOM ENGINEER	PLANT OPERATION ENGINEER	ELECTRICAL MAINTENANCE ENGINEER	MECHANICAL MAINTENANCE ENGINEER	INSRUMENTATION & CONTROL MAINTENANCE ENGINEER
LEVEL 4	PROCESS TREATMENT ASSISTANT CHEMIST	CONTROL ROOM ASSISTANT ENGINEER	PLANT OPERATION ASSISTANT ENGINEER	ELECTRICAL MAINTENANCE ASSISTANT ENGINEER	MECHANICAL MAINTENANCE ASSISTANT ENGINEER	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT ENGINEER
LEVEL 3	- NO LEVEL -	CONTROL ROOM TECHNICIAN	PLANT OPERATION TECHNICIAN	ELECTRICAL MAINTENANCE TECHNICIAN	MECHANICAL MAINTENANCE TECHNICIAN	INSRUMENTATION & CONTROL MAINTENANCE TECHNICIAN
LEVEL 2	- NO LEVEL -	- NO LEVEL -	PLANT OPERATION ASSISTANT TECHNICIAN	ELECTRICAL MAINTENANCE ASSISTANT TECHNICIAN	MECHANICAL MAINTENANCE ASSISTANT TECHNICIAN	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT TECHNICIAN
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 2.3: Occupational Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Thermal Plant Operation



SECTOR	ELECTRICAL INDUSTRY					
SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	HYDRO PLANT OPERATION					
	OPERATION CONTROL		PRODUCTION MAINTENANCE			GROUPS MAINTENANCE
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	HYDRO PLANT MANAGER					
LEVEL 6	OPERATION MANAGER		PRODUCTION MAINTENANCE MANAGER			GROUPS MAINTENANCE MANAGER
LEVEL 5	CONTROL ROOM ENGINEER	PLANT OPERATION ENGINEER	ELECTRICAL MAINTENANCE ENGINEER	MECHANICAL MAINTENANCE ENGINEER	INSRUMENTATION & CONTROL MAINTENANCE ENGINEER	GROUPS MAINTENANCE ENGINEER
LEVEL 4	CONTROL ROOM ASSISTANT ENGINEER	PLANT OPERATION ASSISTANT ENGINEER	ELECTRICAL MAINTENANCE ASSISTANT ENGINEER	MECHANICAL MAINTENANCE ASSISTANT ENGINEER	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT ENGINEER	GROUPS MAINTENANCE ASSISTANT ENGINEER
LEVEL 3	CONTROL ROOM TECHNICIAN	PLANT OPERATION TECHNICIAN	ELECTRICAL MAINTENANCE TECHNICIAN	MECHANICAL MAINTENANCE TECHNICIAN	INSRUMENTATION & CONTROL MAINTENANCE TECHNICIAN	GROUPS MAINTENANCE TECHNICIAN
LEVEL 2	- NO LEVEL -	PLANT OPERATION ASSISTANT TECHNICIAN	ELECTRICAL MAINTENANCE ASSISTANT TECHNICIAN	MECHANICAL MAINTENANCE ASSISTANT TECHNICIAN	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT TECHNICIAN	GROUPS MAINTENANCE ASSISTANT TECHNICIAN
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 2.4: Occupational Structure of Electrical Sector, Sub Sector Power Plant Operation, Job Area Hydro Plant Operation



SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	INTERNAL COMBUSTION ENGINE (ICE) PLANT OPERATION AND MAINTENANCE		SOLAR PHOTOVOLTAIC PLANT OPERATION		WIND TURBINE PLANT OPERATION AND MAINTENANCE	
			SOLAR PHOTOVOLTAIC DESIGN	SOLAR PHOTOVOLTAIC INSTALLATION. OPERATION & MAINTENANCE		
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	INTERNAL COMBUSTION ENGINE PLANT MANAGER		SOLAR PHOTOVOLTAIC PLANT MANAGER		WIND TURBINE PLANT MANAGER	
LEVEL 6	INTERNAL COMBUSTION ENGINE OPERATION MANAGER		SOLAR PHOTOVOLTAIC OPERATION MANAGER		WIND TURBINE OPERATION MANAGER	
LEVEL 5	INTERNAL COMBUSTION ENGINE ENGINEER		SOLAR PHOTOVOLTAIC DESIGNER	SOLAR PHOTOVOLTAIC ENGINEER	WIND TURBINE ENGINEER	
LEVEL 4	INTERNAL COMBUSTION ENGINE ASSISTANT ENGINEER		SOLAR PHOTOVOLTAIC ASSISTANT DESIGNER	SOLAR PHOTOVOLTAIC ASSISTANT ENGINEER	WIND TURBINE ASSISTANT ENGINEER	
LEVEL 3	INTERNAL COMBUSTION ENGINE TECHNICIAN (MECHANICAL)	INTERNAL COMBUSTION ENGINE TECHNICIAN (ELECTRICAL)	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE TECHNICIAN		WIND TURBINE TECHNICIAN (MECHANICAL)	WIND TURBINE TECHNICIAN (ELECTRICAL)
LEVEL 2	INTERNAL COMBUSTION ENGINE ASSISTANT TECHNICIAN (MECHANICAL)	INTERNAL COMBUSTION ENGINE ASSISTANT TECHNICIAN (ELECTRICAL)	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE ASSISTANCE TECHNICIAN		WIND TURBINE ASSISTANT TECHNICIAN (MECHANICAL)	WIND TURBINE ASSISTANT TECHNICIAN (ELECTRICAL)
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 2.5: OS of Electrical Sector, Sub Sector Power Plant Operation, Job Area Internal Combustion Engine, Solar Photovoltaic & Wind Turbine



SECTOR	ELECTRICAL INDUSTRY	
SUB SECTOR	ELECTRICAL INSTALLATION AND MAINTENANCE	
JOB AREA	ELECTRICAL INSTALLATION AND MAINTENANCE	CABLE JOINTING
LEVEL 8	- NO LEVEL -	- NO LEVEL -
LEVEL 7	ELECTRICAL SENIOR ENGINEER (VERY HIGH TENSION VOLTAGE (132KV))	- NO LEVEL -
LEVEL 6	ELECTRICAL ENGINEER (HIGH TENSION VOLTAGE (33KV))	- NO LEVEL -
LEVEL 5	ELECTRICAL ASSISTANT ENGINEER (HIGH VOLTAGE ELECTRICAL INSTALLATION & MAINTENANCE ASSISTANT MANAGER (11KV))	HIGH VOLTAGE CABLE JOINTER (132 KV)
LEVEL 4	ELECTRICAL SUPERVISOR (AO, A1, A4)	HIGH VOLTAGE CABLE JOINTER (33 KV)
LEVEL 3	ELECTRICAL SENIOR TECHNICIAN (THREE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)	HIGH VOLTAGE CABLE JOINTER (11 KV)
LEVEL 2	ELECTRICAL TECHNICIAN (SINGLE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)	LOW VOLTAGE CABLE JOINTER
LEVEL 1	- NO LEVEL -	- NO LEVEL -

Table 2.6: OS of Electrical Sector, Job Area Electrical Installation & Maintenance and Cable Jointing



SECTOR	ELECTRONICS INDUSTRY						
SUB SECTOR	ELECTRONIC COMPONENT						
JOB AREA	MATERIAL PREPARATION		INGOT AND RAW WAFER PROCESSING			QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	INGOTTNG	CRYSTAL GROWTH	DICING AND POLISHING	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	INGOT AND RAW WAFER PROCESSING MANAGER			No Level	No Level
LEVEL 6	No Level	No Level	INGOT PROCESSING OPERATION MANAGEMENT	CRYSTAL GROWTH MANAGER	DICING AND POLISHING MANAGER	QUALITY MANAGEMENT MANAGER	
LEVEL 5	MATERIAL PREPARATION ENGINEER	CHEMICAL PREPARATION ENGINEER	INGOT ENGINEER	CRYSTAL GROWTH ENGINEER	DICING AND POLISHING ENGINEER	QUALITY CONTROL ENGINEER	QUALITY ASSURANCE ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	CHEMICAL PREPARATION ASSISTANT ENGINEER	INGOT ASSISTANT ENGINEER	CRYSTAL GROWTH ASSISTANT ENGINEER	DICING AND POLISHING ASSISTANT ENGINEER	QUALITY CONTROL ASSISTANT ENGINEER	QUALITY ASSURANCE ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	CHEMICAL PREPARATION TECHNICIAN	No Level	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	CHEMICAL PREPARATION HANDLER	No Level	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.7: OS of Electronics Sector, Sub Sector Electronics Components



SECTOR	ELECTRONICS INDUSTRY									
SUB SECTOR	WAFER FABRICATION PRODUCTION									
JOB AREA	MATERIAL PREPARATION		CIRCUIT IMPREGNATION						QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	OXIDATION	DIFFUSION	LITHOGRAPHY	ETCHING	DEPOSITION	CHEMICAL MECHANICAL PLANARISATION (CMP)	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	CIRCUIT IMPREGNATION SPECIALIST						No Level	No Level
LEVEL 6	No Level	No Level	CIRCUIT IMPREGNATION MANAGER						QUALITY MANAGEMENT MANAGER	
LEVEL 5	MATERIAL PREPARATION ENGINEER	CHEMICAL PREPARATION ENGINEER	CIRCUIT IMPREGNATION ENGINEER						QUALITY CONTROL ENGINEER	QUALITY ASSURANCE ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	CHEMICAL PREPARATION ASSISTANT ENGINEER	CIRCUIT IMPREGNATION ASSISTANT ENGINEER						QUALITY CONTROL ASSISTANT ENGINEER	QUALITY ASSURANCE ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	CHEMICAL PREPARATION TECHNICIAN	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	CHEMICAL PREPARATION HANDLER	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.8: OS of Electronics Sector, Sub Sector Wafer Fabrication Production



SECTOR	ELECTRONICS INDUSTRY											
SUB SECTOR	SEMICONDUCTOR COMPONENT MANUFACTURING											
JOB AREA	MATERIAL PREPARATION		FRONT OF LINE ASSEMBLY				END OF LINE PROCESS				QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	SCREEN PRINTING	DIE ATTACHED	WIRE BONDING	ENCAPSULATION	SURFACE FINISH	FORMING & TRIMMING	ENVIRONMENTAL TESTING	FINAL TESTING	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	SEMICONDUCTOR COMPONENT MANUFACTURING SPECIALIST								No Level	No Level
LEVEL 6	No Level	No Level	FRONT OF LINE ASSEMBLY MANAGER				END OF LINE ASSEMBLY MANAGER				QUALITY MANAGEMENT MANAGER	
LEVEL 5	MATERIAL PREPARATION ENGINEER	CHEMICAL PREPARATION ENGINEER	FRONT OF LINE ASSEMBLY ENGINEER		WIRE BONDING ENGINEER	ENCAPSULATION ENGINEER	SURFACE FINISH ENGINEER	FORMING & TRIMMING ENGINEER	ENVIRONMENTAL TESTING ENGINEER	FINAL TESTING ENGINEER	QUALITY CONTROL ENGINEER	QUALITY ASSURANCE ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	CHEMICAL PREPARATION ASSISTANT ENGINEER	FRONT OF LINE ASSEMBLY ASSISTANT ENGINEER		WIRE BONDING ASSISTANT ENGINEER	ENCAPSULATION ASSISTANT ENGINEER	SURFACE FINISH ASSISTANT ENGINEER	FORMING & TRIMMING ASSISTANT ENGINEER	ENVIRONMENTAL TESTING ASSISTANT ENGINEER	FINAL TESTING ASSISTANT ENGINEER	QUALITY CONTROL ASSISTANT ENGINEER	QUALITY ASSURANCE ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	CHEMICAL PREPARATION TECHNICIAN	SCREEN PRINTING TECHNICIAN	DIE ATTACHED TECHNICIAN	WIRE BONDING TECHNICIAN	ENCAPSULATION TECHNICIAN	SURFACE FINISH TECHNICIAN	FORMING & TRIMMING TECHNICIAN	ENVIRONMENTAL TESTING TECHNICIAN	FINAL TESTING TECHNICIAN	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	CHEMICAL PREPARATION HANDLER	SCREEN PRINTING ASSISTANT TECHNICIAN	DIE ATTACHED ASSISTANT TECHNICIAN	WIRE BONDING ASSISTANT TECHNICIAN	ENCAPSULATION ASSISTANT TECHNICIAN	SURFACE FINISH ASSISTANT TECHNICIAN	FORMING & TRIMMING ASSISTANT TECHNICIAN	ENVIRONMENTAL TESTING ASSISTANT TECHNICIAN	FINAL TESTING ASSISTANT TECHNICIAN	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.9: OS of Electronics Sector, Sub Sector Semiconductor Component Manufacturing



SECTOR	ELECTRONICS INDUSTRY									
SUB SECTOR	ELECTRONIC COMPONENT						CONSUMER ELECTRONIC			
JOB AREA	DISCREET COMPONENT MANUFACTURING					ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT	CONSUMER ELECTRONIC PRODUCT ASSEMBLY			
	MATERIAL PREPARATION		DISCREET COMPONENT PRODUCTION	QUALITY MANAGEMENT			PRINTED CIRCUIT BOARD ASSEMBLY	PRODUCT ASSEMBLY	QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION		QUALITY CONTROL	QUALITY ASSURANCE				QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	DISCREET COMPONENT PRODUCTION SPECIALIST	No Level	No Level	ELECTRONIC COMPONENT R&D SPECIALIST	CONSUMER ELECTRONIC PRODUCT ASSEMBLY SPECIALIST		No Level	No Level
LEVEL 6	No Level	No Level	DISCREET COMPONENT PRODUCTION MANAGER	QUALITY MANAGEMENT MANAGER		R&D HEAD OF DEPARTMENT	CONSUMER ELECTRONIC PRODUCT ASSEMBLY MANAGER		QUALITY MANAGEMENT MANAGER	
LEVEL 5	MATERIAL PREPARATION ENGINEER	CHEMICAL PREPARATION ENGINEER	ENGINEER	QUALITY CONTROL ENGINEER	QUALITY CONTROL ENGINEER	R&D RESERCHER	PRINTED CIRCUIT BOARD ASSEMBLY ENGINEER	PRODUCT ASSEMBLY ENGINEER	QUALITY CONTROL ENGINEER	QUALITY ASSURANCE ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	CHEMICAL PREPARATION ASSISTANT ENGINEER	ASSISTANT ENGINEER	QUALITY CONTROL ASSISTANT ENGINEER	QUALITY CONTROL ASSISTANT ENGINEER	R&D ASSISTANT RESERCHER	PRINTED CIRCUIT BOARD ASSEMBLY ASSISTANT ENGINEER	PRODUCT ASSEMBLY ASSISTANT ENGINEER	QUALITY CONTROL ASSISTANT ENGINEER	QUALITY ASSURANCE ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	CHEMICAL PREPARATION TECHNICIAN	TECHNICIAN	No Level	No Level	R&D TECHNICIAN	PRINTED CIRCUIT BOARD ASSEMBLY TECHNICIAN	PRODUCT ASSEMBLY TECHNICIAN	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	CHEMICAL PREPARATION HANDLER	ASSISTANT TECHNICIAN	No Level	No Level	No Level	PRINTED CIRCUIT BOARD ASSEMBLY ASSISTANT TECHNICIAN	PRODUCT ASSEMBLY ASSISTANT TECHNICIAN	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.10: OS of Electronics Sector, Sub Sector Electronics Component & Consumer Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	MEDICAL ELECTRONIC					
	MATERIAL PREPARATION	MEDICAL EQUIPMENT ASSEMBLY PROCESS	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT			MEDICAL EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	MEDICAL EQUIPMENT ASSEMBLY PROCESS SPECIALIST	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST			
LEVEL 6	No Level	MEDICAL EQUIPMENT ASSEMBLY PROCESS MANAGER	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER			
LEVEL 5	MATERIAL PREPARATION ENGINEER	MEDICAL EQUIPMENT ASSEMBLY PROCESS ENGINEER	MECHATRONIC ENGINEER	ELECTRICAL ENGINEER	ELECTRONIC ENGINEER	MEDICAL EQUIPMENT APPLICATION SUPPORT ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	MEDICAL EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER	MECHATRONIC ASSISTANT ENGINEER	ELECTRICAL ASSISTANT ENGINEER	ELECTRONIC ASSISTANT ENGINEER	MEDICAL EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	MEDICAL EQUIPMENT ASSEMBLY PROCESS TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	MEDICAL EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.11: OS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Medical Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	TELECOMMUNICATION ELECTRONIC					
	MATERIAL PREPARATION	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT			TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS SPECIALIST	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST			
LEVEL 6	No Level	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS MANAGER	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER			
LEVEL 5	MATERIAL PREPARATION ENGINEER	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ENGINEER	MECHATRONIC ENGINEER	ELECTRICAL ENGINEER	ELECTRONIC ENGINEER	TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER	MECHATRONIC ASSISTANT ENGINEER	ELECTRICAL ASSISTANT ENGINEER	ELECTRONIC ASSISTANT ENGINEER	TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.12: OS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Telecommunication Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	AUTOMOTIVE ELECTRONIC					
	MATERIAL PREPARATION	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT			AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS SPECIALIST	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST			
LEVEL 6	No Level	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS MANAGER	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER			
LEVEL 5	MATERIAL PREPARATION ENGINEER	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ENGINEER	MECHATRONIC ENGINEER	ELECTRICAL ENGINEER	ELECTRONIC ENGINEER	AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER	MECHATRONIC ASSISTANT ENGINEER	ELECTRICAL ASSISTANT ENGINEER	ELECTRONIC ASSISTANT ENGINEER	AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.13: OS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Automotive Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC					
	MATERIAL PREPARATION	ICT EQUIPMENT ASSEMBLY PROCESS	ICT ELECTRONIC RESEARCH AND DEVELOPMENT			ICT EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	ICT EQUIPMENT ASSEMBLY PROCESS SPECIALIST	ICT ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST			
LEVEL 6	No Level	ICT EQUIPMENT ASSEMBLY PROCESS MANAGER	ICT ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER			
LEVEL 5	MATERIAL PREPARATION ENGINEER	ICT EQUIPMENT ASSEMBLY PROCESS ENGINEER	MECHATRONIC ENGINEER	ELECTRICAL ENGINEER	ELECTRONIC ENGINEER	ICT EQUIPMENT APPLICATION SUPPORT ENGINEER
LEVEL 4	MATERIAL PREPARATION ASSISTANT ENGINEER	ICT EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER	MECHATRONIC ASSISTANT ENGINEER	ELECTRICAL ASSISTANT ENGINEER	ELECTRONIC ASSISTANT ENGINEER	ICT EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER
LEVEL 3	MATERIAL PREPARATION TECHNICIAN	ICT EQUIPMENT ASSEMBLY PROCESS TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL PREPARATION ASSISTANT TECHNICIAN	ICT EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 2.14: OS of Electronics Sector, Sub Sector Industrial Electronics, Job Area ICT Electronics



4.3 Occupational Definition

This chapter will focus on the explanation of the Job Description for Electrical & Electronics sector. A job description summarizes the duties of a position and states the essential responsibilities of the job. A company relies on a job description to relay this information regarding a work role to potential candidates to encourage qualified applicants to apply and discourage the application of unqualified individuals. The job description also serves to structure job interviews by focusing attention on the work requirements and applicant credentials that are most important to success in the position to be filled. The job description also establishes expectations for potential employees of the criteria that will be used to evaluate future on-the-job performance.

A job description consists of several elements, one of which is the position title that describes the nature of the work performed. The purpose of a job and the key functions to be performed also are summarized in the job description. Action verbs describe the duties, which the description lists in order of importance. In addition, the description states the knowledge or skills needed to perform the essential responsibilities of the role. The description also identifies the working conditions and physical demands of the job.

Findings in this chapter were obtained via literature review, observation, interviews with industry practitioners and discussions during workshops with development panel members. The findings of the Job Description are also discussed with panel members to obtain insight and to ensure on the matters at hand from a practitioner's perspective.



OCCUPATIONAL DEFINITION FOR ELECTRICAL SECTOR





THERMAL PLANT OPERATION

(PROCESS TREATMENT)

LEVEL 4

PROCESS TREATMENT ASSISTANT CHEMIST

A Process Treatment Assistant Chemist is designated to carry out laboratory testing, prepare reports and maintain laboratory equipment. He/She also required to adhere to test procedures and Safety, Health & Environment (SHE) procedures.

In particular the person will:

1. Conduct chemical testing
2. Document test procedures and results
3. Carry out data collection
4. Carry out sampling activities
5. Communicate project status report
6. Setup laboratory equipment, materials and supplies
7. Report equipment repair and maintenance requests
8. Adhere to occupational safety and health practices and procedures





THERMAL PLANT OPERATION

(PROCESS TREATMENT)

LEVEL 5

PROCESS TREATMENT CHEMIST

A Process Treatment Chemist is designated to be responsible for the operation of the process treatment plant laboratory and as such is the primary individual responsible for monitoring process control for the facility assigned and assists development and implementation of Safety, Health & Environment (SHE) procedures.

In particular the person will:

1. Conducts regular and special chemical analysis of samples
2. Analys treatment and chemical constituents efficiency
3. Coordinate laboratory equipment calibratation requirements
4. Interpret test results and formulates recommendations for plant operations
5. Coordinate maintenance of laboratory certification
6. Perform research work on problems of a chemical nature
7. Prepare clear and accurate scientific reports
8. Prepare compliance monitoring reports
9. Coordinate further response actions with superior and local responders
10. Verify and evaluate data collection activity and analysis result
11. Processes data and prepares report for regulatory bodies
12. Enforce and monitor implementatioon of Safety, Health & Environment (SHE) procedures and good lab practices





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 3

CONTROL ROOM TECHNICIAN

A Control Room Technician is responsible to monitor and report plant operation issues according to control rooms indication panel operation. He/She also required to adhere to occupational sate, health and environment practices and procedures.

In particular the person will:

1. Check equipment and indicators to detect evidence of operating problems
2. Adjust controls to regulate the flow of power safe start up, shutdown and operation of the plant and equipment as necessary
3. Assist control engineer to monitor the operating status of plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
4. Writes and maintains equipment logs, operational logs, and working reports
5. Participates in daily preventative, scheduled, and corrective maintenance activities
6. Provides assistance with plant clean-up and housekeeping activities
7. Adhere to accupational safety and health practices and procedures





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 4

CONTROL ROOM ASSISTANT ENGINEER

A Control Room Assistant Engineer is designated to assist control room engineer to monitor and operate boilers and auxiliary plant equipment from the field to maintain safe, efficient and continuous plant operations also ensuring all safety, health & environmental compliance standards and procedures.

In particular the person will:

1. Handle start up, shutdown and operation of the plant and equipment
2. Carry out preventive maintenance jobs
3. Carry out preventive maintenance through Computerized Maintenance Management System (CMMS)
4. Monitor operating status of thermal plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
5. Prepare reports on thermal power plant operations, status, maintenance, and other information
6. Adhere to occupational safety and health practices and procedures





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 5

CONTROL ROOM ENGINEER

A Control Room Engineer is designated to be responsible to monitor and plant equipment operation to maintain safe, efficient and continuous plant operations. He/She also required to adhere to safety, health & environmental compliance standards and procedures.

In particular the person will:

1. Direct start up, shutdown and operation of the plant and equipment
2. Prepare and evaluate plant operations and performance monitoring report
3. Prepare departmental operation budget and planning
4. Verify preventive maintenance jobs monitoring through Computerized Maintenance Management System (CMMS)
5. Monitor operating status of thermal plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
6. Assist in preparing planning and schedule for plant activities (including refuse fuel deliveries, ash removal, and regular maintenance)
7. Assist in preparation of reports on hydro power plant operations, status, maintenance, and other information
8. Adhere Safety, Health & Environment procedures and good practices Enforce hydrostation voltage schedules





THERMAL PLANT OPERATION

PLANT OPERATION

LEVEL 2

PLANT OPERATION ASSISTANT TECHNICIAN

A Plant Operation Assistant Technician is responsible in performing support task for plant operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assst in maintenance activities
2. Carry out tools and equipment maintenance and storage
3. Carry out housekeeping activities
4. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 3

PLANT OPERATION TECHNICIAN

A Plant Operation Technician is designated to provide technical support in monitoring and operating plant equipment, maintenance operation and record keeping in accordance with plant operation standard operating procedure. He/She also required to adhere to Safety, Health & Environmental (SHE) compliance standards and procedures.

In particular the person will:

1. Carry out visual inspection monitor power distribution and isolate disruptions
2. Carry out routine maintenance activities
3. Provide technical support for corrective maintenance activities
4. Update equipment operation logs
5. Monitor operating status of thermal plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
6. Provide technical support to operation assistant engineer to operate controls to start, stop, generator units, boilers, engines, or auxiliary systems
7. Adhere to plant Safety, Health & Environment procedures and good practices





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 4

PLANT OPERATION ASSISTANT ENGINEER

A Plant Operations Assistant Engineer is responsible carrying out thermal plant operation and responding to plant emergency according to plant operation Standard Operating Procedure. He / she also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Operate and monitor electrical power distribution systems
2. Assist in inspection and testing of new installed equipments
3. Carry out field operational functions as well as responding to plant emergency
4. Carry out plant and equipment start up, shutdown and operation
5. Prepare plant operation report
6. Check and evaluate equipments operation log report
7. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 5

PLANT OPERATION ENGINEER

A Plant operations engineer will be responsible for all aspects of operation and maintenance of the thermal power and co-generation plant. He / she will provide high quality O&M solutions operation and maintenance problems, take initiative to improve plant efficiency, reliability and availability to enhance company profitability and productivity, and adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Monitor and verify electrical power distribution systems operation
2. Plan and monitor preventive and corrective maintenance activities
3. Coordinate field operational functions as well as responding to plant emergency
4. Carry out inspection and testing of new installed equipments
5. Prepare work scheduling planning for subordinate
6. Prepare plant operational budget and reports
7. Direct plant and equipment start up, shutdown and operation
8. Coordinate safety documents requirements (such as lock out/tag out, hot work permit, confined space entry permit, chemical hazard, emergency response procedure etc.)
9. Coordinate staff training requirements
10. Maintain and enforce safe operating practices and compliance with other local, state, and federal regulatory requirements
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

OPERATION CONTROL

LEVEL 6

OPERATION MANAGER

An Operation Manager is designated to be responsible to manage operations at thermal power generation facilities. Direct work activities at plant, including supervision of operations and maintenance staff and assists development and implementation of Safety, Health & Environment (SHE) procedures.

In particular the person will:

1. Ensure compliance with all environmental, health and safety policies, laws and regulations
2. Supervise operations and control room team members
3. Direct plant operations routines
4. Plan and conduct annual capacity test
5. Monitor equipment operating trends
6. Analyse and improve standard plant operating procedures, casualty control procedures and control room practices
7. Monitor and evaluate testing programs for all plant equipment
8. Prepare and implement staff development program
9. Evaluate and verify departmental budgets and planning.
10. Evaluate preventative and corrective maintenance program
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 2

ELECTRICAL MAINTENANCE ASSISTANT TECHNICIAN

An Electrical Maintenance Assistant Technician is responsible in performing support task for electrical maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

5. Assist in electrical equipment wiring, installation and testing
6. Assist in maintenance activities
7. Carry out tools and equipment maintenance and storage
8. Carry out housekeeping activities
9. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 3

ELECTRICAL MAINTENANCE TECHNICIAN

The primary responsibility of the Electrical Maintenance Assistant Technician is responsible in performing operational maintenance tasks within operating power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assemble and wire mechanical, electromechanical, and electrical components to structural components
2. Lay and connect wires and cables
3. Measure direct and alternating current strengths and test component parts and structures
4. Assemble, wire, and mount structural components, equipment, and parts of a power plant
5. Test, measure, and adjust structural components and equipment
6. Install and commission structural components, devices, and parts of a power plant
7. Measure non-electrical values and test technical control and instrumentation elements
8. Handle protective devices in the power station
9. Maintain, troubleshoot, and repair operational material and power supply plants including lighting and signal systems
10. Adhere to plant Safety, Health & Environment (SHE) standard and procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 4

ELECTRICAL MAINTENANCE ASSISTANT ENGINEER

An Electrical Maintenance Assistant Engineer is responsible to carry out plant electrical systems maintenance, carry out equipment testing and maintenance operation related to electrical equipment and fittings.. He/She also required to supervise technical support work activities and adhere to plant Safety, Health & Environment (SHE) standard and procedures.

In particular the person will:

1. Implement routine servicing schedules
2. Coordinate calibrating instruments requirements
3. Carry out periodic maintenance on all electrical equipment, components, and installations
4. Provide prompt response electrical equipment breakdown
5. Carry out new electrical components and fittings installation
6. Collect data for energy auditing purpose
7. Carry out electrical equipment breakdowns maintenance
8. Implement maintenance schedule and prepare maintenance report
9. Adhere to plant Safety, Health & Environment (SHE) standard and procedures
10. Carry out administrative duties according to plant Standard Operating Procedure





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 5

ELECTRICAL MAINTENANCE ENGINEER

An Electrical Maintenance Engineer is responsible to maintain plant electrical systems by ensuring electrical power and equipment operation efficiency, offering engineering support and managing staff work scheduling. He/She also required to prepare maintenance procedures and adhere to plant Safety, Health & Environment (SHE) standard and procedures.

In particular the person will:

1. Organising routine servicing schedules
2. Schedule and undertake periodic maintenance on all electrical equipment, components, and installations
3. Provide prompt response electrical equipment breakdown
4. Endorse new electrical components and fittings installation
5. Recommend replacement for old or faulty electrical components or fittings
6. Perform energy auditing
7. Assist in forecasting requirements, creating budget and scheduling expenses for the electrical maintenance operation
8. Troubleshoot electrical equipment breakdowns and provide maintenance solution
9. Keep record of all stock and supplies, including company's electrical equipment
10. Assist in formulating the best cost-effective production process
11. Monitor implementation of maintenance schedule and verify maintenance report
12. Adhere to plant Safety, Health & Environment (SHE) standard and procedures
13. Carry out managerial duties according to plant Standard Operating Procedure





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 2

MECHANICAL MAINTENANCE ASSISTANT TECHNICIAN

A Mechanical Maintenance Assistant Technician is responsible in performing support task for mechanical maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assist in mechanical equipment fitting
2. Assist in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 3

MECHANICAL MAINTENANCE TECHNICIAN

A Mechanical Maintenance Technician is responsible in perform maintenance and repairs work on mechanical equipment. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assemble and test basic and complex power plant components using assembly drawings
2. Perform plant operation inspection for inconsistencies and report issues arise
3. Carry out mechanical repair activities to
4. Respond to station alarms and resolve power plant issues
5. Test and calibrate equipment such as pressure transmitters, valve positioning devices and pneumatic controls
6. Develop, implement and maintain effective outage backup plans
7. Install, test and maintain HVAC systems at the power plant premises
8. Carry out preventative maintenance on mechanical equipment
9. Monitor key indicators of power plant operations to determine evidence of mechanical problems
10. Monitor generators and auxiliary pumping equipment operation
11. Monitor and control power generating equipment such as turbines, boilers and reactors
12. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 4

MECHANICAL MAINTENANCE ASSISTANT ENGINEER

The primary responsibility of the Mechanical Maintenance Assistant Engineer is to assist Maintenance Engineer to operates, performs regular preventive maintenance, troubleshoots, tests, and makes rounds taking regular interpreting on all power plant equipment and systems. Provides safety and environmental stewardship. Ensures compliance with all applicable regulations and plant procedures. Keeps all equipment in optimum operating condition. Develops operating procedures for plant equipment to ensure consistent and safe operation.

In particular the person will:

1. Perform all work in compliance with all Safety, Health & Environment (SHE) standards and company procedures/policies
2. Assists with the development of organization, procedures and processes manuals for the Maintenance Department
3. Assist engineer to coordinate the mechanical maintenance team and maintain competencies, motivation and performance to achieve the teams mission and objectives
4. Assist engineer to propose and control the mechanical component of the maintenance budget
5. Ensure that all personnel performing job related activities must be legally trained and certified



6. Ensure at all times safe installations and operations through proper design, protection systems, procedures and training. Supervision of Lockout/tag out procedures
7. Assist engineer to monitor plant and equipment to ensure optimal operation and reduction of planned and unplanned downtime.
8. Coordinate with Production, Quality Management and 3rd Party Engineering to resolve any mechanical issues
9. Supervise and coordinate mechanical maintenance and project work by mechanics and contractors
10. Ensure proper management of mechanical equipment documents (manuals, diagrams, instrument data Safety, Health & Environment (SHE), software packages/licenses) through efficient filling and archiving procedures
11. Assist engineer to plans actual and future material requirements in collaboration with Process Operation and Materials Handling department
12. Assists Safety Manager regarding safety and emergency measures and realization of safety and emergency plans
13. Ensures that quality, budgetary targets and environmental objectives are met





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 5

MECHANICAL MAINTENANCE ENGINEER

An Electrical Maintenance Engineer is responsible to maintain plant electrical systems by ensuring mechanical power and equipment operation efficiency, offering engineering support and managing staff work scheduling. He/She also required to prepare maintenance procedures and adhere to plant Safety, Health & Environment (SHE) standard and procedures.

In particular the person will:

1. Organising routine servicing schedules
2. Schedule and undertake periodic maintenance on all mechanical equipment, components, and installations
3. Provide prompt response mechanical equipment breakdown
4. Endorse new mechanical components and fittings installation
5. Assist in forecasting requirements, creating budget and scheduling expenses for the mechanical maintenance operation
6. Troubleshoot mechanical equipment breakdowns and provide maintenance solution
7. Keep record of all stock and supplies, including company's mechanical equipment
8. Assist in formulating the best cost-effective production process
9. Monitor implementation of maintenance schedule and verify maintenance report
10. Adhere to plant Safety, Health & Environment (SHE) standard and procedures
11. Carry out managerial duties according to plant Standard Operating Procedure





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 2

INSTRUMENTATION & CONTROL MAINTENANCE ASSISTANT TECHNICIAN

A Control And Instrumentation Maintenance Assistant Technician is responsible in performing support task for control and instrumentation maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Assist in control and instrumentation installation
2. Assist in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 3

INSTRUMENTATION & CONTROL MAINTENANCE TECHNICIAN

A control and instrumentation maintenance technician is responsible in performing routine maintenance, installation, repair and integration of various types of process control instrumentation equipment. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out field fault analysis
2. Carry out control and instrumentation equipment maintenance
3. Determines instrument failures and process problem
4. Carry out field calibration of instrumentation utilizing proper test equipment
5. Carry out complete overhaul in shop environment to include component replacements, alignments and calibration to specifications of record;
6. Carry out repair work for signal for control and instrumentation equipment
7. Carry out fault analysis of hardwire relay logic, motor control circuits, motor power circuits and common utility / lighting circuits;
8. Carry installation control and instrumentation equipment
9. Carry out fault analysis of PLC based systems
10. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 4

INSTRUMENTATION & CONTROL MAINTENANCE ASSISTANT ENGINEER

A control and instrumentation maintenance engineer is responsible in carry out complex installation activities and supervise maintenance operation for control and instrumentation equipment in power plant. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Inspecting and testing the operation of instruments and systems to diagnose faults using testing devices
2. Installing complex control and measurement instruments on existing or new plant equipment
3. Supervise in repairing, adjusting, removing and replacing activities for defective parts on system components
4. Carry out components and instruments calibration
5. Supervise scheduled preventative maintenance work
6. Prepare control and instrumentation maintenance reports
7. Consulting manuals, reading and interpreting circuit diagrams, blueprints and schematics
8. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 5

INSTRUMENTATION & CONTROL MAINTENANCE ENGINEER

A control and instrumentation maintenance engineer is responsible in designing, developing, installing, managing and/or maintaining equipment which is used to monitor and control engineering systems, machinery and processes in power plants. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Prepare maintenance procedures for plant
2. Carry out fault diagnosis and rectification solution
3. Design and develop new control systems
4. Carry out testing, maintaining and modifying for existing systems
5. Analyse data and prepare written reports
6. Write computer software and test procedures
7. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 6

PRODUCTION MAINTENANCE MANAGER

A Production Maintenance Manager is responsible in the management, maintenance and construction of manufacturing facilities, associated infrastructure and manufacturing equipment. He/She also directs and manages the plant maintenance staff, programs and processes, typically under direction of the plant operations manager, in order to ensure safe, timely and efficient operation of all plant machinery and equipment in line with Safety, Health & Environment (SHE) and quality standards and procedures.

In particular the person will:

1. Verify Planned Preventative Maintenance (PPM) work orders and reports
2. Prepare and implement staff development planning
3. Evaluate plant production maintenance department budget and production maintenance operational planning
4. Evaluate and establish Safety, Health & Environment (SHE)d programs, policies and practices
5. Conduct field inspections of thermal plants, stations, or substations to ensure normal and safe operating conditions
6. Enforce implementation of Safety, Health & Environment (SHE) procedures and practices
7. Perform managerial duties





THERMAL PLANT OPERATION

PLANT MAINTENANCE

LEVEL 7

THERMAL PLANT MANAGER

A Thermal Plant Manager is responsible for manages and oversees the daily operations of a power plant. He/She also required to monitors operations for efficiency and safety and ensuring that all applicable regulatory requirements are followed.

In particular the person will:

1. Plan and direct plant operation to meet production goals
2. Evaluate and verify plant operation and maintenance operation budget and planning
3. Direct and coordinate departments operational planning
4. Verify productionand operation reports
5. Ensure operatioan and maintenance plans and targets are achieved, economically and within the environmental limits of the plant
6. Enforce compliance with relevant health and safety regulations and quality standards





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 3

CONTROL ROOM TECHNICIAN

A Control Room Technician is responsible to monitor and report plant operation issues according to control rooms indication panel operation. He/She also required to adhere to occupational sate, health and environment practices and procedures.

In particular the person will:

1. Check equipment and indicators to detect evidence of operating problems
2. Adjust controls to regulate the flow of power safe start up, shutdown and operation of the plant and equipment as necessary
3. Assist control engineer to monitor the operating status of plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
4. Writes and maintains equipment logs, operational logs, and working reports
5. Participates in daily preventative, scheduled, and corrective maintenance activities
6. Provides assistance with plant clean-up and housekeeping activities
7. Adhere to accupational safety and health practices and procedures





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 4

CONTROL ROOM ASSISTANT ENGINEER

A Control Room Assistant Engineer is designated to assist control room engineer to monitor and operate boilers and auxiliary plant equipment from the field to maintain safe, efficient and continuous plant operations also ensuring all safety, health & environmental compliance standards and procedures.

In particular the person will:

1. Handle start up, shutdown and operation of the plant and equipment
2. Carry out preventive maintenance jobs
3. Carry out preventive maintenance through Computerized Maintenance Management System (CMMS)
4. Monitor operating status of hydro plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
5. Prepare reports on thermal power plant operations, status, maintenance, and other information
6. Adhere to occupational safety and health practices and procedures





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 5

CONTROL ROOM ENGINEER

A Control Room Engineer is designated to be responsible to monitor and plant equipment operation to maintain safe, efficient and continuous plant operations. He/She also required to adhere to safety, health & environmental compliance standards and procedures.

In particular the person will:

1. Direct start up, shutdown and operation of the plant and equipment
2. Prepare and evaluate plant operations and performance monitoring report
3. Prepare departmental operation budget and planning
4. Verify preventive maintenance jobs monitoring through Computerized Maintenance Management System (CMMS)
5. Monitor operating status of thermal plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
6. Assist in preparing planning and schedule for plant activities (including refuse fuel deliveries, ash removal, and regular maintenance)
7. Assist in preparation of reports on hydro power plant operations, status, maintenance, and other information
8. Adhere Safety, Health & Environment procedures and good practices Enforce hydrostation voltage schedules





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 2

PLANT OPERATION ASSISTANT TECHNICIAN

A Plant Operation Assistant Technician is responsible in performing support task for plant operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assst in maintenance activities
2. Carry out tools and equipment maintenance and storage
3. Carry out housekeeping activities
4. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 3

PLANT OPERATION TECHNICIAN

A Plant Operation Technician is designated to provide technical support in monitoring and operating plant equipment, maintenance operation and record keeping in accordance with plant operation standard operating procedure. He/She also required to adhere to Safety, Health & Environmental (SHE) compliance standards and procedures.

In particular the person will:

1. Carry out visual inspection monitor power distribution and isolate disruptions
2. Carry out routine maintenance activities
3. Provide technical support for corrective maintenance activities
4. Update equipment operation logs
5. Monitor operating status of thermal plants by observing control system parameters, distributed control systems, switchboard gauges, dials, or other indicators
6. Provide technical support to operation assistant engineer to operate controls to start, stop, generator units, boilers, engines, or auxiliary systems
7. Adhere to plant Safety, Health & Environment procedures and good practices





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 4

PLANT OPERATOR ASSISTANT ENGINEER

A Plant Operations Assistant Engineer is responsible carrying out thermal plant operation and responding to plant emergency according to plant operation Standard Operating Procedure. He / she also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Operate and monitor electrical power distribution systems
2. Assist in inspection and testing of new installed equipments
3. Carry out field operational functions as well as responding to plant emergency
4. Carry out plant and equipment start up, shutdown and operation
5. Prepare plant operation report
6. Check and evaluate equipments operation log report
7. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 5

PLANT OPERATION ENGINEER

A Plant operations engineer will be responsible for all aspects of operation and maintenance of the thermal power and co-generation plant. He / she will provide high quality O&M solutions operation and maintenance problems, take initiative to improve plant efficiency, reliability and availability to enhance company profitability and productivity, and adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Monitor and verify electrical power distribution systems operation
2. Plan and monitor preventive and corrective maintenance activities
3. Coordinate field operational functions as well as responding to plant emergency
4. Carry out inspection and testing of new installed equipments
5. Prepare work scheduling planning for subordinate
6. Prepare plant operational budget and reports
7. Direct plant and equipment start up, shutdown and operation
8. Coordinate safety documents requirements (such as lock out/tag out, hot work permit, confined space entry permit, chemical hazard, emergency response procedure etc.)
9. Coordinate staff training requirements
10. Maintain and enforce safe operating practices and compliance with other local, state, and federal regulatory requirements
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

OPERATION CONTROL

LEVEL 6

HYDRO PLANT OPERATION MANAGER

An Operation Manager is designated to be responsible to manage operations at hydro power generation facilities. Direct work activities at plant, including supervision of operations and maintenance staff and implementation of Safety, Health & Environment (SHE) procedures.

In particular the person will:

1. Ensure compliance with all environmental, health and safety policies, laws and regulations
2. Supervise operations and control room team members
3. Direct plant operations routines
4. Plan and conduct annual capacity test
5. Monitor equipment operating trends
6. Analyse and improve standard plant operating procedures, casualty control procedures and control room practices
7. Monitor and evaluate testing programs for all plant equipment
8. Prepare and implement staff development program
9. Evaluate and verify departmental budgets and planning.
10. Evaluate preventative and corrective maintenance program
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

GROUND MAINTENANCE

LEVEL 2

GROUND MAINTENANCE ASSISTANT TECHNICIAN

Grounds Maintenance Assistant Technician is responsible in performing support task for ground maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assst in ground maintenance activities
2. Carry out tools and equipment maintenance and storage
3. Carry out housekeeping activities
4. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

GROUND MAINTENANCE

LEVEL 3

GROUND MAINTENANCE TECHNICIAN

Grounds Maintenance Technician is responsible in performing facilities maintenance tasks within operating power plants area, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Install and maintain electrical, mechanical, and plumbing fixtures and equipment.
2. Operate, maintain, clean, adjust, and repair high pressure steam boilers, emergency power generators, HVAC systems, and auxiliary components.
3. Inspect, test, and maintain building safety and security systems.
4. Perform renovations, maintenance, and repair of buildings and other physical structures.
5. Take readings of control and monitoring instruments.
6. Conduct standard chemical analyses of boiler and cooling tower water and take corrective action as needed.
7. Keep records of operating conditions and of the operation and repair of equipment.
8. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

GROUND MAINTENANCE

LEVEL 4

GROUND MAINTENANCE ASSISTANT ENGINEER

Grounds Maintenance Assistant Engineer is responsible in executing ground maintenance activities is carried out efficiently and provide support for production maintenance team to ensure smooth operation for Hydro Plant Operation. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

.

In particular the person will:

1. Implement and monitor work scheduling for Grounds Maintenance staffs
2. Assist in controlling hydro plant-generating electrical equipment
3. Collect data from charts, meters, and gauges to monitor voltage and electricity flows at on-site
4. Check equipment for ground facilities and indicators to detect evidence of facilities problems
5. Handle the operation of generators, turbines, and other electrical equipment as necessary for ground facilities
6. Carry out hydroelectric electrical facility operations
7. Check hydroelectric operations for compliance with prescribed operating limits, such as loads, voltages, temperatures, lines, or equipment
8. Implement hydrostation voltage schedules



9. Provide information for purpose of developing or review budgets, annual plans, power contracts, power rates, standing operating procedures, power reviews, or engineering studies
10. Prepare report for power system emergencies & ensure emergencies response activities
11. Assist on operate energized high- or low-voltage hydroelectric power transmission system substations, according to procedures and safety requirements





HYDRO PLANT OPERATION

GROUND MAINTENANCE

LEVEL 5

GROUND MAINTENANCE ENGINEER

Grounds Maintenance Engineer is responsible in managing ground maintenance activities is carried out efficiently and provide support for production maintenance team to ensure smooth operation for Hydro Plant Operation. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Prepare work scheduling for Grounds Maintenance staffs
2. Analyse equipment functionality and efficiency
3. Prepare periodic inspection schedule and procedures
4. Evaluate and verify ground inspection report
5. Evaluate ground facilities upgrade and changes requirements
6. Provide technical guidance on ground facilities maintenance
7. Prepare departmental budget and operational planning
8. Evaluate and verify power system emergencies & ensure emergencies response activities report
9. Perform managerial duties
10. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





HYDRO PLANT OPERATION

GROUND MAINTENANCE

LEVEL 6

GROUNDS MAINTENANCE MANAGER

A Grounds Maintenance Manager is responsible to perform operation management including productivity, quality control, resources requisition and control. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

Grounds Maintenance Manager will be able to:

1. Maintain and monitor hydroelectric plant facilities for efficient and safe plant operations
2. Coordinate with applicable departments and external service provider (s)
3. Ensure hydroelectric operations are according to determined compliance
4. Create hydrostation voltage schedules
5. Develop or review budgets, annual plans, power contracts, power rates, standing operating procedures, power reviews, or engineering studies
6. Evaluate and verify communicate power system emergencies & ensure emergencies response activities documented
7. Negotiate power generation contracts with other public or private utilities
8. Coordinate problems/issues related to ratepayers, water users, power users, government agencies, educational institutions, or other private or public power resource interests
9. Develop policy evaluation procedures for hydroelectric generation activities
10. Provide technical direction in the erection or commissioning of hydroelectric equipment or supporting electrical or mechanical systems



11. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
12. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
13. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
14. Direct, review, and approve production parameters and changes
15. Recruit employees, assign, direct, and evaluate their work and oversee the development and maintenance of staff competence





HYDRO PLANT OPERATION

(OPERATION CONTROL)

LEVEL 7

HYDRO PLANT MANAGER

A Hydro Plant Manager is responsible for manages and oversees the daily operations of a power plant. He/She also required to monitors operations for efficiency and safety and ensuring that all applicable regulatory requirements are followed.

In particular the person will:

1. Plan and direct plant operation to meet production goals
2. Evaluate and verify plant operation and maintenance operation budget and planning
3. Direct and coordinate departments operational planning
4. Verify productionand operation reports
5. Ensure operatioan and maintenance plans and targets are achieved, economically and within the environmental limits of the plant
6. Enforce compliance with relevant health and safety regulations and quality standards





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 2

INTERNAL COMBUSTION ENGINE ASSISTANT TECHNICIAN (MECHANICAL)

A Internal Combustion Engine Assistant Technician (Mechanical) is responsible in performing support task for mechanical maintenance operation within internal combustion engine power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assist in mechanical equipment fitting
2. Assist in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 3

INTERNAL COMBUSTION ENGINE TECHNICIAN (MECHANICAL)

An Internal Combustion Engine Technician (Mechanical) is responsible in performing maintenance and repairs work on internal combustion engine mechanical equipment. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Control and maintain auxiliary equipment
2. Regulate equipment operations and conditions
3. Record and compile operational data
4. Carry out mechanical equipment maintenance
5. Inspect thermal barrier coatings on integrated gasification combined cycle (IGCC) equipment
6. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 2

INTERNAL COMBUSTION ENGINE ASSISTANT TECHNICIAN (ELECTRICAL)

An Internal Combustion Engine Assistant Technician (electrical) is responsible in performing support task for electrical maintenance operation within internal combustion engine power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Assist in electrical equipment wiring, installation and testing
2. Assist in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 3

INTERNAL COMBUSTION ENGINE TECHNICIAN (ELECTRICAL)

An Internal Combustion Engine Technician (electrical) is responsible in providing daily technical oversight and support of internal and external (vendor and customer) maintenance and operation activities related to Auxiliary Power Unit (APU's) and other system. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Monitor electrical power plant equipment and indicators to detect evidence of operating problems
2. Record and compile operational data by completing and maintaining forms, logs, or reports
3. Control power generating equipment, including boilers, turbines, generators, or reactors, using control boards or semi-automatic equipment
4. Inspect records or log book entries or communicate with plant personnel to assess equipment operating status
5. Place standby emergency electrical generators on line in emergencies and monitor the temperature, output, and lubrication of the system
6. Adjust controls to generate specified electrical power or to regulate the flow of power between generating stations and substations



7. Control generator output to match the phase, frequency, or voltage of electricity supplied to panels
8. Communicate with systems operators to regulate and coordinate line voltages and transmission loads and frequencies
9. Examine and test electrical power distribution machinery and equipment, using testing devices
10. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 4

INTERNAL COMBUSTION ENGINE ASSISTANT ENGINEER

An Internal Combustion Engine Assistant Engineer is responsible in supervising and performing maintenance on power generation equipment, internal combustion engines and associated equipment in power plants. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Perform maintenance on power-generation sets, internal combustion engines and associated equipment
2. Provide data to build specifications and part number interchangeability information
3. Carry out engine test runs
4. Monitor engine production efficiency
5. Carry out troubleshooting activities
6. Prepare engine trend and maintenance reports
7. Supervise routine maintenance activities carried out by subordinate
8. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 5

INTERNAL COMBUSTION ENGINE ENGINEER

An Internal Combustion Engine Engineer is responsible in monitoring and evaluating maintenance activity on power generation equipment, internal combustion engines and associated equipment in power plants. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Evaluate engine test runs and provide detailed calculations and reports consistent with Company standards
2. Coordinating/resolving technical issues with vendors
3. Monitor powerplant troubleshooting activities
4. Evaluate fleet Engine Trend Reports
5. Prepare and coordinate maintenance plans and targets
6. Prepare maintenance operation budget and operational planning
7. Coordinate and maintain compliance requirement with relevant health and safety regulation, environmental regulation and quality standards
8. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 6

INTERNAL COMBUSTION ENGINE OPERATION MANAGER

An Internal Combustion Engine Operation Manager is responsible in the management, maintenance and operation efficiency of internal combustion engine plant. He/She also directs and manages the plant maintenance staff, programs and processes, typically under direction of the plant operations manager, in order to ensure safe, timely and efficient operation of all plant machinery and equipment in line with Safety, Health & Environment (SHE) and quality standards and procedures.

In particular the person will:

1. Verify Plant Maintenance procedures, work orders and reports
2. Prepare and implement staff development planning
3. Generate inspection requirements
4. Analyse plant development requirements
5. Evaluate plant operation budget and operational planning
6. Evaluate plant production efficiency
7. Participates in design reviews and makes recommendations of necessary configurations to meet engine development needs
8. Participates in analysis of failures during test or field operation to provide root cause and solution for failure
9. Evaluate and establish Safety, Health & Environment (SHE)d programs, policies and practices
10. Enforce implementation of Safety, Health & Environment (SHE) procedures and practices
11. Perform managerial duties





INTERNAL COMBUSTION ENGINE (ICE)

PLANT OPERATION AND MAINTENANCE

LEVEL 7

INTERNAL COMBUSTION ENGINE PLANT MANAGER

An Internal Combustion Engine Plant Manager is responsible for manages and oversees the daily operations of a power plant. He/She also required to monitors operations for efficiency and safety and ensuring that all applicable regulatory requirements are followed.

In particular the person will:

1. Plan and direct plant operation to meet production goals
2. Evaluate and verify plant operation and maintenance operation budget and planning
3. Direct and coordinate departments operational planning
4. Verify productionand operation reports
5. Ensure operatioan and maintenance plans and targets are achieved, economically and within the environmental limits of the plant
6. Enforce compliance with relevant health and safety regulations and quality standards





POWER PLANT OPERATION

SOLAR PHOTOVOLTAIC POWER PLANT OPERATION

LEVEL 2

SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE ASSISTANT TECHNICIAN

A Solar Photovoltaic Installation & Maintenance Assistant Technician is designated to carry out safe use of tools and basic first aid treatment, prepare protective equipment and system component and adhere to safety and security procedure. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out safe use of tools and basic first aid treatment
2. Prepare protective equipment and system component
3. Carry out site survey, inverter mounting and battery mounting (where applicable)
4. Carry out controller mounting, distribution box mounting and battery system cabling (where applicable)
5. Carry out photovoltaic panel system cabling
6. Carry out inverter system cabling
7. Carry out controller system cabling
8. Carry out system site documentation
9. Carry out structural integrity testing
10. Carry out routine and emergency maintenance
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





POWER PLANT OPERATION

SOLAR PHOTOVOLTAIC POWER PLANT OPERATION

LEVEL 3

SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE TECHNICIAN

A Solar Photovoltaic Installation & Maintenance Technician is designated to measure solar radiation and temperature, configure angle of inclination and controller system and inspect roof mounted photovoltaic system, electrical system & photovoltaic panel system. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Measure solar radiation and temperature
2. Configure angle of inclination and controller system
3. Inspect roof mounted photovoltaic system, electrical system and photovoltaic panel system
4. Carry out standalone photovoltaic system checks, roof mounted photovoltaic assembly and standalone photovoltaic assembly
5. Carry out schematic plan review, system grounding, system activation and material requisition, staff performance appraisal and inventory inspection
6. Install distribution box, safety disconnect feature and protection system
7. Carry out system performance benchmarking, system functionality testing, system diagnostic testing and troubleshooting procedures
8. Inspect structural integrity, electrical system, photovoltaic panel system, battery system and environmental system
9. Upgrade controller system software
10. Repair electrical system, photovoltaic panel system, battery system and structural system



11. Carry out system functionality testing, client complaint administration and on the job training
12. Prepare maintenance work schedule and coordinate work assignment
13. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures
14. Carry out supervisory functions





POWER PLANT OPERATION

SOLAR PHOTOVOLTAIC POWER PLANT OPERATION

LEVEL 4

SOLAR PHOTOVOLTAIC TECHNOLOGY ASSISTANT DESIGNER

A solar photovoltaic technology assistant designer is designated to analyse energy audit, site load and components requirement, estimate system loss and configure power supply auto selection & system autonomy requirements. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

A Solar Photovoltaic Technology Assistant Designer will be able to:

1. Analyse energy audit, site load and system cost
2. Estimate system loss
3. Configure power supply auto selection
4. Configure system autonomy requirements
5. Analyse components requirement
6. Carry out system design
7. Select over current disconnect device
8. Carry out controller selection
9. Carry out requirement gathering
10. Prepare project definition document
11. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





POWER PLANT OPERATION

SOLAR PHOTOVOLTAIC POWER PLANT OPERATION

LEVEL 5

SOLAR PHOTOVOLTAIC TECHNOLOGY DESIGNER

A solar photovoltaic technology designer is designated to analyse hybrid power supply and structural impact, carry out installation design schedule, system type selection and module type selection and prepare milestone chart, project resources plan & equipment breakdown plan. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Analyse hybrid power supply and structural impact
2. Carry out installation design schedule, system type selection and module type selection
3. Carry out battery type selection, inverter selection and wiring schematic design
4. Carry out utility interconnection point selection, site assessment and environmental analysis
5. Carry out topology design, roof mounting design and independent array mounting design
6. Configure work breakdown structure
7. Prepare milestone chart, project resources plan and equipment breakdown report
8. Control project tracking
9. Present project report
10. Prepare maintenance schedule and check Safety, Health & Environment (SHE)
11. Carry out supplier liaison, meeting coordination and quotation evaluation
12. Approve purchase order
13. Carry out invoice verification
14. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





SOLAR PHOTOVOLTAIC PLANT OPERATION

SOLAR PHOTOVOLTAIC DESIGN, INSTALLATION AND MAINTENANCE

LEVEL 4

SOLAR PHOTOVOLTAIC ASSISTANT ENGINEER

A Solar Photovoltaic Engineer is to assist Solar Photovoltaic Engineer in ensuring the daily safety, operation and maintenance of the Solar PV Power Plants. Ensure the operation is according to the Standard Operating Procedure and Quality Requirements of the regulated authority. He or she also required to comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform routine and corrective maintenance
2. Carry out energy audit analysis
3. Carry out system loss estimation
4. Carry out site load analysis
5. Carry out component requirement analysis
6. Prepare equipment breakdown report
7. Coordinate and communicate with vendors/suppliers
8. Monitor equipment installation and maintenance activities
9. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





SOLAR PHOTOVOLTAIC PLANT OPERATION

SOLAR PHOTOVOLTAIC DESIGN, INSTALLATION AND MAINTENANCE

LEVEL 5

SOLAR PHOTOVOLTAIC ENGINEER

A Solar Photovoltaic Engineer is responsible for the daily safety, operation and maintenance of the Solar PV Power Plants. He is to ensure that the operation is according to the Standard Operating Procedure and Quality Requirements of the regulated authority. He or she also required to comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedure

In particular the person will:

1. Perform solar installation and maintenance project planning
2. Verify installation activities report
3. Verify maintenance activities report
4. Carry out site assessment
5. Carry out hybrid power supply analysis
6. Perform system planning
7. Perform mechanical design planning
8. Perform electrical design planning
9. Carry out structural impact analysis
10. Carry out solar system inspection
11. Perform technical management operation
12. Perform managerial duties
13. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





SOLAR PHOTOVOLTAIC PLANT OPERATION
SOLAR PHOTOVOLTAIC DESIGN, INSTALLATION AND MAINTENANCE
LEVEL 6
SOLAR PHOTOVOLTAIC OPERATION MANAGER

A Solar Photovoltaic Operation Manager is responsible for the daily safety, operation and maintenance of the Solar PV Power Plants. He is to ensure that the total management is according to the Standard Operating Procedures and Quality Requirements of the regulated authority. He or she also required to comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Plant is operated in a safe and environmentally responsible manner and, as such, will have responsibility for all safety, health and environmental activities at the site
2. Ensuring that the site personnel perform their duties and operations and maintenance responsibilities as specified in the Operations and Maintenance Agreement (OMA)
3. Supervise the contractors in providing maintenance of the facilities that are outside the scope of the OMA including site security
4. Ensures that all plant activities are carried out in compliance with regulations, laws, policies and procedures governing health, safety and environmental matters
5. Keeps the Plant Manager informed of all matters regarding plant operations and maintenance



6. Supervises, on a day-to-day basis, other site technical and administrative personnel and any contractors working at site
7. Plans, supervises and ensures execution of all maintenance work outside the scope of the OMA including parts purchasing, equipment repairs, and inventory management
8. Prepares maintenance tenders, evaluates bids, selects winning contractors and puts necessary contracts in place (work outside the scope of the Siemens OMA)
9. Supervises any maintenance contractors at the plant site ensuring that maintenance is done correctly and in compliance with contract terms
10. Serves as Owner's site representative supervising the Siemens OMA
11. Supervises the site security contractor
12. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
13. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
14. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
15. Direct, review, and approve plant production parameters and changes
16. Recruit employees, assign, direct, and evaluate their work, and oversee the development and maintenance of staff competence
17. Confer with management, and all subordinate on plant throughput, specifications and procedures





SOLAR PHOTOVOLTAIC PLANT OPERATION

SOLAR PHOTOVOLTAIC DESIGN, INSTALLATION AND MAINTENANCE

LEVEL 7

SOLAR PHOTOVOLTAIC PLANT MANAGER

A Solar Photovoltaic Plant Manager is responsible for the total safety, operation and maintenance of the Solar PV Power Plants. He is to ensure that the total management is according to the Standard Operating Procedures and Quality Requirements of the regulated authority. He or she also required comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Balance competing & conflicting requirements consistent with Company values & business principles
2. Maintain an accurate and full account of all daily operations including safety, production, downtime, and any incidents
3. Achieve operational plans that deliver expected results for safety, talent development, revenue, cost, asset maintenance, and margins
4. Inspect job sites of each installation crew and provide technical guidance
5. Coach and develop staff on jobs sites to ensure quality and improve techniques
6. Communicate and coordinate with Energy Authority on a regular basis
7. Monitor the progress of all accounts associated with their office
8. Resolve customer complaints or concerns involving the installation process
9. Coordinate with corporate departments on a daily basis





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 2

WIND TURBINE ASSISTANT TECHNICIAN (MECHANICAL)

A Wind turbine assistant technician (Mechanical) is responsible in performing support task for control and instrumentation maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Assist in control and instrumentation installation
2. Assist in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 3

WIND TURBINETECHNICIAN (MECHANICAL)

A Wind Turbine Technician (Mechanical) is responsible for the ongoing operations, maintenance, and repair of wind turbines. They inspect, diagnose, adjust, or repair wind turbines, mechanical, and hydraulic malfunctions. They also perform regular maintenance on wind turbine equipment and also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out inspection, maintenance and repair on wind turbine mechanical equipment
2. Collect turbine data for testing or research
3. Assemble individual wind generators or help with constructing wind farms
4. Inspect and repair fiberglass turbine blades
5. Test structures, controls, or mechanical, hydraulic systems, according to test plans
6. Troubleshoot or repair mechanical, hydraulic, or electrical malfunctions related to variable pitch systems, variable speed control systems, converter systems, or related components
7. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 2

WIND TURBINE ASSISTANT TECHNICIAN (ELECTRICAL)

A Wind Turbine Assistant Technician (Electrical) is responsible in performing support task for control and instrumentation maintenance operation within power plants, while complying with relevant laws, documents, and instructions. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Assist in control and instrumentation installation
2. Assst in maintenance activities
3. Carry out tools and equipment maintenance and storage
4. Carry out housekeeping activities
5. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 3

WIND TURBINETECHNICIAN (ELECTRICAL)

A Wind turbine technician (Electrical) is responsible for the ongoing operations, maintenance, and repair of wind turbines. They inspect, diagnose, adjust, or repair wind turbines and resolving electrical malfunctions. They also perform regular maintenance on wind turbine equipment and also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out inspection, maintainance and repair on wind turbine electrical equipment
2. Collect turbine data for testing or research
3. Diagnose problems involving wind turbine generators or control systems
4. Assemble individual wind generators or help with constructing wind farms
5. Perform routine maintenance on wind turbine electrical equipment, underground transmission systems, wind fields substations, or fiber optic sensing and control systems
6. Start or restart wind turbine generator systems to make sure they are operating properly
7. Test electrical components of wind systems with devices such as voltage testers, multimeters, oscilloscopes, infrared testers, or fiber optic equipment
8. Troubleshoot or repair electrical malfunctions related to control systems, converter systems, or related components
9. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 4

WIND TURBINE ASSISTANT ENGINEER

A Wind Turbine Assistant Engineer is designated to responsible for operation and maintenance of wind turbines. This includes assisting engineer to scheduled and unscheduled maintenance, troubleshooting, and repairing of wind turbine subassemblies and related components. He/She also required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Provide engineering technical support to designers of prototype wind turbines
2. Perform root cause analysis on wind turbine tower component failures
3. Test wind turbine components, using mechanical or electronic testing equipment
4. Write reports to document wind farm collector system test results
5. Oversee the work activities of wind farm consultants or subcontractors
6. Test wind turbine equipment to determine effects of stress or fatigue.
7. Provide input on recommend process or infrastructure changes to improve wind turbine performance, reduce operational costs, or comply with regulations
8. Involve on investigating experimental wind turbines or wind turbine technologies for properties such as aerodynamics, production, noise, and load



9. Apply Direct balance of plant (BOP) construction, generator installation, testing, commissioning, or supervisory control and data acquisition (SCADA) to ensure compliance with specifications
10. Provide data for develop specifications for wind technology components, such as gearboxes, blades, generators, frequency converters, and pad transformers
11. Apply models to optimize the layout of wind farm access roads, crane pads, crane paths, collection systems, substations, switchyards, or transmission lines
12. Apply Design underground or overhead wind farm collector systems
13. Analyze operation of wind farms or wind farm components to determine reliability, performance, and compliance with specifications
14. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 5

WIND TURBINE ENGINEER

A Wind Turbine Engineer is designated to responsible for operation and maintenance of wind turbines. This includes scheduled and unscheduled maintenance, troubleshooting, and repair of wind turbine subassemblies and related components. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures

In particular the person will:

1. Provide engineering technical support to designers of prototype wind turbines
2. Perform root cause analysis on wind turbine tower component failures
3. Test wind turbine components, using mechanical or electronic testing equipment
4. Write reports to document wind farm collector system test results
5. Oversee the work activities of wind farm consultants or subcontractors
6. Test wind turbine equipment to determine effects of stress or fatigue
7. Recommend process or infrastructure changes to improve wind turbine performance, reduce operational costs, or comply with regulations
8. Investigate experimental wind turbines or wind turbine technologies for properties such as aerodynamics, production, noise, and load
9. Monitor wind farm construction to ensure compliance with regulatory standards or environmental requirements



10. Direct balance of plant (BOP) construction, generator installation, testing, commissioning, or supervisory control and data acquisition (SCADA) to ensure compliance with specifications
11. Develop specifications for wind technology components, such as gearboxes, blades, generators, frequency converters, and pad transformers
12. Develop active control algorithms, electronics, software, electromechanical, or electro hydraulic systems for wind turbines
13. Create or maintain wind farm layouts, schematics, or other visual documentation for wind farms
14. Create models to optimize the layout of wind farm access roads, crane pads, crane paths, collection systems, substations, switchyards, or transmission lines
15. Design underground or overhead wind farm collector systems
16. Analyze operation of wind farms or wind farm components to determine reliability, performance, and compliance with specifications
17. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 6

WIND TURBINE OPERATION MANAGER

A Wind Turbine Operation Manager is responsible to carry out plant operation management, maintenance including assessing cost, reliability, and performance of operational utility-scale wind farms. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Evaluate wind farm operations and maintenance (O&M) costs, comparing actuals to budgeted costs and evaluating variances
2. Provide O&M cost data collection, analysis, and benchmarking
3. Analyse and monitor turbine supervisory control and data acquisition (SCADA) system data and other operating wind farm data
4. Assess operational performance and reliability including wind turbine efficiency diagnosis, downtime investigation, and component health
5. Forecast wind turbine major component life employing actual failure data and reliability modeling techniques
6. Develop models from production data and wind data to estimate wind energy resource and energy impact of all sources of inefficiencies and downtime
7. Perform predicting analysis on wind farm energy production including statistical uncertainty
8. Ensure maintenance plans and targets are achieved
9. Adhere to plant Safety, Health & Environment (SHE) rules & operation procedures





WIND TURBINE PLANT

PLANT OPERATION AND MAINTENANCE

LEVEL 7

WIND TURBINE PLANT MANAGER

A Wind Turbine Plant Manager is responsible for managing and oversees the daily operations of a power plant. He/She also required to monitors operations for efficiency and safety and ensuring that all applicable regulatory requirements are followed, and to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Plan and direct plant operation to meet production goals
2. Evaluate and verify plant operation and maintenance operation budget and planning
3. Direct and coordinate departments operational planning
4. Verify productionand operation reports
5. Ensure operatioan and maintenance plans and targets are achieved, economically and within the environmental limits of the plant
6. Enforce compliance with relevant health and safety regulations and quality standards





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 2

ELECTRICAL TECHNICIAN

(SINGLE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)

An Electrical Technician (Single Phase Electrical Installation & Maintenance) is designated carry out wiring system installation and maintenance for single phase. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out single phase wiring activities
2. Prepare drawing for single phase electrical installation
3. Carry out single phase wiring maintenance
4. Carry out single phase motor & motor control installation and maintenance
5. Carry out single phase appliance maintenance
6. Carry out single phase testing and commissioning for single phase wiring and installation
7. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 3

ELECTRICAL SENIOR TECHNICIAN

(THREE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)

An Electrical Senior Technician (Three Phase Electrical Installation & Maintenance) is designated carry out wiring system installation and maintenance for three phase. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out three phase wiring activities
2. Prepare drawing for three phase electrical installation
3. Carry out three phase wiring maintenance
4. Carry out three phase motor & motor control installation and maintenance
5. Carry out three phase appliance maintenance
6. Carry out three phase testing and commissioning for single phase wiring and installation
7. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 4

ELECTRICAL SUPERVISOR (A0, A1, A4)

An Electrical Supervisor (A0, A1, A4) designated to perform installation and maintenance for LV system including swithboard, underground cable, overhead system, protection devices and soft starter. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out low voltage swithboard installation and troubleshooting
2. Carry out low voltage underground cable system installation and maintenance
3. Carry out low voltage overhead system installation and maintenance
4. Perform low voltage generation installation with synchronise
5. Carry out low voltage protection devices installation and maintenance
6. Carry out basic PLC installation and configuration
7. Carry out soft starter installation and maintenance
8. Carry out supervision function
9. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 5

ELECTRICAL ASSISTANT ENGINEER

(HIGH VOLTAGE ELECTRICAL INSTALLATION & MAINTENANCE (11KV))

An Electrical Assistant Engineer (High Voltage Electrical Installation & Maintenance (11kv)) designated to perform installation and maintenance for high tension system such as switchboard, overhead system, protection devices and soft starter. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out high tension switchboard installation and troubleshooting
2. Carry out high tension underground system installation and maintenance
3. Carry out high tension overhead system installation and maintenance
4. Perform high tension generation installation with synchronise
5. Carry out high tension protection devices installation and maintenance
6. Carry out advance PLC installation and configuration
7. Carry out administrative function
8. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 6

ELECTRICAL ENGINEER (HIGH TENSION VOLTAGE (33KV))

An Electrical Engineer (High Voltage Electrical Installation & Maintenance (33kv) designated to perform installation and maintenance for high tension system such as swithboard, overhead system, protection devices and soft starter. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out high tension swithboard installation and troubleshooting
2. Carry out high tension underground system installation and maintenance
3. Carry out high tension overhead system installation and maintenance
4. Perform high tension generation installatioin with synchronise
5. Carry out high tension protection devices installation and maintenance
6. Carry out advance PLC installation and configuration
7. Carry out administrative function
8. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE
(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 7

ELECTRICAL SENIOR ENGINEER (VERY HIGH TENSION VOLTAGE (132KV))

An Electrical Engineer (High Voltage Electrical Installation & Maintenance (132kv) designated to perform installation and maintenance for high tension system such as swithboard, overhead system, protection devices and soft starter. He/She also will be required to adhere to Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out high tension swithboard installation and troubleshooting
2. Carry out high tension underground system installation and maintenance
3. Carry out high tension overhead system installation and maintenance
4. Perform high tension generation installatioin with synchronise
5. Carry out high tension protection devices installation and maintenance
6. Carry out advance PLC installation and configuration
7. Carry out administrative function
8. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 2

LOW VOLTAGE CABLE JOINTER

A Low Voltage Cable Jointer is responsible to make and repair joins in insulated power supply and control cables installed in underground pipes, trenches and overhead systems. They also prepare cable terminations for electrical equipment and overhead lines. Cable jointers also install and maintain underground electrical cables used to transmit and distribute electricity in city and country areas, new housing estates and industrial centres. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems
2. Assist Level 3 to prepare low- and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines
3. Test and locate cable faults, and maintain and repair cables
4. Update location diagrams for the layout of cable systems
5. Ensure that conductors are correctly connected between sub-stations and customers' premises when installing and making repairs
6. Assist with manufacturing and preparing cable jointing components
7. Dig trenches and service pits or tunnels
8. Encase cables in protective covers supervise by Level 3 or above
9. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 3

IGH VOLTAGE CABLE JOINTER (11KV))

A High Voltage Cable Jointer is responsible to make and repair joins in insulated power supply and control cables installed in underground pipes, trenches and overhead systems. They also prepare cable terminations for electrical equipment and overhead lines. Cable jointers also install and maintain underground electrical cables used to transmit and distribute electricity in city and country areas, new housing estates and industrial centres. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems
2. Provide assistance to prepare low- and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines
3. Test and locate cable faults, and maintain and repair cables
4. Update location diagrams for the layout of cable systems
5. Inspect conductors connection between sub-stations and customers' premises when installing and making repairs
6. Assist with manufacturing and preparing cable jointing components
7. Dig trenches and service pits or tunnels
8. Encase cables in protective covers focus on 11kV
9. Work with other staff to install or replace cables 11kV
10. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 4

HIGH VOLTAGE CABLE JOINTER (33KV)

A High Voltage Cable Jointer (33kv) is responsible to make and repair joints in insulated power supply and control cables installed in underground pipes, trenches and overhead systems. They also prepare cable terminations for electrical equipment and overhead lines. Cable jointers also install and maintain underground electrical cables used to transmit and distribute electricity in city and country areas, new housing estates and industrial centres. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Provide information in plan for cable jointer to pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems
2. Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines
3. Carry out testing and maintenance on cable for 33kv cable system
4. Update location diagrams for the layout of cable systems
5. Ensure that conductors are correctly connected between sub-stations and customers' premises when installing and making repairs
6. Assist with manufacturing and preparing cable jointing components
7. Monitor cable jointer dig trenches and service pits or tunnels
8. Encase cables in protective covers focus on 33kv
9. Adhere to safety, health and environment rules and regulation





ELECTRICAL INSTALLATION AND MAINTENANCE

(ELECTRICAL INSTALLATION AND MAINTENANCE)

LEVEL 5

HIGH VOLTAGE CABLE JOINTER (132 KV))

A High Voltage Cable Jointer is responsible to make and repair joins in insulated power supply and control cables installed in underground pipes, trenches and overhead systems. They also prepare cable terminations for electrical equipment and overhead lines. Cable jointers also install and maintain underground electrical cables used to transmit and distribute electricity in city and country areas, new housing estates and industrial centres. He/She also will be required to adhere to plant Safety, Health & Environment (SHE) rules & operation procedures.

In particular the person will:

1. Carry out installation planning for transmission and distribution systems
2. Monitor low- and high-voltage cable joints and cable terminations, connection and installation of electrical equipment and overhead lines
3. Carry out testing and maintenance on cable for 132kv cable system
4. Update location diagrams for the layout of cable systems
5. Monitor and supervise connection activities between sub-stations and customers' premises when installing and making repairs
6. Assist with manufacturing and preparing cable jointing components
7. Encase cables in protective covers focus on 132kV
8. Adhere to safety, health and environment rules and regulation



OCCUPATIONAL DEFINITION FOR ELECTRONICS SECTOR





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible in providing support in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) proedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Perform any combination of following tasks involved in cleaning, sorting, breaking, weighing, and also packaging chunks of silicon for crystal growing
2. Sandblast chunks of silicon or immerses chunks in cleaning tanks to remove breaks chunks of silicon into pieces of specified size, using hammer
3. Test as well as sorts silicon pieces according to resistivity type level, using resistivity device or meter
4. Weigh out specified amounts of silicon to prepare charges specified amounts of materials for crystal growing process, loads silicon into charge can, and also records identifying information on label of charge can
5. Transfer finished silicon chunks to crystal growing department
6. Adhere with Safety, Health & Environment (SHE) procedure





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals and operational planning
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection anjd prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budget, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 2

CHEMICAL PREPARATION HANDLER

A Chemical Preparation Handler is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Carry out chemical raw material preparation
2. Transport all chemical that instruct by Technician/Engineer in preparation to various department
3. Collect waste chemical, container, expired or used/rejected chemical to designated disposal area
4. Carry out housekeeping on work area according to Standard Operating Procedure
5. Adhere with Safety, Health & Environment (SHE) procedures





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 3

CHEMICAL PREPARATION TECHNICIAN

A Chemical Preparation Technician is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Prepare of chemical raw material and assists in setting up laboratory tool and equipment
2. Carry out data collection of daily result
3. Troubleshooting chemical composition variances
4. Participate in improvement of manufacturing processes conducted by management
5. Conduct manufacturing processes or evaluation as per supervisor instruction
6. Perform quality control to meet quality standards and efficiency target
7. To check all chemical safety and disposal procuderres being control thought out the plant.





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 4

CHEMICAL PREPARATION ASSISTANT ENGINEER

A Chemical Preparation Assistant Engineer is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Carry out in research, testing, quality control, and also other operational reports to make sure that quality standards, efficiency, and also schedules are met
2. Collect results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
3. Analyse manufacturing processes efficiency
4. Evaluate equipment and processes to check compliance with safety and environmental regulations
5. Assist in research activities on developing new and improved manufacturing processes
6. Assist in designing and planning the layout of equipment
7. Carry out tests and monitor performance of processes throughout production



8. Collect information for the estimation of production costs for management
9. Prepare research, testing, quality control, and also other operational reports according to company Standard Operating Procedure
10. Interprets results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
11. Provide information for budget preparation





INGOT AND RAW WAFER FABRICATION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 5

CHEMICAL PREPARATION ENGINEER

A Chemical Preparation Engineer is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Develop safety procedures to be employed by workers operating equipment or working in close proximity to on-going chemical reactions.
2. Determine most effective arrangement of operations, such as mixing, crushing, heat transfer, distillation, and drying.
3. Prepare estimate of chemical costs
4. Prepare staff scheduling and operational planning
5. Perform laboratory studies of steps in manufacture of new product and test proposed process in small scale operation
6. Conduct research to develop new and improved chemical manufacturing processes.
7. Design measurement and control systems for chemical plants based on data collected in laboratory experiments and in pilot plant operations.
8. Design and plan layout of equipment
9. Perform tests throughout stages of production to determine degree of control over variables, including temperature, density, specific gravity, and pressure.





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - INGOTTING

LEVEL 4

INGOT ASSISTANT ENGINEER

An IngotAssistant Engineer is responsible to assist by check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Setting up and operates furnaces for melting silicon chunks or any related material specifications into polysilicon ingot
2. Load furnace with silicon chunk like polysilicon, quartz, gallium arsenide, or recycled mono or polysilicon nuggets
3. Interpret work order, adjusts furnace controls to regulate operating conditions, like power level, temperature, vacuum according to specifications
4. Monitor meltdown of furnace, and also adjusts furnace controls
5. Shut down furnace unloads crystal ingot after cooling
6. Carry out inside furnace cleaning, using vacuum cleaner as well as cleaning supplies, and also replace furnace liner or other parts
7. Carry out ingot cropping, slice sample wafer, measure test ingot for resistivity
8. Operate computer controls to regulate furnace conditions





WAFER FABRICATION PRODUCTION

INGOT AND RAW WAFER PROCESSING - INGOTTING

LEVEL 5

INGOT ENGINEER

An Ingot Engineer is responsible to check that the silicon wafer are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure

In particular the person will:

1. Handle all automated equipment throughout entire process of ingot and raw processing
2. Setting up and operates cleaning station, dry and wet etching process station, diffusion furnaces, photolithography station, PECVD stations for silicon wafer fabrication or any related material specifications
3. Interpret work order, adjusts various equipment controls to regulate operating conditions, like power level, temperature, vacuum according to specifications
4. Monitor cleaning station, dry and wet etching process station, diffusion furnaces, photolithography station and PECVD stations
5. Carry out inside furnace cleaning, supplies cleaning, and also replace furnace liner or other parts





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - INGOTTING

LEVEL 6

INGOT PROCESSING MANAGER

An Ingot Processing Operation Management is responsible to provide technical expertise to solve more complex problems, and leadership skills to manage work in a specific area of expertise, with minimal supervision to check that the raw material are prepared according to the Standard Operation Management and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provides subject matter technical expertise and guidance in the identification, analysis and resolution of problems in area of expertise
2. Provide technical expertise in setting up and running of the dicing saw, vertical grinder, and X-Ray equipment in order to align and cut laser crystals/substrates
3. Prepares thorough and accurate technical reports, correspondence, documentation, calculations and sketches
4. Participate in team projects developing process improvement methods, solutions, and procedures to enhance quality, cost, and scheduling
5. Adhere to organisation Safety, Health and Environmental practice and Procedures
6. Coaches and mentors other Engineering Managers





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - CRYSTAL GROWTH

LEVEL 4

CRYSTAL GROWTH ASSISTANT ENGINEER

A Crystal Growth Assistant Engineer is responsible to assist in check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or Safety, Health & Environment (SHE) required to comply with company policies such as Safety, Health & Environment (SAFETY, HEALTH & ENVIRONMENT (SHE)) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in setting up and operates furnaces to grow mono silicon crystals from silicon chunks or any related material specifications
2. Loads furnace with seed crystal, dopant plus crystal growing materials, like polysilicon, quartz, gallium arsenide, or recycled mono or polysilicon
3. Interpret work order, adjusts furnace controls to regulate operating conditions, like power level, temperature, vacuum and additionally rotation speed, according to crystal growing specifications
4. Monitors meltdown of growing material crystal growth, and also adjusts furnace controls
5. Shuts down furnace unloads crystal ingot after cooling
6. Carry out cleaning of inside furnace, using vacuum cleaner as well as cleaning supplies, and also replace furnace liner or other parts
7. Carry out cropping crystal ingot, slice sample wafer, measure test ingot for resistivity, and also determine crystal orientation Inspector and crystal electron
8. Operate computer controls to regulate furnace conditions





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - CRYSTAL GROWTH

LEVEL 5

CRYSTAL GROWTH ENGINEER

A Crystal Growth Engineer is responsible to check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Setting up and operates furnaces to grow mono silicon crystals from silicon chunks or any related material specifications
2. Load furnace with seed crystal, dopant plus crystal growing materials, like polysilicon, quartz, gallium arsenide, or recycled mono or polysilicon
3. Prepare work order, adjusts furnace controls to regulate operating conditions, like power level, temperature, vacuum and additionally rotation speed, according to crystal growing specifications
4. Monitor meltdown of growing material crystal growth, and also adjusts furnace controls
5. Shut down furnace unloads crystal ingot after cooling
6. Monitor cleaning activity for inside furnace, using vacuum cleaner as well as cleaning supplies, and also replace furnace liner or other parts



7. May weigh as well as crop crystal ingot, slice sample wafer, measure test ingot for resistivity, and also determine crystal orientation Inspector, crystal electron
8. May operate computer controls to regulate furnace conditions





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - CRYSTAL GROWTH

LEVEL 6

CRYSTAL GROWTH MANAGER

A Crystal Growth Manager is responsible to provide technical expertise to solve more complex problems, and leadership skills to manage work in a specific area of expertise, with minimal supervision to check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provides subject matter technical expertise and guidance in the identification, analysis and resolution of problems in area of expertise
2. Provide technical expertise in setting up and running of the dicing saw, vertical grinder, and X-Ray equipment in order to align and cut laser crystals/substrates
3. Prepares thorough and accurate technical reports, correspondence, documentation, calculations and sketches
4. Participate in team projects developing process improvement methods, solutions, and procedures to enhance quality, cost, and scheduling
5. Adhere to organisation Safety, Health and Environmental practice and Procedures
6. Carry out coaching and mentoring for other Engineering Managers





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING- DICING AND POLISHING

LEVEL 4

DICING AND POLISHING ASSISTANT ENGINEER

A Dicing and Polishing Assistant Engineer is responsible to assist check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assisting in setting up and running of the dicing saw, vertical grinder, and X-Ray equipment in order to align and cut laser crystals/substrates
2. Carry out inspection of Equipment, blades, and flanges
3. Maintain a neat and orderly work area
4. Carry out measuring to tight tolerances using micrometres and callipers along with microscopes
5. Maintain and order supplies for the department
6. Participate in team projects developing process improvement methods, solutions, and procedures to enhance quality, cost, and scheduling
7. Adhere to organisation Safety, Health and Environmental practice and Procedures





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - DICING AND POLISHING

LEVEL 5

DICING AND POLISHING ENGINEER

A Dicing and Polishing Engineer is responsible to check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out set up and running of the dicing saw, vertical grinder, and X-Ray equipment in order to align and cut laser crystals/substrates
2. Carry out inspection of equipment, blades, and flanges
3. Carry out measuring to tight tolerances using micrometres and callipers along with microscopes
4. Maintain and order supplies for the department
5. Participate in team projects developing process improvement methods, solutions, and procedures to enhance quality, cost, and scheduling
6. Adhere to organisation Safety, Health and Environmental practice and Procedures





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING - DICING AND POLISHING

LEVEL 6

DICING AND POLISHING MANAGER

A Dicing and Polishing Manager is responsible to provide technical expertise to solve more complex problems, and leadership skills to manage work in a specific area of expertise, with minimal supervision to check that the raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure

In particular the person will:

1. Provides subject matter technical expertise and guidance in the identification, analysis and resolution of problems in area of expertise
2. Provide technical expertise in setting up and running of the dicing saw, vertical grinder, and X-Ray equipment in order to align and cut laser crystals/substrates
3. Prepare thorough and accurate technical reports, correspondence, documentation, calculations and sketches
4. Participate in team projects developing process improvement methods, solutions, and procedures to enhance quality, cost, and scheduling
5. Adhere to organisation Safety, Health and Environmental practice and Procedures
6. Coaches and mentors other Engineering Managers





INGOT AND RAW WAFER FABRICATION

INGOT AND RAW WAFER PROCESSING – INGOTTING

LEVEL 7

INGOT AND RAW WAFER PROCESSING MANAGER

An Ingot and Raw Wafer Processing Manager is responsible to check that the total management and production the raw material are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Confer with management, ingot processing operation manager, crystal growth manager and dicing and polishing manager, and marketing staff to discuss on product throughput, specifications and procedures
2. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
3. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
4. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
5. Direct, review, and approve production parameters and changes
6. Recruit employees assign, direct, and evaluate their work and oversee the development and maintenance of staff competence





INGOT AND RAW WAFER FABRICATION

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 4

QUALITY CONTROL ASSISTANT ENGINEER

A Quality Control Assistant Engineer is responsible to assist Quality Control Engineer in planning, control and drive the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

Quality Control Assistant Engineer will be able to:

1. To send and receive all tools, equipments, testers, jigs, tool & die to be calibrate and update Calibration Master Schedule
2. Updated control chart
3. Update process control point.
4. Follow written procedure to avoid NCR to the QS/ISO standards
5. Follow up closure of NCR
6. Participate in Continuous Improvement activities
7. Enforce implementation of quality system and evaluate its effectiveness





INGOT AND RAW WAFER FABRICATION

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 5

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Monitor Calibration Master Schedule for all tools, equipments, testers, jigs, tool & die
3. To approve updated control chart
4. Monitor plant wide quality marks
5. Implement company policy for plant wide
6. Evaluate setup and monitor process control point
7. Conduct Internal Audits to define conformance to QS/ISO standards
8. Investigate closure of NCR
9. Implement of quality policy
10. Lead Continuous Improvement activities





INGOT AND RAW WAFER FABRICATION

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 4

QUALITY ASSURANCE ASSISTANT ENGINEER

A Quality Assurance Assistant Engineer assist in the execution, implementation of the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out quality system implementation assessment
2. Collect and compile reports of the quality datafor product, process and equipment
3. Carry out technical evaluation with Production and Technical personnel for quality improvement and countermeasures to correct non conformance issues
4. Assist in writing quality assurance procedures and education program materials for lead training sessions
5. Carry out monitoring and assessment on quality assurance procedures implementation





INGOT AND RAW WAFER FABRICATION

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 5

QUALITY ASSURANCE ENGINEER

A Quality Assurance Engineer execute, implement and assured the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Determine noncompliance activities and coordinate rectification requirements
3. Review and analyse product, process and equipment quality data
4. Coordinate with Production and Technical personnel in the company as well as vendors for quality improvement and countermeasures to correct non conformance
5. Assist in developing continuing professional education program materials lead training sessions
6. Mentor staff in areas requiring quality related improvement to otherwise contribute to their professional development
7. Lead Continuous Improvement activities





INGOT AND RAW WAFER FABRICATION

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 6

QUALITY MANAGEMENT MANAGER

A Quality Management Manager is responsible to plan, control and drive the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Directly managed all the resources in the department including people, materials and tools & equipment in Quality Assurance Department
2. Conduct orientation training of production employees
3. Implement company policy for plant wide
4. Prepare budget for the department
5. Carry out Training Need Analysis and coordinate staff development program
6. Conduct Internal Audits to define conformance to QS/ISO standards
7. Review closure of NCR
8. Coordinate resource allocation to departmental unit
9. Lead Continuous Improvement activities
10. Endure that the quality system in place
11. Determine noncompliance activities and coordinate rectification requirements
12. Review and analyses product, process and equipment quality data
13. Evaluate and verify technical evaluation report and coordinate rectification action





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible to responsible in providing supprt in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Monitor transfer of general work including wafer incoming, collection, stock counting and checking, tagging and storage
2. Carry out sample testing to determine correct wafer parameters prior to acceptance of products
3. Carry out testing of silicon wafer according to resistivity type level, using resistivity device or meter
4. Monitor transfer of silicon wafer to etching department
5. Adhere with Safety, Health & Environment (SHE) procedures





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals and operational planning
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material . He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budegt, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 2

CHEMICAL PREPARATION HANDLER

A Chemical Preparation Handler is responsible to check that all chemicals are prepared according to the Standard Operating Procedure and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Prepare chemical and raw material for wafer fabrication production
2. Transport all chemical that instruct by Technician/Engineer in preparation to various department
3. Collect waste chemical, container, expired or used/rejected chemical to designated disposal area
4. Adhere to Safety, Health & Environment (SHE) procedures





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 3

CHEMICAL PREPARATION TECHNICIAN

A Chemical Preparation Technician is responsible to check that all chemicals are prepared according to the Standard Operating Procedure and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

Chemical Preparation Technician will be able to:

1. Prepare of chemical raw material and assists in setting up laboratory tool and equipment
2. Carry out data collection of daily result
3. Carry out trouble shooting for chemical composition variances
4. Participate in improvement program of manufacturing processes
5. Conduct manufacturing processes or evaluation as per superior instruction
6. Perform quality control to meet quality standards and efficiency target





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 4

CHEMICAL PREPARATION ASSISTANT ENGINEER

A Chemical Preparation Assistant Engineer is designated to assist Chemical Preparation Engineer in checking that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Assist in directs activities of chemical laboratory in industrial, research, governmental, or other organization
2. Assist in research, testing, quality control, and also other operational reports to make sure that quality standards, efficiency, and also schedules are met
3. Collect results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
4. Assist in troubleshooting problems with manufacturing processes
5. Evaluate equipment and processes to check compliance with safety and environmental regulations
6. Assist in research activities on developing new and improved manufacturing processes



7. Assist in designing and planning the layout of equipment
8. Carry out tests and monitor performance of processes throughout production
9. Collect information for the estimation of production costs for management
10. Prepare research, testing, quality control, and also other operational reports according to company Standard Operating Procedure
11. Interprets results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
12. Assist in preparing budgets





WAFER FABRICATION PRODUCTION

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 5

CHEMICAL PREPARATION ENGINEER

A Chemical Preparation Engineer is responsible to check that all chemicals are prepared according to the Standard Operating Procedure and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Coordinates research analysis activities according to applicable government regulations, manufacturing processes, or other considerations and additionally approves modification of formulas, standards, specifications and additionally processes
2. Troubleshoot problems with manufacturing processes
3. Evaluate equipment and processes to check compliance with safety and environmental regulations
4. Conduct research to develop new and improved manufacturing processes
5. Design and plan the layout of equipment
6. Carry out tests and monitor performance of processes throughout production
7. Estimate production costs for management



8. Reviews research, testing, quality control, and also other operational reports to make sure that quality standards, efficiency, and also schedules are met
9. Interprets results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
10. May prepare administration budgets
11. May advice assist in obtaining patents for products, processes, or equipment
12. Develop safety procedures for those working with potentially dangerous chemicals





WAFER FABRICATION PRODUCTION

CIRCUIT IMPREGNATION

LEVEL 4

CIRCUIT IMPREGNATION ASSISTANT ENGINEER

A Circuit Impregnation Assistant Engineer is responsible to assist Circuit Impregnation Engineer in checking that the silicon wafer process are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Handle all automated equipment throughout entire process
2. Setting up and operates cleaning station, dry and wet etching process station, diffusion furnaces, photolithography station, PECVD stations and annealing station for silicon wafer fabrication or any related material specifications
3. Interpret work order, adjusts various equipment controls to regulate operating conditions, like power level, temperature, vacuum according to specifications
4. Monitors cleaning station, dry and wet etching process station, diffusion furnaces, photolithography stations, PECVD stations and annealing stations
5. Carry out cleaning of inside furnace, using vacuum cleaner as well as cleaning supplies, and also replace furnace liner or other parts





WAFER FABRICATION PRODUCTION

CIRCUIT IMPREGNATION

LEVEL 5

CIRCUIT IMPREGNATION ENGINEER

A Circuit Impregnation Engineer is responsible to check that the silicon wafer are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Monitor operation of automated equipment throughout entire process
2. Setting up and operates cleaning station, dry and wet etching process station, diffusion furnaces, photolithography station, PECVD stations and annealing station for silicon wafer fabrication or any related material specifications
3. Prepare work order, adjusts various equipment controls to regulate operating conditions, like power level, temperature, vacuum according to specifications
4. Monitors cleaning station, dry and wet etching process station, diffusion furnaces, photolithography stations, PECVD stations and annealing stations
5. Coordinate cleaning of inside furnace, using vacuum cleaner as well as cleaning supplies, and also replace furnace liner or other parts





WAFER FABRICATION PRODUCTION

CIRCUIT IMPREGNATION

LEVEL 6

CIRCUIT IMPREGNATION MANAGER

A Circuit Impregnation Manager is responsible to perform operation management including productivity, quality control, resources requisition and control. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Confer with management, engineer, and consultant to discuss on product throughput, specifications and procedures
2. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
3. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
4. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
5. Direct, review, and approve production parameters and changes
6. Recruit employees, assign, direct, and evaluate their work and oversee the development and maintenance of staff competence
7. Design wafer circuitary as required by customers and clients, the full functional of such devices
8. Design the whole production line in relation to new circuit design or latest technology application





WAFER FABRICATION PRODUCTION

CIRCUIT IMPREGNATION

LEVEL 7

CIRCUIT IMPREGNATION SPECIALIST

A Circuit Impregnation Specialist is responsible to check that the total management and production are executed according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

Circuit Impregnation Specialist will be able to:

1. Confer with management, wafer processing operation manager, circuit impregnation manager and marketing staff to discuss on product throughput, specifications and procedures
2. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
3. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
4. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
5. Direct, review, and approve production parameters and changes
6. Recruit employees assign, direct, and evaluate their work and oversee the development and maintenance of staff competence





WAFER FABRICATION PRODUCTION

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 4

QUALITY CONTROL ASSISTANT ENGINEER

A Quality Control Assistant Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. To send and receive all tools, equipments, testers, jigs, tool & die to be calibrate and update Calibration Master Schedule
3. Updated control chart
4. Update process control point.
5. Follow written procedure to avoid NCR to the QS/ISO standards
6. Follow up closure of NCRs
7. Participate in Continuous Improvement activities





WAFER FABRICATION PRODUCTION

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 5

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

Quality Control Engineer will be able to:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Monitor Calibration Master Schedule for all tools, equipments, testers, jigs, tool & die
3. To approve updated control chart
4. Monitor plant wide quality marks
5. Implement company policy for plant wide
6. Evaluate setup and monitor process control point
7. Conduct Internal Audits to define conformance to QS/ISO standards
8. Investigate closure of NCRs
9. Implement of quality policy
10. Lead Continuous Improvement activities





WAFER FABRICATION PRODUCTION

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 4

QUALITY ASSURANCE ASSISTANT ENGINEER

A Quality Assurance Assistant Engineer assist in the execution, implementation of the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out quality system implementation assessment
2. Collect quality assurance data on product, process and equipment and prepare summarise report
3. Carry out technical evaluation with Production and Technical personnel for quality improvement and countermeasures to correct non conformance issues
4. Assist in writing quality assurance procedures and education program materials for lead training sessions
5. Carry out monitoring and assessment on quality assurance procedures implementation





WAFER FABRICATION PRODUCTION

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 5

QUALITY ASSURANCE ENGINEER

A Quality Assurance Engineer execute, implement and assured the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Determine noncompliance activities and coordinate rectification requirements
3. Review and analyse product, process and equipment quality data
4. Evaluate and verify technical evaluation report and coordinate rectification action
5. Assist in developing continuing professional education program materials lead training sessions
6. Mentor staff in areas requiring quality related improvement to otherwise contribute to their professional development
7. Lead Continuous Improvement activities





WAFER FABRICATION PRODUCTION

QUALITY MANAGEMENT

LEVEL 6

QUALITY MANAGEMENT MANAGER

A Quality Management Manager is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Directly managed all the resources in the department including people, materials and tools & equipment in Quality Assurance Department
2. Conduct orientation training of production employees
3. Implement company policy for plant wide
4. Prepare budget for the department
5. Carry out Training Need Analysis and coordinate staff development program
6. Conduct Internal Audits to define conformance to QS/ISO standards
7. Review closure of NCRs
8. Coordinate resource allocation to departmental unit
9. Lead Continuous Improvement activities
10. Enforce implementation of quality system and evaluate its effectiveness
11. Determine noncompliance activities and coordinate rectification requirements
12. Review and analyses product, process and equipment quality data





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible to responsible in providing support in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is responsible to perform maintenance and operational aspect of the raw material testing equipments, tools and systems in accordance to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform maintenance and set up equipments and processes for material testing and preparation
2. Carry out material preparation activities
3. Carry out stock inspection for production materials
4. Monitor/perform direct testing of processing procedure
5. Assist in evaluation of technical specifications and economic factors relating to the design objectives of processes or products
6. Supervise subordinate work activities
7. Coordinate production machinery meeting calibration activity





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals and operational planning
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material . He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budget, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION – CHEMICAL PREPARATION

LEVEL 2

CHEMICAL PREPARATION HANDLER

A Chemical Preparation Handler is responsible to perform directly the task of handling all chemicals and related materials in accordance to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out chemical raw material preparation
2. Transport all chemical that instruct by Technician/Engineer in preparation to various department
3. Collect waste chemical, container, expired or used/rejected chemical to designated disposal area
4. Carry out housekeeping on work area according to Standard Operating Procedure
5. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 3

CHEMICAL PREPARATION TECHNICIAN

A Chemical Preparation Technician is responsible to perform maintenance and operational aspect of the raw material testing equipments, tools and sytems an Laboartory equipments in accordance to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Provedure.

In particular the person will:

1. Prepare of chemical raw material and assists in setting up laboratory tool and equipment
2. Carry out data collection of daily result
3. Troubleshooting chemical composition variances
4. Participate in improvement of manufacturing processes conducted by management
5. Conduct manufacturing processes or evaluation as per supervisor instruction
6. Perform quality control to meet quality standards and efficiency target
7. To check all chemical safety and disposal procuderres being control thought out the plant





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 4

CHEMICAL PREPARATION ASSISTANT ENGINEER

A Chemical Preparation Assistant Engineer is responsible to check that the chemical raw material are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in evaluation of Chemical raw material quality status and prepare record for approval by higher authorities
2. Execute and monitor Quality plan on incoming materials
3. Assist in preparation of budgets, and manpower planning of department Supervise the work of managers, technicians
4. Monitor the testing of processing procedures
5. Monitor how materials perform and evaluate how they deteriorate
6. Determine causes of product failure and write NCR (Non Conformance Record) on failed material
7. Assist in evaluation of process and technical specifications and economic factors relating to the design objectives of processes or products
8. Assist in writing Standard Operating Procedures and Quality System
9. To check that the production machinery meeting calibration standard





SEMICONDUCTOR COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 5

CHEMICAL PREPARATION ENGINEER

A Chemical Preparation Engineer is responsible to check that the chemical raw material are prepared according to the Standard Operating Procedure and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Evaluate Chemical raw material quality status and prepare for release to respective for Production
2. Write and implement Quality plan on incoming materials
3. Prepare proposals and budgets, analyze labor costs, write reports, and perform other managerial tasks
4. Supervise the work of managers, technicians, and other engineers
5. Design and direct the testing of processing procedures
6. Monitor how materials perform and evaluate how they deteriorate
7. Determine causes of product failure and write NCR (Non Conformance Record) on failed material
8. Evaluate technical specifications and economic factors relating to the design objectives of processes or products
9. Implement and maintain organisation Standard Operating Procedures and Quality System
10. To check that the production machinery meeting calibration standard





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 2

SCREEN PRINTING ASSISTANT TECHNICIAN

A Screen Printing Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

Screen printing assistant technician will be able to:

1. Dispense epoxy to lead frame of semiconductor package
2. Check expiry date of epoxy according manufacturing specification
3. Carry out mixing of epoxy according to
4. Setup Screen printing machine
5. Determine correct amount of dispense epoxy to device package or lead frame
6. Check quality of amount and quality of epoxy
7. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 3

SCREEN PRINTING TECHNICIAN

A Screen Printing Technician is responsible to carry out and check all the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Check the dispensing of epoxy to lead frame of semiconductor package according to determined procedure and specification
2. Check quality of mixed epoxy according to specification
3. Setup Screen printing machine according to determine specification
4. Determine correct amount of dispense epoxy to device package or lead frame
5. Check quality of amount and quality of epoxy according to Standard Operating Procedure
6. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 2

DIE ATTACHED ASSISTANT TECHNICIAN

A Die Attached Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setup and die attach machine
2. Check contamination of epoxy on the die
3. Setup and troubleshoot machine
4. Place Die/IC lying flat on the deep frame/device package
5. Carry out setting of curing oven at the right temperature and timer according specification and Standard Operating Procedure
6. Check calibration status of oven and expiry date
7. Carry out routine maintenance of oven
8. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 3

DIE ATTACHED TECHNICIAN

A Die Attached Technician is responsible to carry out and check all the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

Die attached technician will be able to:

1. Check setting parameter of die attach machine according to Standard Operating Procedure
2. Check contamination of epoxy on the die
3. Setup and troubleshoot machine
4. Check Die/IC lying flat on the deep frame/device package
5. Check curing oven at the right temperature and timer according specification and sop
6. Check calibration status of oven and expiry date
7. Carry out routine maintenance of oven
8. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 4

FRONT OF LINE ASSISTANT ENGINEER

A Front of Line Assistant engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Assist in evaluation process to optimize the surface finish process of the specific products
2. Process monitoring to sustain the productivity and quality of the surface finish and the reliability testing of the surface finish products
3. Coordinate new product introduction to the surface finish department
4. Implement SOP and training of new processes (surface finish methodology and parameter) to production personnels
5. Assisnt in perform failure analysis and proposes countermeasures for product non conformances
6. Implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 5

FRONT OF LINE ENGINEER

A Front of Line Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Perform evaluation to optimize the surface finish process of the specific products
2. process monitoring to sustain the productivity and quality of the surface finish and the reliability testing of the surface finish products
3. Coordinate new product introduction to the surface finish department
4. Write Standard Operating Procedure and training of new processes (surface finish methodology and parameter) to production personnels
5. Perform failure analysis and proposes countermeasures for product non conformances
6. Monitor and coordinate implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 2

WIRE BONDING ASSISTANT TECHNICIAN

A Wire Bonding Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out placement of the bonding sequence is correct
2. Carry out parameter setting of force for wire bonding process
3. Carry out routine maintenance of die wire bonding machine
4. Carry out wire cut off parameter setting for sequence, force, temperature and timer on wire bonding machine
5. Check calibration status of oven and expiry date of wire bonding machine
6. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 3

WIRE BONDING TECHNICIAN

A Wire Bonding Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Check placement of the bonding sequence is correct
2. Check the force of during wire bonding doesn't cause damage to the die
3. Carry out routine maintenance of die wire bonding machine
4. Check sequence, force, temperature and timer of wire cut off setting on wire bonding machine
5. Check calibration status of oven and expiry date of wire bonding machine
6. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 4

WIRE BONDING ASSISTANT ENGINEER

A Wire Bonding Assistant Engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Impelement optimization procedure for wire bonding process
2. Assist in evaluation of correct parameter for machine for best wire bonding process
3. Assist in wire bonding process improvement
4. Carry out inventory control for wire bonding
5. Develop Standard Operating Procedures for wire bonding engineer
6. Check overall quality for product
7. Collect production data for continuous improvement
8. Assist in failure analysis for product quality and material quality
9. Assist in cost and effect analysis
10. Carry out implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 5

WIRE BONDING ENGINEER

A Wire Bonding Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out process optimization for wire bonding process
2. Evaluate correct parameter for machine for best wire bonding process
3. Carry out wire bonding process improvement
4. Verify inventory control for wire bonding
5. Develop Standard Operating Procedure for wire bonding engineer
6. Verify overall quality for product
7. Review and analyse production data for continuous improvement
8. Provide engineering report to management for quality improvement of production process
9. Carry out failure analysis for product quality and material quality
10. Lead cost and effect analysis
11. Monitor implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 2

ENCAPSULATION ASSISTANT TECHNICIAN

A Encapsulation Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setup the moulding machine according to parameter setting
2. Check calibration status of oven and expiry date of wire bonding machine
3. Check temperature and clamping pressure of encapsulation machine
4. Check defect of the moulded parts for short mould, voids and burr according to specification
5. Carry out trial shot for mould before releasing for production
6. Adhere with Safety, Health & Environment (SHE) procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 3

ENCAPSULATION TECHNICIAN

A Encapsulation Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Check the moulding machine properly setup and all parameter for according to specification
2. Check calibration status of oven and expiry date of wire bonding machine
3. Check temperature, clamping pressure
4. Verify and report defect of the moulded parts for short mould, voids, burr according to production Standard Operating Procedure
5. Check quality of trial shot product for mould before releasing for production





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 4

ENCAPSULATION ASSISTANT ENGINEER

An Encapsulation Assistant Engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Implement optimization procedure for encapsulation process
2. Assist in evaluation of correct parameter for machine for best encapsulation process
3. Assist in encapsulation process improvement
4. Carry out inventory control for encapsulation
5. Develop Standard Operating Procedure for encapsulation engineer
6. Check overall quality for product quality
7. Collect production data for continuous improvement
8. Assist in failure analysis for product quality and material quality
9. Assist in cost and effect analysis
10. Carry out implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 5

ENCAPSULATION ENGINEER

An Encapsulation Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out process optimization for encapsulation process
2. Evaluate correct parameter for machine for best encapsulation process
3. Carry out encapsulation process improvement
4. Verify inventory control for encapsulation
5. Develop Standard Operating Procedure for encapsulation process
6. Verify overall quality for product quality
7. Review and analyse production data for continuous improvement
8. Provide engineering report to management for quality improvement of production process
9. Carry out failure analysis for product quality and material quality
10. Lead cost and effect analysis
11. Monitor implementation of new and existing company wide Quality policy





SEMICONDUCTOR COMPONENT MANUFACTURING

FRONT OF LINE ASSEMBLY

LEVEL 6

FRONT OF LINE ASSEMBLY MANAGER

A Front Of Line Assembly Manager is designated to manage the entire assembly processes and resources to meet the company's management objectives namely the productivity and quality as well as the P&L of the department. He or she also required to with company company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Peocedure.

In particular the person will:

1. Management of all department resources to achieve departmental budget and contribute towards company profit
2. Motivate,drive and achieved the organization planned target
3. Setup up Front Of Line assembly policy and department goals
4. Prepare and propose TNA (Training Need Analysis) and compensation plan for the department
5. Lead new project and new product rollout for the department
6. Lead Department Productivity and Quality Improvement activities
7. Participate and contribute in companys strategic meetings
8. Prepare department Budget and organization chart
9. Identify, motivate, develop and approve succession planning of departments team and its members
10. Lead Quality Manual implementation and other company wide improvement program on behalf of the department





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 2

SURFACE FINISH ASSISTANT TECHNICIAN

A Surface Finish Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setup wave soldering machine and tin plating are setup according determine parameter
2. Maintain chemical concentration and equipment for tin plating process
3. Replenish the molten solder
4. Remove contamination on top of the solder wave
5. Maintain the solder bath
6. Check flux concentration according to specification
7. Carry out maintenance on soldering wave machine
8. Check calibration status of oven and expiry date of wire bonding machine





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 3

SURFACE FINISH TECHNICIAN

A Surface Finish Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

Surface Finish Technician will be able to:

1. Monitor and verify wave soldering machine and tin plating machine setting according determine parameter
2. Check chemical concentration and equipment for tin plating process
3. Check the the molten solder are replenish according to procedure
4. Check the removal of contamination on top of the solder wave executred according to proceure
5. Check the solder bath are maintained according to procedure
6. Check Flux concentration according to specification
7. Check the maintenance on soldering wave machine executed according to procedure
8. Check calibration status of oven and expiry date of wire bonding machine





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 4

SURFACE FINISH ASSISTANT ENGINEER

A Surface Finish Assistant Engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Check thickness of surface finish according to product specification
2. Impelement optimization procedure for surface finish process
3. Assist in evaluation of correct parameter for machine for best surface finish process
4. Assist in surface finish process improvement
5. Carry out inventory control for surface finish
6. Develop Standard Operating Procedure for surface finish engineer
7. Check overall quality for product quality
8. Collect production data for continuous improvement
9. Assist in failure analysis for product quality and material quality
10. Assist in cost and effect analysis
11. Carry out implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 5

SURFACE FINISH ENGINEER

A Surface Finish Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Verify thickness of surface finish according to product specification
2. Carry out process optimization for surface finish process
3. Evaluate correct parameter for machine for best wire bonding process
4. Carry out surface finish process improvement
5. Carry out inventory control for surface finish
6. Develop Standard Operating Procedure for surface finish engineer
7. Check overall quality for product quality
8. Review and production data for continuous improvement
9. Provide engineering report to management for quality improvement of production process
10. Carry out failure analysis for product quality and material quality
11. Lead cost and effect analysis





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 2

FORMING & TRIMMING ASSISTANT TECHNICIAN

A Forming & Trimming Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setup forming & trimming machine are setup according determine machine specification
2. Check product quality according to determine quality inspection criteria
3. Check machine faulty and coordinate for repair
4. Carry out routine maintenance according to machine standard
5. Check defect course by the machine
6. Check calibration status for forming & trimming machine
7. Adhere to company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 3

FORMING & TRIMMING TECHNICIAN

A Forming & Trimming Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setup forming & trimming machine are setup according determine machine specification
2. Verify product quality according to determine quality inspection criteria
3. Check calibration status of forming and trimming machine
4. Check machine faulty and coordinate for repair
5. Check defect course by the machine and determine rectification for improvement





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 4

FORMING & TRIMMING ASSISTANT ENGINEER

A Forming & Trimming Assistant Engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Impelement optimization procedure for forming & trimming process
2. Assisnt in evaluation of correct parameter for machine for best forming & trimming process
3. Assist in forming & trimming process improvement
4. Carry out inventory control for forming & trimming
5. Develop Standard Operating Procedures for forming & trimming engineer
6. Check overall quality for product quality
7. Collect production data for continuous improvement
8. Assist in failure analysis for product quality and material quality
9. Assist in cost and effect analysis
10. Carry out implementation of new and existing company wide quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 5

FORMING & TRIMMING ENGINEER

A Forming & Trimming Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Verify thickness of forming & trimming according to product specification
2. Carry out process optimization for forming & trimming process
3. Evaluate correct parameter for machine for best forming & trimming process
4. Carry out forming & trimming process improvement
5. Carry out inventory control for forming & trimming
6. Develop Standard Operating Procedure for forming & trimming engineer
7. Check overall quality for product quality
8. Review and production data for continuous improvement
9. Provide engineering report to management for quality improvement of production process
10. Carry out failure analysis for product quality and material quality
11. Lead cost and effect analysis





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 2

ENVIRONMENTAL TESTING ASSISTANT TECHNICIAN

An Environmental Testing Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Assist in failure analysis and evaluating testing of product after environmental testing
2. Record environmental testing data
3. Check calibration status of Environmental Testing machine
4. Carry out routine maintenance on final testing machine
5. Comply with organisation Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 3

ENVIRONMENTAL TESTING TECHNICIAN

An Environmental Testing Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

Environmental Testing Technician will be able to:

1. Carry out parameter setting for temperature cycling and stabilization bake according to environmental test requirement
2. Assist in reliable testing according to Standard Operating Procedure
3. Check equipment are setup according to Standard Operating Procedure
4. Check calibration status of equipment
5. Carry out maintenance of environmental testing equipment
6. Comply with organisation Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 4

ENVIRONMENTAL TESTING ASSISTANT ENGINEER

An Environmental Testing Assistant engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out data collection in failure analysis and evaluating testing of product after environmental testing
2. Implement optimization procedure for environmental testing process
3. Assist in evaluation of correct parameter for machine for best forming & trimming process
4. Assist in environmental testing process improvement
5. Carry out inventory control for forming & trimming
6. Develop SOP for environmental testing engineer
7. Check overall quality for product quality
8. Collect production data for continuous improvement
9. Assist in failure analysis for product quality and material quality
10. Assist in cost and effect analysis
11. Carry out implementation of new and existing company wide Quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 5

ENVIRONMENTAL TESTING ENGINEER

An Environmental Testing Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out failure analysis and evaluating testing of product after environmental testing
2. Coordinate with final testing engineer for failure analysis and final quality control
3. Carry out process optimization for environmental testing process
4. Evaluate correct parameter for machine for best environmental testing process
5. Carry out environmental testing process improvement
6. Carry out inventory control for environmental testing
7. Develop Standard Operating Procedure for environmental testing engineer
8. Check overall quality for product quality
9. Review and production data for continuous improvement
10. Provide engineering report to management for quality improvement of production process
11. Carry out failure analysis for product quality and material quality
12. Lead cost and effect analysis





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 2

FINAL TESTING ASSISTANT TECHNICIAN

A Final Testing Assistant Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare final testing equipment according to customer requirement
2. Carry out parameter setting on equipment according to customer specification
3. Carry out routine maintenance of machine
4. Check calibration status of equipment
5. Assist in data collection for analysis
6. Assist superior in experiment process and process evaluation





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 3

FINAL TESTING TECHNICIAN

A Final Testing Technician is responsible to carry out the preparation and production process of the product according to specification as determined by superior. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Check final testing equipment according to customer requirement
2. Carry out parameter setting on equipment according to customer specification
3. Monitor routine maintenance on final testing machine
4. Check calibration status of equipment
5. Collect data for analysis
6. Assist superior in experiment process and process evaluation





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 4

FINAL TESTING ASSISTANT ENGINEER

A Final Testing Assistant Engineer is designated to handle the production process of the product according to specification as determined by the customer. He or she also required to assist engineer in report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Carry out data collection in failure analysis and evaluating testing of product after final testing
2. Impelement optimization procedure for final testing process
3. Assisnt in evaluation of correct parameter for machine for best forming & trimmingprocess
4. Assist in final testing process improvement
5. Carry out inventory control for forming & trimming
6. Develop Standard Operating Procedure for final testing engineer
7. Check overall quality for product quality
8. Collect production data for continuous improvement
9. Assist in failure analysis for product quality and material quality
10. Assist in cost and effect analysis
11. Carry out implementation of new and existing company wide Quality policy





SEMICONDUCTOR EQUIPMENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 5

FINAL TESTING ENGINEER

A Final Testing Engineer is designated to monitor the production process of the product according to specification as determined by the customer. He or she also required carry out various analysis and report production regarding production, quality control and on improvement requirement and to check production activities comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Setting of testing procedures and equipments and parameters as required by customers and according to reference stds such as military std 883C or other stds. For product reliability and integrity
2. Carry out test monitoring and post test analysis on product
3. Review failure analysis report, interpretation and recommendation for corrective measures
4. Coordinate new product introduction and its final testing procedures and parameters, and limits as per end customer requirement
5. Write Standard Operating Procedure and training of new test procedures to production personnels
6. Perform failure analysis and proposes countermeasures for product non conformances



7. Monitor and coordinate implementation of new and existing company wide Quality policy
8. Coordinate with final testing engineer for failure analysis and final quality control
9. Evaluate correct parameter for machine for best final testing process
10. Carry out final testing process improvement
11. Carry out inventory control for final testing
12. Review and production data for continuous improvement
13. Provide engineering report to management for quality improvement of production process
14. Carry out failure analysis for product quality and material quality





SEMICONDUCTOR COMPONENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 6

END OF LINE MANAGER

An End Of Line Manager is designated to manage the entire Front of Line assembly processes and resources to meet the company's management objectives namely the productivity and quality as well as the P&L of the department. He or she also required to with company company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

An End Of Line Assembly Manager will be able to:

1. Control production operation including output, product quality and maintenance operation
2. Plan, organize, direct the day-to-day operations
3. Control and manage resource allocation
4. Implement cost effective systems of control over capital, operating expenditures, manpower, wages and salaries. Develop and control profits, plans, and budget
5. Coordinate staff recruitment, carry out staff management and staff development program
6. Increase production, assets capacity and flexibility while minimizing unnecessary costs and maintaining current quality standards
7. Implement strategies in alignment with strategic initiatives and provide a clear sense of direction and focus. Maintains effective communication levels and fosters Team Building
8. Evaluate and implement the process of implementing new technologies into production
9. Ensure plant compliance are adhered





SEMICONDUCTOR COMPONENT MANUFACTURING

END OF LINE ASSEMBLY

LEVEL 7

SEMICONDUCTOR COMPONENT MANUFACTURING SPECIALIST

A Semiconductor Component Manufacturing Specialist is designated to manage the entire assembly processes and resources to meet the company's management objectives namely the productivity and quality as well as the P&L of the department. He or she also required to with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Evaluate and verify production, quality control, and maintenance report
3. Setup manufacturing policy and divisonal goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Approve department Budget and operational planning
7. Drive and approve succession planning policy of departments team and its members
8. Approve production, quality and maintenance procedurees and monitor the implementation





SEMICONDUCTOR COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 4

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. To send and receive all tools, equipments, testers, jigs, tool & Die to be calibrate and update Calibration Master Schedule
3. Updated control chart
4. Update process control point
5. Follow written procedure to avoid NCR to the QS/ISO standards
6. Follow up closure of NCRs
7. Be apart in Continuous Improvement activities





SEMICONDUCTOR COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 5

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Monitor Calibration Master Schedule for all tools, equipments, testers, jigs, tool & Die.
3. To approve updated control chart
4. Monitor plant wide quality marks
5. Implement company policy for plant wide
6. Evaluate setup and monitor process control point
7. Conduct Internal Audits to define conformance to QS/ISO standards
8. Investigate closure of NCRs
9. Implement of quality policy
10. Lead Continuous Improvement activities





SEMICONDUCTOR COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 4

QUALITY ASSURANCE ASSISTANT ENGINEER

A Quality Assurance Assistant Engineer assist in the execution, implementation of the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out quality system implementation assessment
2. Collect quality assurance data on product, process and equipment and prepare summarise report
3. Assist in technical evaluation with Production and Technical personnels in the company as well as vendors for quality improvement and countermeasures to correct non conformance
4. Assist in writing quality assurance procedures and education program materials for lead training sessions
5. Carry out monitoring and assessment on quality assurance procedures implementation





SEMICONDUCTOR COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 5

QUALITY ASSURANCE ENGINEER

A Quality Assurance Engineer execute, implement and assured the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Determine noncompliance activities and coordinate rectification requirements
3. Review and analyse product, process and equipment quality data
4. Evaluate and verify technical evaluation report and coordinate rectification action
5. Assist in developing continuing professional education program materials lead training sessions
6. Mentor staff in areas requiring quality related improvement to otherwise contribute to their professional development
7. Lead Continuous Improvement activities





SEMICONDUCTOR COMPONENT MANUFACTURING

QUALITY MANAGEMENT

LEVEL 6

QUALITY MANAGEMENT MANAGER

A Quality Management Manager is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Directly managed all the resources in the department including people, materials and tools & equipments in Quality Assurance Department
2. Conduct orientation training of production employees
3. Implement company policy for plant wide
4. Prepare budget for the department
5. Carry out Training Need Analysis and coordinate staff development program
6. Conduct Internal Audits to define conformance to QS/ISO standards
7. Review closure of NCRs
8. Coordinate resource allocation to departmental unit
9. Lead Continuous Improvement activities
10. Enforce implementation of quality system and evaluate its effectiveness
11. Determine noncompliance activities and coordinate rectification requirements
12. Review and analyses product, process and equipment quality data





SEMICONDUCTOR COMPONENT MANUFACTURING

ASSEMBLY

LEVEL 7

SEMICONDUCTOR COMPONENT MANUFACTURING SPECIALIST

A Semiconductor Component Manufacturing Specialist is designated to manage the entire manufacturing resources to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure. To achieve division goals and contribute towards realisation of the overall companys P& L.

In particular the person will:

10. Carry out management of all divisional resources to achieve departmental budget and contribute towards companys P&L
11. Motivate,drive and achieved the organization planned target
12. Setup up manufacturing policy and divisonal goals
13. Drive New Project.and New Product Rollout for the department
14. Drive Department Productivity and Quality Improvement activities
15. Setup up strategic objectives
16. Approve department Budget and management organization chart
17. Drive and approve succession planning policy of departments team and its members
18. Approve Quality Manual and other company wide improvement program on behalf of the company





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible to responsible in providing supprt in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

Material Preparation Technician will be able to:

1. Supervise tasking carried out by subordinate including in wafer incoming, collection, stock counting and checking, tagging and storage
2. Sample testing to determine correct wafer parameters prior to acceptance of products
3. Carry out material testing
4. Carry out sorting of silicon wafer according to resistivity type level, using resistivity device or meter
5. Transfer silicon wafer to etching department
6. Adhere with Safety, Health & Environment (SHE) procedures





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals and operational planning
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budget, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 2

CHEMICAL PREPARATION HANDLER

A Chemical Preparation Handler is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Prepare of chemicals for raw material
2. Transport all chemical that instruct by Technician/Engineer in preparation to various department
3. Collect waste chemical, container, expired or used/rejected chemical to designated disposal area
4. Adhere to Safety, Health & Environment (SHE) procedures





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 3

CHEMICAL PREPARATION TECHNICIAN

A Chemical Preparation Technician is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Prepare of chemical raw material and assists in setting up laboratory tool and equipment
2. Carry out data collection of daily result
3. Troubleshooting chemical composition variances
4. Participate in improvement of manufacturing processes conducted by management
5. Conduct manufacturing processes or evaluation as per supervisor instruction
6. Perform quality control to meet quality standards and efficiency target
7. To check all chemical safety and disposal procuderres being control throught out the plant





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 4

CHEMICAL PREPARATION ASSISTANT ENGINEER

A Chemical Preparation Assistant Engineer is responsible to assist Chemical Preparation Engineer in check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Assist in directs activities of chemical laboratory in industrial, research, governmental, or other organization
2. Assist in research, testing, quality control, and also other operational reports to make sure that quality standards, efficiency, and also schedules are met
3. Collect results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
4. Assist in troubleshooting problems with manufacturing processes
5. Evaluate equipment and processes to check compliance with safety and environmental regulations
6. Assist in research activities on developing new and improved manufacturing processes



7. Assist in designing and planning the layout of equipment
8. Carry out tests and monitor performance of processes throughout production
9. Collect information for the estimation of production costs for management
10. Prepare research, testing, quality control, and also other operational reports according to company Standard Operating Procedure
11. Interprets results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
12. Assist in preparing budgets





DISCREET COMPONENT MANUFACTURING

MATERIAL PREPARATION - CHEMICAL PREPARATION

LEVEL 5

CHEMICAL PREPARATION ENGINEER

A Chemical Preparation Engineer is responsible to check that all chemicals are prepared according to the Standard Operating Procedures and Quality and Safety Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure and all chemical must have latest documentations and tracibility of MSDS, TDS and CDS.

In particular the person will:

1. Coordinates research analysis activities according to applicable government regulations, manufacturing processes, or other considerations and additionally approves modification of formulas, standards, specifications and additionally processes
2. Troubleshoot problems with manufacturing processes
3. Evaluate equipment and processes to check compliance with safety and environmental regulations
4. Conduct research to develop new and improved manufacturing processes
5. Design and plan the layout of equipment
6. Carry out tests and monitor performance of processes throughout production
7. Estimate production costs for management



8. Reviews research, testing, quality control, and also other operational reports to make sure that quality standards, efficiency, and also schedules are met
9. Interprets results of laboratory activities to laboratory personnel, management, and also professional as well as technical societies, and also prepares reports technical papers
10. May prepare administer budgets
11. May advice assist in obtaining patents for products, processes, or equipment
12. Develop safety procedures for those working with potentially dangerous chemicals





DISCREET COMPONENT MANUFACTURING

PRODUCT ASSEMBLY

LEVEL 2

DISCREET COMPONENT PRODUCTION ASSISTANT TECHNICIAN

A Discreet Component Production Assistant Technician is responsible to assist Discreet Component Production Technician in check that integration of sub components to become a desired discreet components are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Monitor how materials perform and evaluate how they deteriorate
2. Analyse causes of product failure and develop solutions
3. To adhere Standard Operating Procedures and Quality System
4. To check that the production machinery meeting calibration standard
5. Reviews production schedules, specifications, and priorities to plan department work assignments
6. Carry out requisition and distribute supplies and materials, electronic components and parts, solder and flux, antistatic bags & wristbands, and schematic drawings work orders
7. Execute duties from engineer and assistant engineer and participate in department activities



8. Revises work assignments to meet production schedules contract priorities
9. Explains and demonstrates product assembly line procedures techniques to assistant technicians
10. Check compliance with IPC standards in assembling printed circuit boards PCB, applying knowledge of assembly techniques, specifications and production scheduling
11. Check schematic drawings, specifications, and work orders for technicians
12. Capable of solving routine production problems
13. May assemble sample product, using schematic drawings, hand tools, and soldering equipment, to use as work aids
14. May preform lead wires for electronic components, using forming machines or hand tools, and supply preformed parts to assembler





DISCREET COMPONENT MANUFACTURING

DISCREET COMPONENT PRODUCTION

LEVEL 3

DISCREET COMPONENT PRODUCTION TECHNICIAN

A Discreet Component Production Technician is responsible to check that integration of sub components to become a desired discreet component are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Compliance with IPC standards in assembling sub components, applying knowledge of assembly techniques, specifications and production scheduling
2. Monitor how component perform and evaluate how they deteriorate
3. Analyse causes of product failure and develop solutions
4. To check that the production machinery meeting calibration standard
5. Reviews production schedules, specifications, and priorities to plan department work assignments
6. Requisitions, obtains, and distributes supplies and materials, electronic components and parts, solder and flux, antistatic bags & wristbands, and schematic drawings work orders
7. Execute duties from engineer and assistant engineer and participate in department activities



8. Revises work assignments to meet production schedules contract priorities
9. Explains and demonstrates product assembly line procedures techniques to assistant technicians
10. Adhere Standard Operating Procedures and Quality System
11. Resolve minor technical problems and routine production problems
12. Assemble sample product, using schematic drawings, hand tools, and soldering equipment, to use as work aids
13. Perform lead wires for electronic components, using forming machines or hand tools, and supply preformed parts to assemblers





DISCREET COMPONENT MANUFACTURING

DISCREET COMPONENT PRODUCTION

LEVEL 4

DISCREET COMPONENT PRODUCTION ASSISTANT ENGINEER

A Discreet Component Production Assistant Engineer is responsible to assist Discreet Component Production Engineer in checking that integration of sub components to become a desired discreet components are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Prepare production report
2. Supervise subordinate work operation
3. Evaluate technical specifications and economic factors relating to the design objectives of processes or products
4. Check that the production machinery meeting calibration standard
5. Carry out production schedules, specifications, and priorities to plan department work assignments
6. Carry out production requisitions
7. Explains and demonstrates product assembly line procedures techniques to technicians
8. Design and check schematic drawings, specifications, and work orders for technicians
9. Assists technicians in resolving technical problems advises Supervisor, Printed Circuit Board Assembly electron
10. Resolve complex assembly problems





DISCREET COMPONENT MANUFACTURING

PRODUCT ASSEMBLY

LEVEL 5

DISCREET COMPONENT PRODUCTION ENGINEER

A Discreet Component Production Engineer is responsible to check that integration of sub components to become a discreet components are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Plan and evaluate new projects, consulting with others as necessary
2. Prepare proposals and budgets, analyze labor costs, write reports, and perform other managerial tasks
3. Design and direct the processing procedures and testing
4. Analyse causes of product failure and develop solutions
5. Evaluate technical specifications and economic factors relating to the design objectives of processes or products
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. To provide training and certification for staff and indirect staff
8. Coordinate production machinery meeting calibration requirements
9. Reviews production schedules, specifications, and priorities to plan department work assignments
10. Verify and evaluate production requisition
11. Revises work assignments to meet production schedules contract priorities





DISCREET COMPONENT MANUFACTURING

DISCREET COMPONENT PRODUCTION

LEVEL 6

DISCREET COMPONENT PRODUCTION MANAGER

A Discreet Component Production Manager is responsible to perform operation management including productivity, quality control, resources requisition and control. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Confer with management, engineer, and consultant to discuss on product throughput, specifications and procedures
2. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
3. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
4. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
5. Direct, review, and approve production parameters and changes
6. Recruit employees, assign, direct, and evaluate their work and oversee the development and maintenance of staff competence
7. Design the whole production line in relation to latest technology application
8. Reconfigure and determine new parameters and adjusts various equipment controls to regulate operating conditions in order to meet new design parameters





DISCREET COMPONENT MANUFACTURING

DISCREET COMPONENT PRODUCTION

LEVEL 7

DISCREET COMPONENT PRODUCTION SPECIALIST

A Discreet Component Production Specialist is responsible to check that the total management and A Semiconductor Component Manufacturing Specialist is designated to manage the entire manufacturing resources to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure. To achieve division goals and contribute towards realisation of the overall companys P& L.

In particular the person will:

1. Carry out management of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Motivate,drive and achieved the organization planned target
3. Setup up manufacturing policy and divisonal goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Setup up strategic objectives
7. Approve department Budget and management organization chart
8. Drive and approve succession planning policy of departments team and its members
9. Approve Quality Manual and other company wide improvement program on behalf of the company





DICREET CONMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 4

QUALITY CONTROL ASSISTANT ENGINEER

A Quality Control Assistant Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations.He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. To send and receive all tools, equipments, testers, jigs, tool & die to be calibrate and update Calibration Master Schedule
3. Updated control chart
4. Update process control point
5. Follow written procedure to avoid NCR to the QS/ISO standards
6. Follow up closure of NCRs
7. Be apart in Continuous Improvement activities





DICREET CONMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 5

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Monitor Calibration Master Schedule for all tools, equipments, testers, jigs, tool & die
3. To approve updated control chart
4. Monitor plant wide quality marks
5. Implement company policy for plant wide
6. Evaluate setup and monitor process control point
7. Conduct Internal Audits to define conformance to QS/ISO standards
8. Investigate closure of NCRs
9. Implement of quality policy
10. Lead Continuous Improvement activities





DISCREET COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 4

QUALITY ASSURANCE ASSISTANT ENGINEER

A Quality Assurance Assistant Engineer assist in the execution, implementation of the quality plan of the the respective process/departments are met.He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out quality system implementation assessment
2. Collect quality assurance data on product, process and equipment and prepare summarise report
3. Carry out technical evaluation with Production and Technical personnel for quality improvement and countermeasures to correct non conformance issues
4. Assist in writing quality assurance procedures and education program materials for lead training sessions
5. Carry out monitoring and assessment on quality assurance procedures implementation





DISCREET COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 5

QUALITY ASSURANCE ENGINEER

A Quality Assurance Engineer execute, implement and assured the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Determine noncompliance activities and coordinate rectification requirements
3. Review and analyse product, process and equipment quality data
4. Evaluate and verify technical evaluation report and coordinate rectification action
5. Assist in developing continuing professional education program materials lead training sessions
6. Mentor staff in areas requiring quality related improvement to otherwise contribute to their professional development
7. Lead Continuous Improvement activities





DISCREET COMPONENT MANUFACTURING

QUALITY MANAGEMENT - QUALITY CONTROL

LEVEL 6

QUALITY MANAGEMENT MANAGER

A Quality Management Manager is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Directly managed all the resources in the department including people, materials and tools & equipments in Quality Assurance Department
2. Conduct orientation training of production employees
3. Implement company policy for plant wide
4. Prepare budget for the department
5. Carry out Training Need Analysis and coordinate staff development program
6. Conduct Internal Audits to define conformance to QS/ISO standards
7. Review closure of NCRs
8. Coordinate resource allocation to departmental unit
9. Lead Continuous Improvement activities
10. Enforce implementation of quality system and evaluate its effectiveness
11. Determine noncompliance activities and coordinate rectification requirements
12. Review and analyses product, process and equipment quality data





ELECTRONIC COMPONENT

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT

LEVEL 3

RESEARCH AND DEVELOPMENT TECHNICIAN

A Research And Development Technician is responsible in assisting and providing technical support in research and development activities. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in testing, calibrating and running alpha & beta testing for product
2. Meeting electronic standards regulatory bodies
3. Conduct Testing procedure, isolation test and etc
4. Conduct safety to the operator & equipment
5. Collect various data for research and development purpose
6. Evaluate and summarize data collection report
7. Conduct field-testing and analysis for more precise results





ELECTRONIC COMPONENT

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT

LEVEL 4

RESEARCH AND DEVELOPMENT ASSISTANT RESEARCHER

A Research And Development Assistant Researcher is responsible in researching and developing activities including hardware, software and firmware or electronic component and process. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage the process of implementing new technologies into research
2. Carry out product development and the design
3. Collect and analyse evaluative project data
4. Communicate and work closely with the Industry Partners
5. Produce writing scientific reports
6. Coordinating data collection activities
7. Participate in the definition of research directions and any other research activities as required
8. Conduct testing procedure
9. Conduct safety to the operator & equipment
10. Adhere to with Electronic Standards, term, regulatory bodies, certification and standardization
11. Check compliance with safety and environmental regulations





ELECTRONIC COMPONENT

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT

LEVEL 5

RESEARCH AND DEVELOPMENT RESEARCHER

A Research And Development Researcher is responsible in leading research and development activities including designing and development of hardware, software and firmware or electronic component and process. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product and product engineering and applies engineering best practices and tools
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Lead the development of products through knowledge of the clinical and physical performance requirements including all aspects of the product design criteria, product function and customer needs



6. Researches new processes or materials processing technologies for possible new product development
7. Evaluate product design to satisfy product and customer requirement
8. Carry out analysis on Design to Cost and Design for Manufacturability methods to support project leader in achievement of project objectives
9. Provides technical support to Unit Business
10. Checks proper design and development documentation as per Company Standard Operating Procedure
11. Enforce Standard Operating Procedures and maintains all relevant Standard Operating Procedures to check strict compliance of R&D functional operation according to Company Standard Operating Procedure (SOP)
12. Checks a safe, healthy and environmentally-friendly workplace by observing Company's procedures and regulations
13. Participate in prevention, elimination of potential safety hazards and participation in activities which promotes recycling, replacement and reduction of resource materials





ELECTRONIC COMPONENT

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT

LEVEL 6

RESEARCH AND DEVELOPMENT HEAD OF DEPARTMENT

A Research And Development Head Of Department is responsible to manage research project from conceptual design a complete product inclusive of design, software, firmware and hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Conducts user/ergonomic studies
2. Prepare organization's intellectual property strategy
3. Leads R&D Team
4. Prepare project budgeting, planning and resource planning
5. Provides leadership in design analysis
6. Evaluate product quality in a product's design for usability, reliability, functionality, marketability, and manufacturability
7. Leads product design verification and validation to satisfy product and customer requirement
8. Provides technical support to Unit Business
9. Evaluate and verify R&D documentation and reports as per Company Standard Operating Procedure
10. Creates new Standard Operating Procedures and maintains all relevant Standard Operating Procedures





ELECTRONIC COMPONENT

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT

LEVEL 7

ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT SPECIALIST

A Electronic Component Research And Development Specialist is responsible to manage for all the scientific aspects of a research project also design a complete equipment from conceptual to production release of new product inclusive of design, software, firmware or hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Develop new and improved product and process technologies
2. Lead efforts to scale up R&D processes from laboratory to pilot project
3. Provide technical support for full scale implementation.
4. Evaluate, define and steer research projects.
5. Survey existing technical and trade literature to assess technology and develop new ideas for experimental work.
6. Direct R&D Project
7. Suggest alternative approaches and solutions to mechanical, analytical and chemical problems.
8. Model physical phenomena to optimize processes and yield new equipment designs.
9. Implement and troubleshoot pilot plant equipment and procedures to demonstrate improvements.
10. Contribute to the innovation process through the development and justification of new project proposals





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRINTED CIRCUIT BOARD ASSEMBLY

LEVEL 2

PRINTED CIRCUIT BOARD ASSEMBLY ASSISTANT TECHNICIAN

A Printed Circuit Board Assembly Assistant Technician is responsible to assist Printed Circuit Board Assembly Technician in check that electronic components are fully placed on PCB board and are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to establish specifications and instructions
2. Adhere to assembly and test procedures to promote production of quality products
3. Check equipment and report any problems or substandard condition to the supervisor
4. Record log books according to standard operating procedures
5. Perform cleaning of all parts as per established cleaning procedures
6. Carry out pre-assembly activities according to product assembly procedure
7. Assist in product testing and performance testing
8. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
9. Receive, unload, unpack and transfer materials to different work stations
10. Maintain work area clean, safe and orderly





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRINTED CIRCUIT BOARD ASSEMBLY

LEVEL 3

PRINTED CIRCUIT BOARD ASSEMBLY TECHNICIAN

A Printed Circuit Board Assembly Technician is responsible to check that electronic components are fully placed on PCB board and are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
4. Check all log books are maintained according to standard operating procedures
5. Perform pre-assembly activities according to product assembly procedure
6. Conduct product testing and performance testing and record the results
7. Perform final checks and adjustments for any defects to check high quality products
8. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
9. Order and stock materials and supplies to avoid materials shortages





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRINTED CIRCUIT BOARD ASSEMBLY

LEVEL 4

PRINTED CIRCUIT BOARD ASSEMBLY ASSISTANT ENGINEER

A Printed Circuit Board Assembly Assistant Engineer is responsible to assist Product Assembly Engineer in check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and oversea production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Identifies opportunities and offers commercially sound solutions to design related concerns
4. Provides accurate and thorough analysis of CAD files received from the customer
5. Participate in cost reduction activities as it applies to product
6. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
7. Participate in finding design solutions for product concerns



8. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
9. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
10. Implement continuous improvement and lean manufacturing process





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRINTED CIRCUIT BOARD ASSEMBLY

LEVEL 5

PRINTED CIRCUIT BOARD ASSEMBLY ENGINEER

A Printed Circuit Board Assembly Engineer is responsible to check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, producibility, quality, performance, reliability, serviceability and user features that meet division and customer requirements
3. Improves performance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improve effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identifies opportunities and offers commercially sound solutions to design related concerns
7. Provides accurate and thorough analysis of CAD files received from the customer



8. Leads the Engineering team in the development and implementation of ideas to help offset customer expectations
9. Participate in cost reduction activities as it applies to product
10. Develop accurate component level prints with proper application to check overall assembly requirements are met
11. Lead the Engineering team in arriving at design solutions for product concerns
12. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
13. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
14. Implement continuous improvement and lean manufacturing process





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 2

PRODUCT ASSEMBLY ASSISTANT TECHNICIAN

A Product Assembly Assistant Technician is responsible to assist Product Assembly Technician in check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or Safety, Health & Environment (SHE) also required to comply with company policies such as Safety, Health & Environment (SAFETY, HEALTH & ENVIRONMENT (SHE)) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to established specifications and instructions
2. Assist in equipment calibration and adjustments using testing instruments
3. Adhere to assembly and test procedures to promote production of quality products
4. Check equipment and report any problems or substandard condition to the supervisor
5. Record log books according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform cleaning of all parts as per established cleaning procedures
8. Carry out pre-assembly activities according to product assembly procedure
9. Assist in product testing and performance testing



10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Receive, unload, unpack and transfer materials to different work stations
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 3

PRODUCT ASSEMBLY TECHNICIAN

A Product Assembly Technician is responsible to check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Develop assembly and test procedures to promote production of quality products
4. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
5. Check all log books are maintained according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform pre-assembly activities according to product assembly procedure
8. Conduct product testing and performance testing and record the results
9. Perform final checks and adjustments for any defects to check high quality products
10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Order and stock materials and supplies to avoid materials shortages
12. Implement preventive maintenance procedures to avoid any breakdowns and failures
13. Maintain work area clean, safe and orderly





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 4

PRODUCT ASSEMBLY ASSISTANT ENGINEER

A Product Assembly Assistant Engineer is responsible to assist Product Assembly Engineer in check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and overseas production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Identifies opportunities and offers commercially sound solutions to design related concerns
4. Provides accurate and thorough analysis of CAD files received from the customer
5. Participate in cost reduction activities as it applies to product
6. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
7. Participate in finding design solutions for product concerns
8. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
9. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
10. Implement continuous improvement and lean manufacturing process





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 5

PRODUCT ASSEMBLY ENGINEER

A Product Assembly Engineer is responsible to check that integration of sub components to become a desired product are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, producibility, quality, performance, reliability, serviceability and user features that meet division and customer requirements
3. Improves performance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improve effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identifies opportunities and offers commercially sound solutions to design related concerns
7. Provides accurate and thorough analysis of CAD files received from the customer



8. Leads the Engineering team in the development and implementation of ideas to help offset customer expectations
9. Participate in cost reduction activities as it applies to product
10. Develop accurate component level prints with proper application to check overall assembly requirements are met
11. Lead the Engineering team in arriving at design solutions for product concerns
12. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
13. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
14. Implement continuous improvement and lean manufacturing process





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 6

CONSUMER ELECTRONIC PRODUCT ASSEMBLY MANAGER

A Consumer Electronic Product Assembly Manager is responsible to check that the total management and production the raw material are prepared according to the Standard Operating Procedures and Quality Requirements prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Confer with management, product assembly engineers, and marketing staff to discuss on product throughput, specifications and procedures
2. Coordinate and direct subordinate, making detailed plans to accomplish goals and directing the integration of technical activities
3. Analyse technology, resource needs, and market demand, to plan and assess production capability and production throughput
4. Plan and direct the installation, testing, operation, maintenance, and repair of facilities and equipment
5. Direct, review, and approve production parameters and changes



6. Recruit employees assign, direct, and evaluate their work and oversee the development and maintenance of staff competence
7. Carry out product design as required by customers and clients, the full functional of such devices
8. Design the whole production line in relation to new circuit design or latest technology application
9. Reconfigure and determine new parameters and adjusts various equipment controls to regulate operating conditions in order to meet new design parameters





CONSUMER ELECTRONICS

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - PRODUCT ASSEMBLY

LEVEL 7

CONSUMER ELECTRONIC PRODUCT ASSEMBLY SPECIALIST

A Consumer Electronic Product Assembly Specialist is designated to manage the entire assembly resources to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure. To achieve division goals and contribute towards realisation of the overall companys P& L.

In particular the person will:

1. Carry out management of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Motivate,drive and achieved the organization planned target
3. Setup up manufacturing policy and divisonal goals
4. Drive New Project.and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Setup up strategic objectives
7. Approve department Budget and management organization chart
8. Drive and approve succession planning policy of departments team and its members
9. Approve Quality Manual and other company wide improvement program on behalf of the company





CONSUMER ELECTRONIC

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - QUALITY MANAGEMENT

(QUALITY CONTROL)

LEVEL 4

QUALITY CONTROL ASSISTANT ENGINEER

A Quality Control Assistant Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations.He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. To send and receive all tools, equipments, testers, jigs, tool & die to be calibrate and update Calibration Master Schedule
3. Updated control chart
4. Update process control point
5. Follow written procedure to avoid NCR to the QS/ISO standards
6. Follow up closure of NCRs
7. Pqarticipate in Continuous Improvement activities





CONSUMER ELECTRONIC

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - QUALITY MANAGEMENT

(QUALITY CONTROL)

LEVEL 5

QUALITY CONTROL ENGINEER

A Quality Control Engineer is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Monitor Calibration Master Schedule for all tools, equipments, testers, jigs, tool & die
3. Evaluate and verify updated control chartupdated control chart
4. Monitor plant wide quality marks
5. Implement company policy for plant wide
6. Evaluate setup and monitor process control point
7. Conduct Internal Audits to define conformance to QS/ISO standards
8. Investigate closure of NCRs
9. Lead continuous improvement activities





CONSUMER ELECTRONIC

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - QUALITY MANAGEMENT

(QUALITY ASSURANCE)

LEVEL 4

QUALITY ASSURANCE ASSISTANT ENGINEER

A Quality Assurance Assistant Engineer assist in the execution, implementation of the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out quality system implementation assessment
2. Collect quality assurance data on product, process and equipment and prepare summarise report
3. Carry out technical evaluation with Production and Technical personnel for quality improvement and countermeasures to correct non conformance issues
4. Assist in writing quality assurance procedures and education program materials for lead training sessions
5. Carry out monitoring and assessment on quality assurance procedures implementation





CONSUMER ELECTRONIC PRODUCT ASSEMBLY
QUALITY MANAGEMENT - QUALITY ASSURANCE

LEVEL 5

QUALITY ASSURANCE ENGINEER

A Quality Assurance Engineer execute, implement and assured the quality plan of the the respective process/departments are met. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Enforce implementation of quality system and evaluate its effectiveness
2. Determine noncompliance activities and coordinate rectification requirements
3. Review and analyse product, process and equipment quality data
4. Evaluate and verify technical evaluation report and coordinate rectification action
5. Assist in developing continuing professional education program materials lead training sessions
6. Mentor staff in areas requiring quality related improvement to otherwise contribute to their professional development
7. Lead continuous improvement activities





CONSUMER ELECTRONIC

CONSUMER ELECTRONIC PRODUCT ASSEMBLY - QUALITY MANAGEMENT

LEVEL 6

QUALITY MANAGEMENT MANAGER

A Quality Management Manager is responsible to plan, control and driver the company quality and product assurance including internal and external audits and recommendations. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Directly managed all the resources in the department including people, materials and tools & equipment in Quality Assurance Department
2. Conduct orientation training of production employees
3. Implement company policy for plant wide
4. Prepare budget for the department
5. Carry out Training Need Analysis and coordinate staff development program
6. Conduct Internal Audits to define conformance to QS/ISO standards
7. Review closure of NCRs
8. Coordinate resource allocation to departmental unit
9. Lead Continuous Improvement activities
10. Enforce implementation of quality system and evaluate its effectiveness
11. Determine noncompliance activities and coordinate rectification requirements
12. Review and analyses product, process and equipment quality data





MEDICAL ELECTRONIC

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible to responsible in providing supprt in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





MEDICAL ELECTRONIC

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Performs any combination of following tasks involved in cleaning, sorting, breaking, weighing, and also packaging chunks of silicon for crystal growing
2. Sandblasts chunks of silicon or immerses chunks in cleaning tanks to remove contaminants
3. Breaks chunks of silicon into pieces of specified size, using hammer
4. Tests as well as sorts silicon pieces according to resistivity type level, using resistivity device or meter
5. Weighs out specified amounts of silicon to prepare charges specified amounts of materials for crystal growing process, loads silicon into charge can, and also records identifying information on label of charge can
6. Transfer finished silicon chunks to crystal growing department
7. Adhere with Safety, Health & Environment (SHE) procedures





MEDICAL ELECTRONIC

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





MEDICAL ELECTRONIC

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budget, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 2

MEDICAL EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN

A Medical Equipment Assembly Process Assistant Technician is responsible to carry out assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to established specifications and instructions
2. Assist in equipment calibration and adjustments using testing instruments
3. Adhere to assembly and test procedures to promote production of quality products
4. Check equipment and report any problems or substandard condition to the supervisor
5. Record log books according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform cleaning of all parts as per established cleaning procedures
8. Carry out pre-assembly activities according to product assembly procedure
9. Assist in product testing and performance testing
10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Receive, unload, unpack and transfer materials to different work stations
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 3

MEDICAL EQUIPMENT ASSEMBLY PROCESS TECHNICIAN

A Medical Equipment Assembly Process Technician is responsible to carry out supervision activities on assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Develop assembly and test procedures to promote production of quality products
4. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
5. Check all log books are maintained according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform pre-assembly activities according to product assembly procedure
8. Conduct product testing and performance testing and record the results
9. Perform final checks and adjustments for any defects to check high quality products
10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Order and stock materials and supplies to avoid materials shortages
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 4

MEDICAL EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER

A Medical Equipment Assembly Process Assistant Engineer Overse is responsible to handle product assembly proses including inspection, testing and quality control according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and over sees production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Provides accurate and thorough analysis of CAD files
4. Participate in cost reduction activities as it applies to product
5. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
6. Participate in finding design solutions for product concerns
7. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
8. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
9. Implement continuous improvement and lean manufacturing process





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 5

MEDICAL EQUIPMENT ASSEMBLY PROCESS ENGINEER

A Medical Equipment Assembly Process Engineer Overse is responsible to manage product assembly operation including technical aspect, assembly operation management and clients management. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, productibility, quality, performance, reliability, serviceability and user features that meet division and customer requirements
3. Carry out analysis in improving performance and design of existing products and monitor production and packaging of the final productperformance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improvement effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identify opportunities and offers commercially sound solutions to design related concerns



7. Leads the Engineering team in the development and implementation of ideas to help offset customer expectations
8. Participate in cost reduction activities
9. Develop accurate component level prints with proper application to check overall assembly requirements are met
10. Lead the Engineering team for design solutions for product concerns
11. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
12. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
13. Implement continuous improvement and lean manufacturing process





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 6

MEDICAL EQUIPMENT ASSEMBLY PROCESS MANAGER

A Medical Equipment Assembly Process Manager is responsible to oversee the operation management of assembly/manufacturing facility including safety, quality, production volume, costs, and operation team and support staff. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Control production operation including output, product quality and maintenance operation
2. Plan, organize, direct the day-to-day operations
3. Control and manage resource allocation
4. Implement cost effective systems of control over capital, operating expenditures, manpower, wages and salaries. Develop and control profits, plans, and budget
5. Coordinate staff recruitment, carry out staff management and staff development program
6. Increase production, assets capacity and flexibility while minimizing unnecessary costs and maintaining current quality standards
7. Implement strategies in alignment with strategic initiatives and provide a clear sense of direction and focus. Maintains effective communication levels and fosters Team Building
8. Evaluate and implement the process of implementing new technologies into production
9. Ensure plant compliance are adhered





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT ASSEMBLY PROCESS

LEVEL 7

MEDICAL EQUIPMENT ASSEMBLY PROCESS SPECIALIST

A Medical Equipment Assembly Process Specialist is designated to manage the entire assembly process to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Evaluate and verify production, quality control, and maintenance report
3. Set up manufacturing policy and divisional goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Approve department Budget and operational planning
7. Drive and approve succession planning policy of departments team and its members
8. Approve production, quality and maintenance procedures and monitor the implementation





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 4

MECHATRONIC ASSISTANT ENGINEER

A Mechatronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 5

MECHATRONIC ENGINEER

A Mechatronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure
9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - ELECTRICAL

LEVEL 4

ELECTRICAL ASSISTANT ENGINEER

An electrical Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - ELECTRICAL

LEVEL 5

ELECTRICAL ENGINEER

An Electrical Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - ELECTRONIC

LEVEL 4

ELECTRONIC ASSISTANT ENGINEER

An Electronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT - ELECTRONIC

LEVEL 5

ELECTRONIC ENGINEER

An Electronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure
9. Coordinate product patent requirements and intellectual property protection



10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 6

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER

A Medical Electronic Research And Development Head Of Department is responsible to manage research project and R&D teams from conceptual design to a complete product inclusive of design, software, firmware and hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Conducts user/ergonomic studies
2. Prepare organization's intellectual property strategy
3. Leads R&D Team
4. Prepare project budgeting, planning and resource planning
5. Provides leadership in design analysis
6. Evaluate product quality in a product's design for usability, reliability, functionality, marketability, and manufacturability
7. Leads product design verification and validation to satisfy product and customer requirement
8. Provides technical support to Unit Business
9. Evaluate and verify R&D documentation and reports as per Company Standard Operating Procedure
10. Creates new Standard Operating Procedures and maintains all relevant Standard Operating Procedures





MEDICAL ELECTRONIC

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 7

MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST

A Medical Electronic Research And Development Specialist is responsible to manage for all the scientific aspects of a research project also design a complete equipment from conceptual to production release of new product inclusive of design, software, firmware or hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Develop new and improved product and process technologies
2. Lead efforts to scale up R&D processes from laboratory to pilot project
3. Provide technical support for full scale implementation.
4. Evaluate, define and steer research projects.
5. Survey existing technical and trade literature to assess technology and develop new ideas for experimental work.
6. Direct R&D Project
7. Suggest alternative approaches and solutions to mechanical, analytical and chemical problems.
8. Model physical phenomena to optimize processes and yield new equipment designs.
9. Implement and troubleshoot pilot plant equipment and procedures to demonstrate improvements.
10. Contribute to the innovation process through the development and justification of new project proposals





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT APPLICATION SUPPORT

LEVEL 4

MEDICAL EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER

A Medical Equipment Application Support Assistant Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions.
6. Provide regular reports for management that measure the effectiveness of the technical support function





MEDICAL ELECTRONIC

MEDICAL EQUIPMENT APPLICATION SUPPORT

LEVEL 5

MEDICAL EQUIPMENT APPLICATION SUPPORT ENGINEER

A Medical Equipment Application Support Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





TELECOMMUNICATION ELECTRONIC

MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

A Material Preparation Assistant Technician is responsible to responsible in providing support in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





TELECOMMUNICATION ELECTRONIC

MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

A Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in preparing raw material for the work of managers, technicians, and other engineers and scientists
2. Analyse causes of product failure and develop solutions
3. Adhere to organisation Standard Operating Procedure and Quality System
4. To check that the production machinery meeting calibration standard
5. Execute Standard Testing Procedures
6. Check other firmware are updated, revised to the latest standard
7. Adhere with telecommunication Standards, term, regulatory bodies, certification and standardization
8. Check all incoming components meeting production quality & specifications
9. Check traceability meeting Company Quality System





TELECOMMUNICATION ELECTRONIC

MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





TELECOMMUNICATION ELECTRONIC

MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material . He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budegt, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 2

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN

A Telecommunication Equipment Assembly Process Assistant Technician is responsible to carry out assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to established specifications and instructions
2. Assist in equipment calibration and adjustments using testing instruments
3. Adhere to assembly and test procedures to promote production of quality products
4. Check equipment and report any problems or substandard condition to the supervisor
5. Record log books according to standard operating procedures
6. Perform cleaning of all parts as per established cleaning procedures
7. Carry out pre-assembly activities according to product assembly procedure
8. Assist in product testing and performance testing
9. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
10. Receive, unload, unpack and transfer materials to different work stations
11. Implement preventive maintenance procedures to avoid any breakdowns and failures





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 3

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS TECHNICIAN

A Telecommunication Equipment Assembly Process Technician is responsible to carry out supervision activities on assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Develop assembly and test procedures to promote production of quality products
4. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
5. Check all log books are maintained according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform pre-assembly activities according to product assembly procedure
8. Conduct product testing and performance testing and record the results
9. Perform final checks and adjustments for any defects to check high quality products



10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Implement preventive maintenance procedures to avoid any breakdowns and failures





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 4

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER

A Telecommunication Equipment Assembly Process Assistant Engineer is responsible to handle product assembly processes including inspection, testing and quality control according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and over sees production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Provides accurate and thorough analysis of CAD files
4. Participate in cost reduction activities as it applies to product
5. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
6. Participate in finding design solutions for product concerns
7. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
8. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
9. Implement continuous improvement and lean manufacturing process





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 5

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS ENGINEER

A Telecommunication Equipment Assembly Process Engineer is responsible to manage product assembly operation including technical aspect, assembly operation management and clients management. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, productibility, quality, performance, reliability, serviceability and user features that meet division and customer requirements
3. Carry out analysis in improving performance and design of existing products and monitor production and packaging of the final productperformance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improvement effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identify opportunities and offers commercially sound solutions to design related concerns
7. Leads the Engineering team in the development and implementation of ideas to help offset customer expectations



8. Participate in cost reduction activities
9. Develop accurate component level prints with proper application to check overall assembly requirements are met
10. Lead the Engineering team for design solutions for product concerns
11. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
12. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
13. Implement continuous improvement and lean manufacturing process





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 6

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS MANAGER

A Telecommunication Equipment Assembly Process Manager is responsible to oversee the operation management of assembly/manufacturing facility including safety, quality, production volume, costs, and operation team and support staff. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Control production operation including output, product quality and maintenance operation
2. Plan, organize, direct the day-to-day operations
3. Control and manage resource allocation
4. Implement cost effective systems of control over capital, operating expenditures, manpower, wages and salaries. Develop and control profits, plans, and budget
5. Coordinate staff recruitment, carry out staff management and staff development program
6. Increase production, assets capacity and flexibility while minimizing unnecessary costs and maintaining current quality standards
7. Implement strategies in alignment with strategic initiatives and provide a clear sense of direction and focus. Maintains effective communication levels and fosters Team Building
8. Evaluate and implement the process of implementing new technologies into production
9. Ensure plant compliance are adhered





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS

LEVEL 7

TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS SPECIALIST

A Telecommunication Equipment Assembly Process Specialist is designated to manage the entire assembly process to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure

In particular the person will:

1. Manage of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Evaluate and verify production, quality control, and maintenance report
3. Setup manufacturing policy and divisonal goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Approve department Budget and operational planning
7. Drive and approve succession planning policy of departments team and its members
8. Approve production, quality and maintenance procedurees and monitor the implementation





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 4

MECHATRONIC ASSISTANT ENGINEER

A Mechatronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 5

MECHATRONIC ENGINEER

An Mechatronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT - ELECTRICAL

LEVEL 4

ELECTRICAL ASSISTANT ENGINEER

An Electrical Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT ELECTRICAL

LEVEL 5

ELECTRICAL ENGINEER

An Electrical Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT

LEVEL 4

TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER

A Telecommunication Equipment Application Support Assistant Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT

LEVEL 5

TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT ENGINEER

A Telecommunication Equipment Application Support Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 6

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER

A Telecommunication Electronic Research And Development Head Of Department is responsible to manage research project and R&D teams from conceptual design to a complete product inclusive of design, software, firmware and hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Conducts user/ergonomic studies
2. Prepare organization's intellectual property strategy
3. Leads R&D Team
4. Prepare project budgeting, planning and resource planning
5. Provides leadership in design analysis
6. Evaluate product quality in a product's design for usability, reliability, functionality, marketability, and manufacturability
7. Leads product design verification and validation to satisfy product and customer requirement
8. Provides technical support to Unit Business
9. Evaluate and verify R&D documentation and reports as per Company Standard Operating Procedure
10. Creates new Standard Operating Procedures and maintains all relevant Standard Operating Procedures
- 11.





TELECOMMUNICATION ELECTRONIC

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 7

TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST

An Telecommunication Electronic Research And Development Specialist is responsible to manage for all the scientific aspects of a research project also design a complete equipment from conceptual to production release of new product inclusive of design, software, firmware or hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Develop new and improved product and process technologies
2. Lead efforts to scale up R&D processes from laboratory to pilot project
3. Provide technical support for full scale implementation.
4. Evaluate, define and steer research projects.
5. Survey existing technical and trade literature to assess technology and develop new ideas for experimental work.
6. Direct R&D Project
7. Suggest alternative approaches and solutions to mechanical, analytical and chemical problems.
8. Model physical phenomena to optimize processes and yield new equipment designs.
9. Implement and troubleshoot pilot plant equipment and procedures to demonstrate improvements.
10. Contribute to the innovation process through the development and justification of new project proposals





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

Material Preparation Assistant Technician is responsible to responsible in providing supprt in material preparation activity. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures

In particular the person will:

1. Provide support in material preparation activities
2. Carry out work area housekeeping
3. Carry out material preparation tools and equipment maintenance and storage
4. Adhere to Safety, Health & Environment (SHE) procedures and practice





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - MATERIAL PREPARATION

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in preparing raw material for the work of managers, technicians, and other engineers and scientists
2. Analyse causes of product failure and develop solutions
3. Check all Standard Operating Procedures and Quality System being executed
4. To check that the production machinery meeting calibration standard
5. Execute Standard Testing Procedures
6. Maintain Programming Machine for Bios & Software Version
7. Check other firmware are updated, revised to the latest standard
8. Familiar with Automotive Standards, term, regulatory bodies, certification and standardization
9. Check all incoming components meeting production quality & specifications
10. Check traceability meeting Company Quality System





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - MATERIAL PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material . He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budegt, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 2

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN

An Automotive Equipment Assembly Process Assistant Technician is responsible to is responsible to carry out assembly proses according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to established specifications and instructions
2. Assist in equipment calibration and adjustments using testing instruments
3. Adhere to assembly and test procedures to promote production of quality products
4. Check equipment and report any problems or substandard condition to the supervisor
5. Record log books according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform cleaning of all parts as per established cleaning procedures
8. Carry out pre-assembly activities according to product assembly procedure
9. Assist in product testing and performance testing



10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Receive, unload, unpack and transfer materials to different work stations
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 3

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS TECHNICIAN

An Automotive Equipment Assembly Process Technician Technician is responsible to carry out supervision activities on assembly proses according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Develop assembly and test procedures to promote production of quality products
4. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
5. Check all log books are maintained according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform pre-assembly activities according to product assembly procedure
8. Conduct product testing and performance testing and record the results
9. Perform final checks and adjustments for any defects to check high quality products
10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Order and stock materials and supplies to avoid materials shortages
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 4

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER

An Automotive Equipment Assembly Process Assistant Engineer is responsible to handle product assembly processes including inspection, testing and quality control according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and over sees production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Provides accurate and thorough analysis of CAD files
4. Participate in cost reduction activities as it applies to product
5. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
6. Participate in finding design solutions for product concerns
7. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
8. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
9. Implement continuous improvement and lean manufacturing process





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 5

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS ENGINEER

Automotive Equipment Assembly Process Engineer is responsible to manage product assembly operation including technical aspect, assembly operation management and clients management. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, producibility, quality, performance, reliability, serviceability and user features that meet division and customer requirement
3. Carry out analysis in improving performance and design of existing products and monitor production and packaging of the final product performance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improvement effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identifoy opportunities and offers commercially sound solutions to design related concerns
7. Leads the engineering team in the development and implementation of ideas to help offset customer expectations
8. Participate in cost reduction activities



9. Develop accurate component level prints with proper application to check overall assembly requirements are met
10. Lead the Engineering team for design solutions for product concerns
11. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
12. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
13. Implement continuous improvement and lean manufacturing process





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 6

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS MANAGER

An Automotive Equipment Assembly Process Manager is responsible to oversee the operation management of assembly/manufacturing facility including safety, quality, production volume, costs, and operation team and support staff. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Control production operation including output, product quality and maintenance operation
2. Plan, organize, direct the day-to-day operations
3. Control and manage resource allocation
4. Implement cost effective systems of control over capital, operating expenditures, manpower, wages and salaries. Develop and control profits, plans, and budget
5. Coordinate staff recruitment, carry out staff management and staff development program
6. Increase production, assets capacity and flexibility while minimizing unnecessary costs and maintaining current quality standards
7. Implement strategies in alignment with strategic initiatives and provide a clear sense of direction and focus. Maintains effective communication levels and fosters Team Building
8. Evaluate and implement the process of implementing new technologies into production
9. Ensure plant compliance are adhered





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 7

AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS SPECIALIST

An Automotive Equipment Assembly Process Specialist Specialist is designated to manage the entire assembly process to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Evaluate and verify production, quality control, and maintenance report
3. Setup manufacturing policy and divisonal goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Approve department Budget and operational planning
7. Drive and approve succession planning policy of departments team and its members
8. Approve production, quality and maintenance procedures and monitor the implementation





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)

LEVEL 4

MECHATRONIC ASSISTANT ENGINEER

A Mechatronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATONIC)

LEVEL 5

MECHATRONIC ENGINEER

Mechatronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)

LEVEL 4

ELECTRICAL ASSISTANT ENGINEER

An Electrical Assistant Engineer is responsible in carry out development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)

LEVEL 5

ELECTRICAL ENGINEER

An Electrical Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure
9. Coordinate product patent requirements and intellectual property protection



10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)

LEVEL 4

ELECTRONIC ASSISTANT ENGINEER

An Electronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)

LEVEL 5

ELECTRONIC ENGINEER

An Electronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





AUTOMOTIVE ELECTRONIC

AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT

LEVEL 4

AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER

Automotive Equipment Application Support Assistant Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she (SHE) also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





AUTOMOTIVE ELECTRONIC

AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT

LEVEL 5

AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT ENGINEER

Automotive Equipment Application Support Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-arounds and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT RESEARCH AND DEVELOPMENT

LEVEL 6

AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER

An Automotive Electronic Research And Development Head Of Department is responsible to manage research project and R&D teams from conceptual design to a complete product inclusive of design, software, firmware and hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Conducts user/ergonomic studies
2. Prepare organization's intellectual property strategy
3. Leads R&D Team
4. Prepare project budgeting, planning and resource planning
5. Provides leadership in design analysis
6. Evaluate product quality in a product's design for usability, reliability, functionality, marketability, and manufacturability
7. Leads product design verification and validation to satisfy product and customer requirement
8. Provides technical support to Unit Business
9. Evaluate and verify R&D documentation and reports as per Company Standard Operating Procedure
10. Creates new Standard Operating Procedures and maintains all relevant Standard Operating Procedures





INDUSTRIAL ELECTRONIC

AUTOMOTIVE ELECTRONIC - AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS

LEVEL 7

AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST

An Automotive Electronic Research And Development Specialist is responsible to manage for all the scientific aspects of a research project also design a complete equipment from conceptual to production release of new product inclusive of design, software, firmware or hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Develop new and improved product and process technologies
2. Lead efforts to scale up R&D processes from laboratory to pilot project
3. Provide technical support for full scale implementation.
4. Evaluate, define and steer research projects.
5. Survey existing technical and trade literature to assess technology and develop new ideas for experimental work.
6. Direct R&D Project
7. Suggest alternative approaches and solutions to mechanical, analytical and chemical problems.
8. Model physical phenomena to optimize processes and yield new equipment designs.
9. Implement and troubleshoot pilot plant equipment and procedures to demonstrate improvements.
10. Contribute to the innovation process through the development and justification of new project proposals





INDUSTRIAL ELECTRONIC

INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC - MATERIAL PREPARATION

LEVEL 2

MATERIAL PREPARATION ASSISTANT TECHNICIAN

Material Preparation Assistant Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in preparing raw material for the work of managers, technicians, and other engineers and scientists
2. Analyse causes of product failure and develop solutions
3. Check all Standard Operating Procedures and Quality System being executed
4. To check that the production machinery meeting calibration standard
5. Execute Standard Testing Procedures
6. Maintain Programming Machine for Bios & Software Version
7. Check other firmware are updated, revised to the latest standard
8. Familiar with ICT Standards, term, regulatory bodies, certification and standardization
9. Check all incoming components meeting production quality & specifications
10. Check traceability meeting Company Quality System





INDUSTRIAL ELECTRONIC

**INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC - MATERIAL
PREPARATION**

LEVEL 3

MATERIAL PREPARATION TECHNICIAN

Material Preparation Technician is responsible to prepare on the raw material for shift/daily production use prior to next process and will be reporting to the next level. He or she also required to comply with company company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist in preparing raw material for the work of managers, technicians, and other engineers and scientists
2. Analyse causes of product failure and develop solutions
3. Check all Standard Operating Procedures and Quality System being executed
4. To check that the production machinery meeting calibration standard
5. Execute Standard Testing Procedures
6. Maintain Programming Machine for Bios & Software Version
7. Check other firmware are updated, revised to the latest standard
8. Familiar with ICT Standards, term, regulatory bodies, certification and standardization
9. Check all incoming components meeting production quality & specifications
10. Check traceability meeting Company Quality System





INDUSTRIAL ELECTRONIC
INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC - MATERIAL
PREPARATION

LEVEL 4

MATERIAL PREPARATION ASSISTANT ENGINEER

A Material Preparation Assistant Engineer is responsible ensure the material is ready for production including carry out quality inspection and analyse product failure. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Provide information for the preparation of budget proposals
2. Prepare material preparation activities report
3. Monitor how materials perform
4. Analyse product failure
5. Implement and maintain organisation Standard Operating Procedures and Quality System
6. Supervise subordinate work activities
7. Check production machinery operation functionality
8. Carry out material quaklity inspection and prepare report for non compliance materail
9. Adhere with Safety, Health & Environment (SHE) procedure





INDUSTRIAL ELECTRONIC

INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC - MATERIAL PREPARATION

LEVEL 5

MATERIAL PREPARATION ENGINEER

A Material Preparation Engineer is responsible to manage the operation of material preparation unit and ensure production material. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedures, ISO14001, Quality System and other operational Standard Operating Procedures.

In particular the person will:

1. Prepare operational budget, planning and resource requirements
2. Calculate material usage and costing and prepare requisition
3. Supervise the work of managers, technicians, and other engineers and scientists
4. Evaluate and verify material inspection report
5. Coordinate with vendors and suppliers
6. Implement and maintain organisation Standard Operating Procedures and Quality System
7. Adhere with Safety, Health & Environment (SHE) procedure





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 2

ICT EQUIPMENT ASSEMBLY PROCESS ASSISTANT TECHNICIAN

An ICT Equipment Assembly Process Assistant Technician is responsible to carry out assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform simple assembly of products according to established specifications and instructions
2. Assist in equipment calibration and adjustments using testing instruments
3. Adhere to assembly and test procedures to promote production of quality products
4. Check equipment and report any problems or substandard condition to the supervisor
5. Record log books according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform cleaning of all parts as per established cleaning procedures
8. Carry out pre-assembly activities according to product assembly procedure
9. Assist in product testing and performance testing



10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Receive, unload, unpack and transfer materials to different work stations
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 3

ICT EQUIPMENT ASSEMBLY PROCESS TECHNICIAN

An ICT Equipment Assembly Process Technician is responsible to carry out supervision activities on assembly processes according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Perform complex and advanced assembly of products according to established specifications and instructions
2. Perform high precision calibration and advanced adjustments using testing instruments
3. Develop assembly and test procedures to promote production of quality products
4. Monitor the functioning of all equipment and report any problems or substandard condition to the supervisor
5. Check all log books are maintained according to standard operating procedures
6. Perform equipment assembly according to engineering drawings
7. Perform pre-assembly activities according to product assembly procedure
8. Conduct product testing and performance testing and record the results
9. Perform final checks and adjustments for any defects to check high quality products



10. Perform installation, repair, inspection, reassembly, replacing, refitting, and adjusting products as required
11. Order and stock materials and supplies to avoid materials shortages
12. Implement preventive maintenance procedures to avoid any breakdowns and failures





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 4

ICT EQUIPMENT ASSEMBLY PROCESS ASSISTANT ENGINEER

An ICT Equipment Assembly Process Engineer is responsible to handle product assembly processes including inspection, testing and quality control according to determined procedures and product specification. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Analyse potential upgrade of performance and design of existing products and over sees production and packaging of the final product
2. Prepare production reports related to assembly operation
3. Provides accurate and thorough analysis of CAD files
4. Participate in cost reduction activities as it applies to product
5. Assist in developing accurate component level prints with proper application to check overall assembly requirements are met
6. Participate in finding design solutions for product concerns
7. Carry out product analysis to check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
8. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
9. Implement continuous improvement and lean manufacturing process





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 5

ICT EQUIPMENT ASSEMBLY PROCESS ENGINEER

An ICT Equipment Assembly Process Engineer is responsible to manage product assembly operation including technical aspect, assembly operation management and clients management. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Provide technical guidance to assembly teams
2. Provides direction to the Engineering group to check both the division and customer needs are met through cost, productibility, quality, performance, reliability, serviceability and user features that meet division and customer requirements
3. Carry out analysis in improving performance and design of existing products and monitor production and packaging of the final product performance and design of existing products and over sees production and packaging of the final product
4. Provide feedback and direction on management to improvement effectiveness
5. Maintains direct contact with the customer check all questions and concerns related to product are being addressed in a timely manner
6. Identify opportunities and offers commercially sound solutions to design related concerns
7. Leads the Engineering team in the development and implementation of ideas to help offset customer expectations



8. Participate in cost reduction activities
9. Develop accurate component level prints with proper application to check overall assembly requirements are met
10. Lead the Engineering team for design solutions for product concerns
11. Interpret product definition and check all manufacturing methods are complied and capable of manufacturing the product at the intended quality level
12. Coordinate with process, quality, and tooling engineers to develop optimum manufacturing strategy
13. Implement continuous improvement and lean manufacturing process





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 6

ICT EQUIPMENT ASSEMBLY PROCESS MANAGER

An ICT Equipment Assembly Process Manager is responsible to oversee the operation management of assembly/manufacturing facility including safety, quality, production volume, costs, and operation team and support staff. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Control production operation including output, product quality and maintenance operation
2. Plan, organize, direct the day-to-day operations
3. Control and manage resource allocation
4. Implement cost effective systems of control over capital, operating expenditures, manpower, wages and salaries. Develop and control profits, plans, and budget
5. Coordinate staff recruitment, carry out staff management and staff development program
6. Increase production, assets capacity and flexibility while minimizing unnecessary costs and maintaining current quality standards
7. Implement strategies in alignment with strategic initiatives and provide a clear sense of direction and focus. Maintains effective communication levels and fosters Team Building
8. Evaluate and implement the process of implementing new technologies into production
9. Ensure plant compliance are adhered





INFORMATION & COMMUNICATION TECHNOLOGY (ICT)

ICT EQUIPMENT ASSEMBLY PROCESS

LEVEL 7

ICT EQUIPMENT ASSEMBLY PROCESS SPECIALIST

An ICT Equipment Assembly Process Specialist is designated to manage the entire assembly process to meet the company management objectives namely the productivity and quality as well as the P&L of the division. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage of all divisional resources to achieve departmental budget and contribute towards companys P&L
2. Evaluate and verify production, quality control, and maintenance report
3. Setup manufacturing policy and divisonal goals
4. Drive New Project and New Product Rollout for the department
5. Drive Department Productivity and Quality Improvement activities
6. Approve department Budget and operational planning
7. Drive and approve succession planning policy of departments team and its members
8. Approve production, quality and maintenance procedures and monitor the implementation





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 4

MECHATRONIC ASSISTANT ENGINEER

A Mechatronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT ELECTRONIC RESEARCH AND DEVELOPMENT - MECHATRONIC

LEVEL 5

MECHATRONIC ENGINEER

A Mechatronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





ICT ELECTRONIC RESEARCH AND DEVELOPMENT

ICT ELECTRONIC RESEARCH AND DEVELOPMENT – ELECTRICAL

LEVEL 4

ELECTRICAL ASSISTANT ENGINEER

An Electrical Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)

LEVEL 5

ELECTRICAL ENGINEER

An Electrical Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT RESEARCH AND DEVELOPMENT (ELECTRONIC)

LEVEL 4

ELECTRONIC ASSISTANT ENGINEER

An Electronic Assistant Engineer is responsible in carry our development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out project literature and technology study
2. Carry out data collection and prepare summarisation report
3. Assist in product development and the design
4. Communicate and work closely with the Industry Partners
5. Prepare scientific reports for mechatronic operation on design
6. Built product prototype according to determined specification
7. Participate in the definition of research directions and any other research activities as required.
8. Conduct functionality testing on mechanical operation of the design
9. Prepare product initial testing and field testing report
10. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT RESEARCH AND DEVELOPMENT- ELECTRONIC

LEVEL 5

ELECTRONIC ENGINEER

An Electronic Engineer is responsible in designing, development, testing and study on medical electronic product focusing on the mechanical function of the product. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Carry out user/ergonomic studies with clinical professionals during the product development process in pursuit of user-based product design excellence
2. Implement organization's intellectual property strategy by documenting data and independent, unique and patentable ideas that result from experimentations and concept generation activities
3. Conduct research for the design and development of new product
4. Analyse product's design for usability, reliability, functionality, marketability, and manufacturability
5. Researches new technology and equipment for possible new product development
6. Evaluate product design to satisfy product and customer requirement
7. Carry out analysis on Design to Cost and Design for Manufacturability
8. Prepare design and development documentation as per Company Standard Operating Procedure



9. Coordinate product patent requirements and intellectual property protection
10. Control R&D project costing and scheduling
11. Adhere to with Electronic and Medical Standards, term, regulatory bodies, certification and standardization





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT APPLICATION SUPPORT

LEVEL 4

ICT EQUIPMENT APPLICATION SUPPORT ASSISTANT ENGINEER

An ICT Equipment Application Support Assistant Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she also required to comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Assist manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviors to determine the problem root-cause(s), issue work-around and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT EQUIPMENT APPLICATION SUPPORT

LEVEL 5

ICT EQUIPMENT APPLICATION SUPPORT ENGINEER

An ICT Equipment Application Support Engineer work closely with cross-functional team members from Support, Product, Quality Assurance, Engineering, and Business to identify solutions to customer issues and work towards product fixes and enhancements, and will be reporting to the next level. He or she is also required to comply with company policies such as Safety, Health & Environment (SHE), ISO14001, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Manage customer support cases on a daily basis, including verifying cases, isolating and diagnosing the problem, and resolving the issue where possible
2. Provide technical support to clients, partners, sales engineers and post-sales consultants via telephone, email and the web
3. Reproduce product behaviours to determine the problem root-cause(s), issue work-around and solutions
4. Coordinate with Quality Assurance, Engineering, and Product teams to provide assistance in identifying, reporting and resolving customer-impacting product issues
5. Author, edit, publish and maintain an on-line knowledge base of known issues/solutions
6. Provide regular reports for management that measure the effectiveness of the technical support function





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC - ICT ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 6

ICT ELECTRONIC RESEARCH AND DEVELOPMENT MANAGER

An ICT Electronic Research And Development Head Of Department is responsible to manage research project and R&D teams from conceptual design to a complete product inclusive of design, software, firmware and hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Conduct user/ergonomic studies
2. Prepare organization's intellectual property strategy
3. Leads R&D Team
4. Prepare project budgeting, planning and resource planning
5. Provide leadership in design analysis
6. Evaluate product quality in a product's design for usability, reliability, functionality, marketability, and manufacturability
7. Lead product design verification and validation to satisfy product and customer requirement
8. Provide technical support to Business Unit
9. Evaluate and verify R&D documentation and reports as per Company Standard Operating Procedure
10. Create new Standard Operating Procedures and maintains all relevant Standard Operating Procedures





INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC

ICT ELECTRONIC RESEARCH AND DEVELOPMENT

LEVEL 7

ICT ELECTRONIC RESEARCH AND DEVELOPMENT SPECIALIST

An ICT Electronic Research And Development Specialist is responsible to manage for all the scientific aspects of a research project also design a complete equipment from conceptual to production release of new product inclusive of design, software, firmware or hardware. He or she also required to comply with company policies such as Safety, Health & Environment (SHE) procedure, ISO14001, TS16949, Quality System and other operational Standard Operating Procedure.

In particular the person will:

1. Develop new and improved product and process technologies
2. Lead efforts to scale up R&D processes from laboratory to pilot project
3. Provide technical support for full scale implementation.
4. Evaluate, define and steer research projects.
5. Survey existing technical and trade literature to assess technology and develop new ideas for experimental work.
6. Direct R&D Project
7. Suggest alternative approaches and solutions to mechanical, analytical and chemical problems.



8. Model physical phenomena to optimize processes and yield new equipment designs.
9. Implement and troubleshoot pilot plant equipment and procedures to demonstrate improvements.
10. Contribute to the innovation process through the development and justification of new project proposals



4.4 Electrical and Electronics Industry Occupational Area Structure (OAS)

The Occupational Area Structure is done so that the current job titles in the industry are translated into the job scope required of the personnel. In doing so, candidates are expected to have better employment prospects, as there will be no mismatch of job titles to expected job competencies. This is because different organisations use different job titles. Certification will also be able to reflect the job competencies correctly and avoid confusion of job scope based on job titles.

In this study for Electrical & Electronics industry, the Occupational Area Structure is extracted from the Occupational Structures. For most of the areas, during the Occupational Area Analysis, the Level 1 job areas could be merged and embedded into level 2 competencies. In terms of merging between job areas vertically, the panel members had gone over each job area and agreed that only job areas that had the similar skill set differentiated by slightly higher or lower certification or competency level could be merged.

Tables 4.1 to 4.12 illustrates the Occupational Area Structure of the Electrical and Electronics Industry.



SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	THERMAL PLANT OPERATION					
	PROCESS TREATMENT	OPERATION CONTROL		PLANT MAINTENANCE		
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	- NO LEVEL -	THERMAL PLANT MANAGEMENT				
LEVEL 6	- NO LEVEL -	THERMAL PLANT OPERATION MANAGEMENT		PRODUCTION MAINTENANCE MANAGEMENT		
LEVEL 5	PROCESS TREATMENT OPERATION	CONTROL ROOM OPERATION	PLANT OPERATION CONTROL	ELECTRICAL MAINTENANCE MANAGEMENT	MECHANICAL MAINTENANCE MANAGEMENT	INSRUMENTATION & CONTROL MAINTENANCE
LEVEL 4	PROCESS TREATMENT OPERATION	CONTROL ROOM OPERATION	PLANT OPERATION CONTROL	ELECTRICAL MAINTENANCE ADMINISTRATION	MECHANICAL MAINTENANCE ADMINISTRATION	INSRUMENTATION & CONTROL MAINTENANCE
LEVEL 3	- NO LEVEL -	CONTROL ROOM OPERATION MONITORING	PLANT OPERATION	ELECTRICAL MAINTENANCE	MECHANICAL MAINTENANCE	INSRUMENTATION & CONTROL MAINTENANCE
LEVEL 2	- NO LEVEL -	- NO LEVEL -	PLANT OPERATION	ELECTRICAL MAINTENANCE	MECHANICAL MAINTENANCE	INSRUMENTATION & CONTROL MAINTENANCE
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 4.1: OAS of Electrical Sector, Sub Sector Power Plant Operation, Job Area Thermal Plant Operation



SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	HYDRO PLANT OPERATION					
	OPERATION CONTROL		PRODUCTION MAINTENANCE			GROUPS MAINTENANCE
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	HYDRO PLANT MANAGEMENT					
LEVEL 6	OPERATION MANAGEMENT		PRODUCTION MAINTENANCE MANAGER			GROUPS MAINTENANCE MANAGEMENT
LEVEL 5	CONTROL ROOM MANAGEMENT	PLANT OPERATION MANAGEMENT	ELECTRICAL MAINTENANCE MANAGEMENT	MECHANICAL MAINTENANCE MANAGEMENT	INSRUMENTATION & CONTROL MAINTENANCE	GROUPS MAINTENANCE MANAGEMENT
LEVEL 4	CONTROL ROOM MANAGEMENT	PLANT OPERATION MANAGEMENT	ELECTRICAL MAINTENANCE MANAGEMENT	MECHANICAL MAINTENANCE MANAGEMENT	INSRUMENTATION & CONTROL MAINTENANCE MANAGEMENT	GROUPS MAINTENANCE MANAGEMENT
LEVEL 3	CONTROL ROOM OPERATION SUPERVISION	PLANT OPERATION SUPERVISION	ELECTRICAL MAINTENANCE OPERATION SUPERVISION	MECHANICAL MAINTENANCE OPERATION SUPERVISION	INSRUMENTATION & CONTROL MAINTENANCE OPERATION SUPERVISION	GROUPS MAINTENANCE OPERATION SUPERVISION
LEVEL 2	- NO LEVEL -	PLANT OPERATION	ELECTRICAL MAINTENANCE OPERATION	MECHANICAL MAINTENANCE OPERATION	INSRUMENTATION & CONTROL MAINTENANCE OPERATION	GROUPS MAINTENANCE OPERATION
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 4.2: OAS of Electrical Sector, Sub Sector Power Plant Operation, Job Area Hydro Plant Operation



SECTOR	ELECTRICAL INDUSTRY					
SUB SECTOR	POWER PLANT OPERATION					
JOB AREA	INTERNAL COMBUSTION ENGINE (ICE) PLANT OPERATION AND MAINTENANCE		SOLAR PHOTOVOLTAIC PLANT OPERATION		WIND TURBINE PLANT OPERATION AND MAINTENANCE	
			SOLAR PHOTOVOLTAIC DESIGN	SOLAR PHOTOVOLTAIC INSTALLATION. OPERATION & MAINTENANCE		
LEVEL 8	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -
LEVEL 7	INTERNAL COMBUSTION ENGINE PLANT MANAGEMENT		SOLAR PHOTOVOLTAIC PLANT MANAGEMENT		WIND TURBINE PLANT MANAGEMENT	
LEVEL 6	INTERNAL COMBUSTION ENGINE OPERATION MANAGEMENT		SOLAR PHOTOVOLTAIC OPERATION MANAGEMENT		WIND TURBINE OPERATION MANAGEMENT	
LEVEL 5	INTERNAL COMBUSTION ENGINE MANAGEMENT		SOLAR PHOTOVOLTAIC DESIGNING	SOLAR PHOTOVOLTAIC MANAGEMENT	WIND TURBINE MANAGEMENT	
LEVEL 4	INTERNAL COMBUSTION ENGINE ADMINISTRATION		SOLAR PHOTOVOLTAIC DESIGNING	SOLAR PHOTOVOLTAIC ADMINISTRATION	WIND TURBINE ADMINISTRATION	
LEVEL 3	INTERNAL COMBUSTION ENGINE OPERATION (MECHANICAL)	INTERNAL COMBUSTION ENGINE OPERATION (ELECTRICAL)	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE OPERATION		WIND TURBINE OPERATION (MECHANICAL)	WIND TURBINE OPERATION (ELECTRICAL)
LEVEL 2	INTERNAL COMBUSTION ENGINE OPERATION (MECHANICAL)	INTERNAL COMBUSTION ENGINE OPERATION (ELECTRICAL)	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE OPERATION		WIND TURBINE OPERATION (MECHANICAL)	WIND TURBINE OPERATION (ELECTRICAL)
LEVEL 1	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -	- NO LEVEL -

Table 4.3: OAS of Electrical Sector, Sub Sector Power Plant Operation, Job Area Internal Combustion Engine, Solar Photovoltaic & Wind Turbine



SECTOR	ELECTRICAL INDUSTRY	
SUB SECTOR	ELECTRICAL INSTALLATION AND MAINTENANCE	
JOB AREA	ELECTRICAL INSTALLATION AND MAINTENANCE	CABLE JOINTING
LEVEL 8	ELECTRICAL PRINCIPAL TECHNOLOGY CONSULTANCY	- NO LEVEL -
LEVEL 7	VERY HIGH TENSION VOLTAGE (132KV) INSTALATION & MAINTENANCE	- NO LEVEL -
LEVEL 6	HIGH TENSION VOLTAGE (33KV) INSTALATION & MAINTENANCE	- NO LEVEL -
LEVEL 5	HIGH VOLTAGE ELECTRICAL INSTALLATION & MAINTENANCE (11KV)	HIGH VOLTAGE CABLE JOINTING (132 KV)
LEVEL 4	LOW VOLTAGE ELECTRICAL INSTALLATION & MAINTENANCE	HIGH VOLTAGE CABLE JOINTING (33 KV)
LEVEL 3	THREE PHASE ELECTRICAL INSTALLATION & MAINTENANCE	HIGH VOLTAGE CABLE JOINTING (11 KV)
LEVEL 2	SINGLE PHASE ELECTRICAL INSTALLATION & MAINTENANCE	LOW VOLTAGE CABLE JOINTING
LEVEL 1	- NO LEVEL -	- NO LEVEL -

Table 4.4: OAS of Electrical Sector, Job Area Electrical Installation & Maintenance and Cable Jointing



SECTOR	ELECTRONICS INDUSTRY						
SUB SECTOR	ELECTRONIC COMPONENT						
JOB AREA	MATERIAL PREPARATION		INGOT AND RAW WAFER PROCESSING			QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	INGOTTNG	CRYSTAL GROWTH	DICING AND POLISHING	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	INGOT AND RAW WAFER PROCESSING PLANNING AND CONTROL			No Level	No Level
LEVEL 6	No Level	No Level	INGOT PROCESSING OPERATION MANAGEMENT	CRYSTAL GROWTH OPERATION MANAGEMENT	DICING AND POLISHING OPERATION MANAGEMENT	QUALITY MANAGEMENT	
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	CHEMICAL PREPARATION OPERATION MANAGEMENT	INGOT OPERATION	CRYSTAL GROWTH OPERATION	DICING AND POLISHING OPERATION	QUALITY CONTROL MANAGEMENT	QUALITY ASSURANCE MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	CHEMICAL PREPARATION OPERATION ADMINISTRATION	INGOT OPERATION	CRYSTAL GROWTH OPERATION	DICING AND POLISHING OPERATION	QUALITY CONTROL INSPECTION OPERATION	QUALITY ASSURANCE INSPECTION OPERATION
LEVEL 3	MATERIAL PREPARATION SUPERVISION	CHEMICAL PREPARATION SUPERVISION	No Level	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	CHEMICAL HANDLING	No Level	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.5: OAS of Electronics Sector, Sub Sector Electronics Components



SECTOR	ELECTRONICS INDUSTRY									
SUB SECTOR	WAFER FABRICATION PRODUCTION									
JOB AREA	MATERIAL PREPARATION		CIRCUIT IMPREGNATION						QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	OXIDATION	DIFFUSION	LITHOGRAPHY	ETCHING	DEPOSITION	CHEMICAL MECHANICAL PLANARISATION (CMP)	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	CIRCUIT IMPREGNATION PRODUCTION PLANNING AND CONTROL						No Level	No Level
LEVEL 6	No Level	No Level	CIRCUIT IMPREGNATION OPERATION MANAGEMENT						QUALITY MANAGEMENT	
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	CHEMICAL PREPARATION OPERATION MANAGEMENT	CIRCUIT IMPREGNATION OPERATION						QUALITY CONTROL MGT.	QUALITY ASSURANCE MGT.
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	CHEMICAL PREPARATION OPERATION ADMINISTRATION	CIRCUIT IMPREGNATION OPERATION						QUALITY CONTROL INSP. OP.	QUALITY ASSURANCE INS.OP.
LEVEL 3	MATERIAL PREPARATION SUPERVISION	CHEMICAL PREPARATION SUPERVISION	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	CHEMICAL HANDLING	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.6: OAS of Electronics Sector, Sub Sector Wafer Fabrication Production



SECTOR	ELECTRONICS INDUSTRY											
SUB SECTOR	SEMICONDUCTOR COMPONENT MANUFACTURING											
JOB AREA	MATERIAL PREPARATION		FRONT OF LINE ASSEMBLY				END OF LINE PROCESS				QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION	SCREEN PRINTING	DIE ATTACHED	WIRE BONDING	ENCAPSULATION	SURFACE FINISH	FORMING & TRIMMING	ENVIRONMENTAL TESTING	FINAL TESTING	QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	SEMICONDUCTOR COMPONENT MANUFACTURING PLANNING AND CONTROL								No Level	No Level
LEVEL 6	No Level	No Level	FRONT OF LINE ASSEMBLY MANUFACTURING OPERATION MANAGEMENT				END OF LINE ASSEMBLY MANUFACTURING OPERATION MANAGEMENT				QUALITY MANAGEMENT	
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	CHEMICAL PREPARATION OPERATION MANAGEMENT	FRONT OF LINE ASSEMBLY OPERATION MANAGEMENT		WIRE BONDING OP. MGT.	ENCAPSULATION OP. MGT.	SURFACE FINISH ENGINEER	FORMING & TRIMMING ENGINEER	ENVIRONMENTAL TESTING ENGINEER	FINAL TESTING ENGINEER	QUALITY CONTROL MGT.	QUALITY ASSURANCE MGT.
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	CHEMICAL PREPARATION OPERATION ADMINISTRATION	FRONT OF LINE ASSEMBLY OPERATION ADMINISTRATION		WIRE BONDING ASSISTANT ENGINEER	ENCAPSULATION ASSISTANT ENGINEER	SURFACE FINISH ASSISTANT ENGINEER	FORMING & TRIMMING ASSISTANT ENGINEER	ENVIRONMENTAL TESTING ASSISTANT ENGINEER	FINAL TESTING ASSISTANT ENGINEER	QUALITY CONTROL INSP. OP.	QUALITY ASSURANCE INS.OP.
LEVEL 3	MATERIAL PREPARATION SUPERVISION	CHEMICAL PREPARATION SUPERVISION	SCREEN PRINTING OP. SPVSN.	DIE ATTACHED OP. SPVSN.	WIRE BONDING OP. SPVSN.	ENCAPSULATION OP. SPVSN.	SURFACE FINISH OP. SPVSN.	FORMING & TRIMMING OP. SPVSN.	ENVIRONMENTAL TESTING OP. SPVSN.	FINAL TESTING TECHNICIAN	No Level	No Level
LEVEL 2	MATERIAL HANDLING	CHEMICAL HANDLING	SCREEN PRINTING OPERATION	DIE ATTACHED OPERATION	WIRE BONDING OPERATION	ENCAPSULATION OPERATION	SURFACE FINISH OPERATION	FORMING & TRIMMING OPERATION	ENVIRONMENTAL TESTING OPERATION	FINAL TESTING OPERATION	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.7: OAS of Electronics Sector, Sub Sector Semiconductor Component Manufacturing



SECTOR	ELECTRONICS INDUSTRY									
SUB SECTOR	ELECTRONIC COMPONENT						CONSUMER ELECTRONIC			
JOB AREA	DISCREET COMPONENT MANUFACTURING					ELECTRONIC COMPONENT RESEARCH AND DEVELOPMENT	CONSUMER ELECTRONIC PRODUCT ASSEMBLY			
	MATERIAL PREPARATION		DISCREET COMPONENT PRODUCTION	QUALITY MANAGEMENT			PRINTED CIRCUIT BOARD ASSEMBLY	PRODUCT ASSEMBLY	QUALITY MANAGEMENT	
	MATERIAL PREPARATION	CHEMICAL PREPARATION		QUALITY CONTROL	QUALITY ASSURANCE				QUALITY CONTROL	QUALITY ASSURANCE
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	No Level	DISCREET COMPONENT PRODUCTION PLANNING & CONTROL	No Level	No Level	ELECTRONIC COMPONENT R&D PLANNING & CONTROL	CONSUMER ELECTRONIC PRODUCT ASSEMBLY PLANNING & CONTROL		No Level	No Level
LEVEL 6	No Level	No Level	DISCREET COMPONENT OPERATION MANAGEMENT	QUALITY OPERATION MANAGEMENT		R&D OPERATION MANAGEMENT	CONSUMER ELECTRONIC PRODUCT ASSEMBLY OPERATION MANAGEMENT		QUALITY MANAGEMENT	
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	CHEMICAL PREPARATION OPERATION MANAGEMENT	DISCREET COMPONENT OPERATION & MANAGEMENT	QUALITY CONTROL MGT.	QUALITY CONTROL MGT.	R&D OPERATION & MANAGEMENT	PRINTED CIRCUIT BOARD ASSEMBLY OPERATION & MANAGEMENT	PRODUCT ASSEMBLY OPERATION & MANAGEMENT	QUALITY CONTROL MANAGEMENT	QUALITY ASSURANCE MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	CHEMICAL PREPARATION OPERATION ADMINISTRATION	DISCREET COMPONENT OPERATION & ADMIN.	QUALITY CONTROL INSP. OP.	QUALITY CONTROL INSP. OP.	R&D OPERATION ADMINISTRATION	PRINTED CIRCUIT BOARD ASSEMBLY OPERATION ADMINISTRATION	PRODUCT ASSEMBLY OPERATION ADMINISTRATION	QUALITY CONTROL INSP. OP.	QUALITY ASSURANCE INSP. OP.
LEVEL 3	MATERIAL PREPARATION SUPERVISION	CHEMICAL PREPARATION SUPERVISION	DISCREET COMPONENT OPERATION & SUPERVISION	No Level	No Level	R&D OPERATION & SUPERVISION	PRINTED CIRCUIT BOARD ASSEMBLY OPERATION & SUPERVISION	PRODUCT ASSEMBLY OPERATION & SUPERVISION	No Level	No Level
LEVEL 2	MATERIAL HANDLING	CHEMICAL HANDLING	DISCREET COMPONENT OPERATION	No Level	No Level	No Level	PRINTED CIRCUIT BOARD ASSEMBLY OPERATION	PRODUCT ASSEMBLY OPERATION	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.8: OAS of Electronics Sector, Sub Sector Electronics Component & Consumer Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	MEDICAL ELECTRONIC					
	MATERIAL PREPARATION	MEDICAL EQUIPMENT ASSEMBLY PROCESS	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT			MEDICAL EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	MEDICAL EQUIPMENT ASSEMBLY PROCESS PLANNING & CONTROL	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT PLANNING & CONTROL			
LEVEL 6	No Level	MEDICAL EQUIPMENT ASSEMBLY PROCESS MANAGEMENT	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT MANAGEMENT			
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	MEDICAL EQUIPMENT ASSEMBLY PROCESS OPERATION MGT.	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	MEDICAL EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	MEDICAL EQUIPMENT ASSEMBLY PROCESS OPERATION ADMINISTRATION	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	MEDICAL ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	MEDICAL EQUIPMENT APPLICATION SUPPORT OPERATION
LEVEL 3	MATERIAL PREPARATION SUPERVISION	MEDICAL EQUIPMENT ASSEMBLY PROCESS SUPERVISION	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	MEDICAL EQUIPMENT ASSEMBLY PROCESS OPERATION	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.9: OAS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Medical Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	TELECOMMUNICATION ELECTRONIC					
	MATERIAL PREPARATION	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT			TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS PLANNING & CONTROL	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT PLANNING & CONTROL			
LEVEL 6	No Level	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS MANAGEMENT	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT MANAGEMENT			
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS OPERATION MANAGEMENT	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS OPERATION ADMINISTRATION	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	TELECOMMUNICATION ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	TELECOMMUNICATION EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 3	MATERIAL PREPARATION SUPERVISION	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS SUPERVISION	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	TELECOMMUNICATION EQUIPMENT ASSEMBLY PROCESS OPERATION	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.10: OAS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Telecommunication Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	AUTOMOTIVE ELECTRONIC					
	MATERIAL PREPARATION	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT			AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS PLANNING & CONTROL	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT PLANNING & CONTROL			
LEVEL 6	No Level	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS MANAGEMENT	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT MANAGEMENT			
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS OPERATION MANAGEMENT	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS OPERATION ADMINISTRATION	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	AUTOMOTIVE ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	AUTOMOTIVE EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 3	MATERIAL PREPARATION SUPERVISION	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS SUPERVISION	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	AUTOMOTIVE EQUIPMENT ASSEMBLY PROCESS OPERATION	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.11: OAS of Electronics Sector, Sub Sector Industrial Electronics, Job Area Automotives Electronics



SECTOR	ELECTRONICS INDUSTRY					
SUB SECTOR	INDUSTRIAL ELECTRONIC					
JOB AREA	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC					
	MATERIAL PREPARATION	ICT EQUIPMENT ASSEMBLY PROCESS	ICT ELECTRONIC RESEARCH AND DEVELOPMENT			ICT EQUIPMENT APPLICATION SUPPORT
			MECHATRONIC	ELECTRICAL	ELECTRONIC	
LEVEL 8	No Level	No Level	No Level	No Level	No Level	No Level
LEVEL 7	No Level	ICT EQUIPMENT ASSEMBLY PROCESS PLANNING & CONTROL	ICT ELECTRONIC RESEARCH AND DEVELOPMENT PLANNING & CONTROL			
LEVEL 6	No Level	ICT EQUIPMENT ASSEMBLY PROCESS MANAGEMENT	ICT ELECTRONIC RESEARCH AND DEVELOPMENT MANAGEMENT			
LEVEL 5	MATERIAL PREPARATION OPERATION MANAGEMENT	ICT EQUIPMENT ASSEMBLY PROCESS OPERATION MANAGEMENT	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	ICT EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 4	MATERIAL PREPARATION OPERATION ADMINISTRATION	ICT EQUIPMENT ASSEMBLY PROCESS OPERATION ADMINISTRATION	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (MECHATRONIC)	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRICAL)	ICT ELECTRONIC RESEARCH AND DEVELOPMENT (ELECTRONIC)	ICT EQUIPMENT APPLICATION SUPPORT MANAGEMENT
LEVEL 3	MATERIAL PREPARATION SUPERVISION	ICT EQUIPMENT ASSEMBLY PROCESS SUPERVISION	No Level	No Level	No Level	No Level
LEVEL 2	MATERIAL HANDLING	ICT EQUIPMENT ASSEMBLY PROCESS OPERATION	No Level	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level	No Level	No Level	No Level

Table 4.12: OAS of Electronics Sector, Sub Sector Industrial Electronics, Job Area ICT Electronics



4.5 Critical Job Titles and Summary of Job Titles

Based on the research that was conducted a total of 291 job titles in the Electrical and Electronic Industry has been identified. Out of the 291 job titles, 43 job titles (Table 5.3) were identified as critical jobs in the Electrical sector while 59 job titles (Table 5.4) were identified as critical jobs in the Electronic sector. Table 5.5 shows the summary of job titles according to sub sectors.

4.6 Conclusion

In the light of recent economic development of the Electrical and Electronics Industry, the demand for sufficient skilled personnel has increased and the development of skilled manpower is timely. By going through the mechanism provided by the Skills Training system in Malaysia, one of the important steps is to identify the Occupational Structure and Occupational Analysis Structure of this sector. With the Occupational Structure and Occupational Analysis Structure clearly defined together with the most critical job titles, the industry stake holders will be able to identify areas that will require more intensive efforts in human capital development. Although there have been past efforts in National Standards Development for the industry, the need for an OA/OAS is required to determine the overall areas that may not yet have been focused on. We can assume that the OA/OAS to be a 'blueprint' of the manpower planning for this sector.

The list of critical job title data is to determine the supply of workers if they are immediately available for critical positions. Determining the supply is important because as the economy rebounds, companies whose growth depends on hiring additional critical-position workers will need a labour supply to source. If low



unemployment levels exist for a critical position, then organizations may not have a reliable supply of workers to fuel growth.

To facilitate reporting, this study grouped similar critical positions into occupations for its analysis. Each critical-position occupation's unemployment rate was evaluated relative to full employment, which is a situation where every qualified worker who wants a job is employed. The findings reveal that of 6 critical-position sub sector selected for the study. Here are four scenarios that employers can expect to encounter for critical positions in a rebounding economy:

- **Higher turnover:** Business leaders can expect rising turnover in critical positions that are pivotal to growth.
- **Longer search periods:** Business leaders can expect longer search periods for critical positions that are pivotal to growth.
- **Lower workforce capabilities:** Business leaders can expect a gradual reduction in critical-position capabilities if managers respond to the prospects of longer search periods by relaxing employment standards to fill open critical positions.
- **Higher compensation:** Business leaders can expect higher compensation costs if managers respond to the prospects of longer search periods by increasing the offer's compensation package. This appears likely in sectors where the critical position requires a higher degree of technical skills and the sector has above-average profit potential.



Table 5.3: List of Critical Job Title for Electrical Industry

NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
1.	THERMAL PLANT OPERATION	CONTROL ROOM TECHNICIAN	3	***
2.	THERMAL PLANT OPERATION	CONTROL ROOM ASSISTANT ENGINEER	4	**
3.	THERMAL PLANT OPERATION	CONTROL ROOM ENGINEER	5	**
4.	THERMAL PLANT OPERATION	PLANT OPERATION ASSISTANT TECHNICIAN	2	***
5.	THERMAL PLANT OPERATION	PLANT OPERATION TECHNICIAN	3	**
6.	THERMAL PLANT OPERATION	PLANT OPERATION ASSISTANT ENGINEER	4	*
7.	THERMAL PLANT OPERATION	PLANT OPERATION ENGINEER	5	*
8.	THERMAL PLANT OPERATION	ELECTRICAL MAINTENANCE ASSISTANT TECHNICIAN	2	**
9.	THERMAL PLANT OPERATION	ELECTRICAL MAINTENANCE TECHNICIAN	3	***
10.	THERMAL PLANT OPERATION	MECHANICAL MAINTENANCE ASSISTANT TECHNICIAN	2	**
11.	THERMAL PLANT OPERATION	MECHANICAL MAINTENANCE TECHNICIAN	3	***
12.	THERMAL PLANT OPERATION	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT TECHNICIAN	2	**
13.	THERMAL PLANT OPERATION	INSRUMENTATION & CONTROL MAINTENANCE TECHNICIAN	3	***
14.	HYDRO PLANT OPERATION	CONTROL ROOM TECHNICIAN	3	***
15.	HYDRO PLANT OPERATION	CONTROL ROOM ASSISTANT ENGINEER	4	**
16.	HYDRO PLANT OPERATION	CONTROL ROOM ENGINEER	5	*
17.	HYDRO PLANT OPERATION	PLANT OPERATION ASSISTANT TECHNICIAN	2	**
18.	HYDRO PLANT OPERATION	PLANT OPERATION TECHNICIAN	3	**



NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
19.	HYDRO PLANT OPERATION	PLANT OPERATION ASSISTANT ENGINEER	4	*
20.	HYDRO PLANT OPERATION	PLANT OPERATION ENGINEER	5	*
21.	HYDRO PLANT OPERATION	ELECTRICAL MAINTENANCE ASSISTANT TECHNICIAN	2	**
22.	HYDRO PLANT OPERATION	ELECTRICAL MAINTENANCE TECHNICIAN	3	**
22.	HYDRO PLANT OPERATION	MECHANICAL MAINTENANCE ASSISTANT TECHNICIAN	2	**
23.	HYDRO PLANT OPERATION	MECHANICAL MAINTENANCE TECHNICIAN	3	**
24.	HYDRO PLANT OPERATION	INSRUMENTATION & CONTROL MAINTENANCE ASSISTANT TECHNICIAN	2	**
25.	HYDRO PLANT OPERATION	INSRUMENTATION & CONTROL MAINTENANCE TECHNICIAN	3	**
26.	HYDRO PLANT OPERATION	GROUPS MAINTENANCE ASSISTANT TECHNICIAN	2	**
27.	HYDRO PLANT OPERATION	GROUPS MAINTENANCE TECHNICIAN	3	**
28.	HYDRO PLANT OPERATION	GROUPS MAINTENANCE ASSISTANT ENGINEER	4	*
29.	HYDRO PLANT OPERATION	GROUPS MAINTENANCE ENGINEER	5	*
30.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE ASSISTANCE TECHNICIAN	2	***
31.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC INSTALLATION & MAINTENANCE TECHNICIAN	3	***
32.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC ASSISTANT DESIGNER	4	*
33.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC DESIGNER	5	*
34.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC ASSISTANT ENGINEER	4	*



NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
35.	SOLAR PHOTOVOLTAIC PLANT OPERATION	SOLAR PHOTOVOLTAIC ENGINEER	5	*
36.	ELECTRICAL INSTALLATION AND MAINTENANCE	ELECTRICAL TECHNICIAN (SINGLE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)	2	**
37.	ELECTRICAL INSTALLATION AND MAINTENANCE	ELECTRICAL SENIOR TECHNICIAN (THREE PHASE ELECTRICAL INSTALLATION & MAINTENANCE)	3	**
38.	ELECTRICAL INSTALLATION AND MAINTENANCE	ELECTRICAL SUPERVISOR (AO, A1, A4)	4	*
39.	ELECTRICAL INSTALLATION AND MAINTENANCE	ELECTRICAL ASSISTANT MANAGER (HIGH VOLTAGE ELECTRICAL INSTALLATION & MAINTENANCE ASSISTANT MANAGER (11KV))	5	*
40.	CABLE JOINTING	LOW VOLTAGE CABLE JOINTER	2	**
41.	CABLE JOINTING	HIGH VOLTAGE CABLE JOINTER (11 KV)	3	**
42.	CABLE JOINTING	HIGH VOLTAGE CABLE JOINTER (33 KV)	4	*
43.	CABLE JOINTING	HIGH VOLTAGE CABLE JOINTER (132 KV)	5	*

Legend

* **Moderately Critical – (4-5 year)**
** **Critical – (1-3 year)**
*** **Highly Critical – (Immediate)**



Table 5.4: List of Critical Job Title for Electronic Industry

NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
1.	INGOT AND RAW WAFER FABRICATION	INGOT ASSISTANT ENGINEER	4	*
2.	INGOT AND RAW WAFER FABRICATION	INGOT ENGINEER	5	*
3.	INGOT AND RAW WAFER FABRICATION	CRYSTAL GROWTH ASSISTANT ENGINEER	4	*
4.	INGOT AND RAW WAFER FABRICATION	CRYSTAL GROWTH ENGINEER	5	*
5.	INGOT AND RAW WAFER FABRICATION	DICING AND POLISHING ASSISTANT ENGINEER	4	*
6.	INGOT AND RAW WAFER FABRICATION	DICING AND POLISHING ENGINEER	5	*
7.	WAFER FABRICATION PRODUCTION	CIRCUIT IMPREGNATION ASSISTANT ENGINEER	4	*
8.	WAFER FABRICATION PRODUCTION	CIRCUIT IMPREGNATION ENGINEER	5	*
9.	SEMICONDUCTOR COMPONENT MANUFACTURING	SCREEN PRINTING ASSISTANT TECHNICIAN	2	***
10.	SEMICONDUCTOR COMPONENT MANUFACTURING	SCREEN PRINTING TECHNICIAN	3	***
11.	SEMICONDUCTOR COMPONENT MANUFACTURING	DIE ATTACHED ASSISTANT TECHNICIAN	2	**
12.	SEMICONDUCTOR COMPONENT MANUFACTURING	DIE ATTACHED TECHNICIAN	3	***
13.	SEMICONDUCTOR COMPONENT MANUFACTURING	FRONT OF LINE ASSEMBLY ASSISTANT ENGINEER	4	*
14.	SEMICONDUCTOR COMPONENT MANUFACTURING	FRONT OF LINE ASSEMBLY ENGINEER	5	*
15.	SEMICONDUCTOR COMPONENT MANUFACTURING	WIRE BONDING ASSISTANT TECHNICIAN	2	**
16.	SEMICONDUCTOR COMPONENT MANUFACTURING	WIRE BONDING TECHNICIAN	3	**
17.	SEMICONDUCTOR COMPONENT MANUFACTURING	WIRE BONDING ASSISTANT ENGINEER	4	*
18.	SEMICONDUCTOR COMPONENT MANUFACTURING	WIRE BONDING ENGINEER	5	*



NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
19.	SEMICONDUCTOR COMPONENT MANUFACTURING	ENCAPSULATION ASSISTANT TECHNICIAN	2	**
20.	SEMICONDUCTOR COMPONENT MANUFACTURING	ENCAPSULATION TECHNICIAN	3	**
21.	SEMICONDUCTOR COMPONENT MANUFACTURING	ENCAPSULATION ASSISTANT ENGINEER	4	*
22.	SEMICONDUCTOR COMPONENT MANUFACTURING	ENCAPSULATION ENGINEER	5	*
23.	SEMICONDUCTOR COMPONENT MANUFACTURING	FINAL TESTING ASSISTANT TECHNICIAN	2	**
24.	SEMICONDUCTOR COMPONENT MANUFACTURING	FINAL TESTING TECHNICIAN	3	**
25.	SEMICONDUCTOR COMPONENT MANUFACTURING	FINAL TESTING ASSISTANT ENGINEER	4	*
26.	SEMICONDUCTOR COMPONENT MANUFACTURING	FINAL TESTING ENGINEER	5	*
27.	SEMICONDUCTOR COMPONENT MANUFACTURING	ASSISTANT TECHNICIAN	2	**
28.	SEMICONDUCTOR COMPONENT MANUFACTURING	TECHNICIAN	3	**
29.	SEMICONDUCTOR COMPONENT MANUFACTURING	ASSISTANT ENGINEER	4	*
30.	SEMICONDUCTOR COMPONENT MANUFACTURING	ENGINEER	5	*
31.	SEMICONDUCTOR COMPONENT MANUFACTURING	R&D TECHNICIAN	3	**
32.	SEMICONDUCTOR COMPONENT MANUFACTURING	R&D ASSISTANT RESERCHER	4	**
33.	SEMICONDUCTOR COMPONENT MANUFACTURING	R&D RESERCHER	5	*
34.	SEMICONDUCTOR COMPONENT MANUFACTURING	R&D HEAD OF DEPARTMENT	6	*
35.	SEMICONDUCTOR COMPONENT MANUFACTURING	ELECTRONIC COMPONENT R&D SPECIALIST	7	*
36.	MEDICAL ELECTRONIC	MECHATRONIC ASSISTANT ENGINEER	4	*
37.	MEDICAL ELECTRONIC	MECHATRONIC ENGINEER	5	*



NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
38.	MEDICAL ELECTRONIC	ELECTRICAL ASSISTANT ENGINEER	4	**
29.	MEDICAL ELECTRONIC	ELECTRICAL ENGINEER	5	*
40.	MEDICAL ELECTRONIC	ELECTRONIC ASSISTANT ENGINEER	4	*
41.	MEDICAL ELECTRONIC	ELECTRONIC ENGINEER	5	*
42.	TELECOMMUNICATION ELECTRONIC	MECHATRONIC ASSISTANT ENGINEER	4	**
43.	TELECOMMUNICATION ELECTRONIC	MECHATRONIC ENGINEER	5	***
44.	TELECOMMUNICATION ELECTRONIC	ELECTRICAL ASSISTANT ENGINEER	4	***
45.	TELECOMMUNICATION ELECTRONIC	ELECTRICAL ENGINEER	5	***
46.	TELECOMMUNICATION ELECTRONIC	ELECTRONIC ASSISTANT ENGINEER	4	***
47.	TELECOMMUNICATION ELECTRONIC	ELECTRONIC ENGINEER	5	**
48.	AUTOMOTIVE ELECTRONIC	MECHATRONIC ASSISTANT ENGINEER	4	**
49.	AUTOMOTIVE ELECTRONIC	MECHATRONIC ENGINEER	5	**
50.	AUTOMOTIVE ELECTRONIC	ELECTRICAL ASSISTANT ENGINEER	4	**
51.	AUTOMOTIVE ELECTRONIC	ELECTRICAL ENGINEER	5	**
52.	AUTOMOTIVE ELECTRONIC	ELECTRONIC ASSISTANT ENGINEER	4	**
53.	AUTOMOTIVE ELECTRONIC	ELECTRONIC ENGINEER	5	**
54.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	MECHATRONIC ASSISTANT ENGINEER	4	**
55.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	MECHATRONIC ENGINEER	5	**
56.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	ELECTRICAL ASSISTANT ENGINEER	4	**



NO.	JOB AREA	JOB TITLE	LEVEL	CRITICAL LEVEL
57.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	ELECTRICAL ENGINEER	5	**
58.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	ELECTRONIC ASSISTANT ENGINEER	4	**
59.	INFORMATION & COMMUNICATION TECHNOLOGY (ICT) ELECTRONIC	ELECTRONIC ENGINEER	5	**

Legend

- * Moderately Critical – (4-5 year)
- ** Critical – (1-3 year)
- *** Highly Critical – (Immediate)



Table 5.5: Summary of Job Titles

SECTOR	SUB SECTOR	LEVEL								TOTAL
		L1	L2	L3	L4	L5	L6	L7	L8	
ELECTRICAL INDUSTRY	POWER PLANT OPERATION	0	14	16	16	16	8	5	0	75
	ELECTRICAL INSTALLATION AND MAINTENANCE	0	2	2	2	2	1	1	1	11
ELECTRONIC INDUSTRY	ELECTRONIC COMPONENT	0	17	18	29	29	12	5	0	110
	CONSUMER ELECTRONIC	0	2	2	4	4	2	1	0	15
	INDUSTRIAL ELECTRONIC	0	8	8	24	24	8	8	0	80
TOTAL JOB TITLE										291



5. CONCLUSION AND RECOMMENDATION

This chapter focusses on the discussion, recommendation and conclusion of the occupational Analysis for Electrical and Electronic industry. The Electrical and Electronic Industry is on the verge of entering a perfect storm unless serious efforts are made to prepare the workforce of the future. The Electrical and Electronic Industry needs to ensure that it has enough skilled workers, from engineers to line technicians, to deliver reliable products to the market, and it must start planning now. Not only the Industry need to replace retiring workers but additional workers are required to support the increasing demand for Electrical and Electronics products, both locally and globally.

Based on the findings obtained throughout the Occupational Analysis on Electrical and Electronic Industry, a total of 291 job titles were identified with 102 job titles is identified as being critical job titles, which are job titles that are in demand. With the competency requirements documented in NOSS format, the personnel in this area will obtain a more structured skills training and will also enable personnel who are experienced and skilled to be certified. Another sector that has a close link with the Electrical and Electronic Industry is the renewable energy sector whereby there will be new jobs created which requires similar certified personnels to install solar panels, wind turbines, lay insulation and energy audits across the country. Thus, this industry is a burgeoning industry and steps to ensure enough certified personnels for this industry is taken into consideration as soon as possible. With reference to Malaysia's economical plans and vision for the coming years, a framework of the Electrical and Electronic industry workforce has been identified. It is hoped that the result of this Occupational Analysis will be use as a reference to develop skilled and certified personnels for Malaysia's Electrical and Electronic Industry, thus improving the quality of this industry and at the same time, boosting Malaysia's global competitiveness.



BIBLIOGRAPHY

Edison Electric Institute (2005) Glossary of Electric Industry Terms. Edison Electric Institute, Philadelphia.

Null, L & Lobur, J. (2006). The essentials of computer organization and architecture. Jones & Bartlett Publishers, p 121

Ahmad M Ibrahim. (1996). Introduction to Applied Fuzzy Electronics

Arend, M. (2014) Investment Profile. www.mida.gov.my

Jobs Malaysia, Ministry of Human Resources Malaysia

Malaysia External Trade Development Corporation (MATRADE), Electrical and Electronic Directory 2011-2013

Malaysian Investment Development Authority (MIDA). www.mida.gov.my accessed 02.06.2015

IMP3 Third Industrial Master Plan (2006 – 2020). Date accessed: 20 May 2015.

Tenth Malaysia Plan. 2011-2015. Economic Planning Unit. Prime Minister's Department. Date accessed: 20 May 2015.

US Environmental Protection Agency. Retrieved 6 June 2014

"Our Mission and What We Do". US EPA. Retrieved 6 June 2014

US Cencures Burea Spreadsheet. Retrieved 7 May 2014

About OSHA. Retrieved 7 June 2014

"OSHA History". Department of Labor, US. Retrieved 7 July 2014

E-NOSS. Jabatan Pembangunan Kemahiran. 2008. Date accessed: 20 Feb 2015.

Black & Veatch (2010). bv.com. Date accessed 9th June 2015.



ANNEX 1: MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF) LEVEL DESCRIPTOR



MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF) LEVEL DESCRIPTOR

Level	Level Description
1	Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to complete routine and predictable tasks that include responsibility for completing tasks and procedures subject to direction or guidance
2	Achievement at this level reflects the ability to select and use relevant knowledge, ideas , skills and procedures to complete well-defined tasks and address straightforward problem . It includes taking responsibility for completing tasks and procedures, and exercising autonomy and judgment subject to overall direction or guidance
3	Achievement at this level reflects the ability to identify and use relevant understanding , methods and skills to complete task and address problems that are well defined with a measure of complexity . It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments within limited parameter . It also reflects awareness of different perspectives or approaches within an area of study or work
4	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but complex and non-routine . It includes taking responsibility for overall courses of action as well as exercising autonomy and judgment within fairly broad parameters. It also reflects under-standing of different perspective or approaches within an area of study or work
5	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address broadly-defined, complex problems . It includes taking responsibility for planning and developing courses of action as well as exercising autonomy and judgment within broad parameters. It also reflects understanding of different perspectives, approaches or schools of thought and the reasoning behind them
6	Achievement at this level reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition . It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment . It also reflects an understanding of different perspectives, approaches of schools of thought and the theories that underpin them



Level	Level Description
7	Achievement at this level reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of theoretical and relevant methodological perspectives, and how they affect their area of study or work
8	Achievement at this level reflects the ability to develop original understanding and extend an area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.



ANNEX 2 : LIST OF DEVELOPMENT PANEL AND FACILITATORS



**LIST OF INDUSTRY PANEL MEMBERS FOR THE ELECTRICAL AND ELECTRONIC INDUSTRY
OCCUPATIONAL ANALYSIS DEVELOPMENT**

NO	NAME	EXPERTISE	POSITION	ORGANISATION
1	TN. HJ. A. KADIR BIN HJ. ISMAIL	ELECTRICAL & ELECTRONICS	ENGINEER	RESEARCH SDN BHD
2	EN. MOHD AZHAR BIN AHMAD	ELECTRICAL & ELECTRONICS	ENGINEER	NURALED SDN BHD
3	IR. SAIFUDDIN BIN AHMAD	ELECTRICAL & ELECTRONICS	ENGINEER	TNB INTEGRATED LEARNING SOLUTION (ILSAS) SDN BHD
4	EN. NIK MUHAMMAD FASHAN BIN HUSAIN	ELECTRICAL & ELECTRONICS	ENGINEER	BOUSTEAD PENANG SHIPYARD SDN BHD
5	EN. EZWAN ARDIE BIN ZAIS	ELECTRICAL & ELECTRONICS	SR. E&I ENGINEER	MALAYSIA MARINE & HEAVY ENGINEERING (MMHE)
6	EN. KHAIRUL HISHAM BIN AHMAD	ELECTRICAL & ELECTRONICS	ENGINEER	TENAGA NASIONAL BERHAD
7	EN. SHAHROL HISHAM BIN AHMAD	ELECTRICAL & ELECTRONICS	ENGINEER	ALPS ELECTRIC MALAYSIA SDN BHD
8	EN. ABU YAZED BIN BAKAR	ELECTRICAL & ELECTRONICS	ENGINEER	NURALED SDN BHD



LIST OF FACILITATORS FOR THE ELECTRICAL & ELECTRONIC INDUSTRY OCCUPATIONAL ANALYSIS DEVELOPMENT

FACILITATORS

EN. FAHISZAM BIN SAAD

EN. AH FAEZAL HUSNI BIN HJ. ARSHAD

RESEARCHERS

DR. NORLENA BINTI SALAMUDDIN

DR MOHD TAIB BIN HARUN

PROOFREADER

EN. AZAM BIN ABD.WAHAB

