

1. INTRODUCTION

The Standard Practice and Standard Content are part of the K-SLDN document, which shows the structured career path of Industrial Maintenance Operation. This document is developed to meet Level 3 requirements, which are currently of priority to the Industrial Maintenance sub sector of Machine & Equipment Maintenance Industry. The panel of experts concluded that this job area requires significant range of varied work activities, performed in a variety of contexts, most of which are complex and necessary. Much responsibility and accountability are expected of skilled personnel, as they are responsible in providing industrial guidance and training in building future generations. To produce competent skilled workforce in this industry, the needs for knowledge and skills training are essential.

The NOSS comprises of eight (8) core and no elective Competency Unit (CU) titles. This document covers the Industrial Maintenance profession job area, which is one of the pillars under the subsector of Machine & Equipment Maintenance Industry. (Refer Figure 1.1 Occupational Area Analysis Chart).

Industry requirements and skills development in the Machine & Equipment Maintenance Industry in Malaysia has directly contributed to the improvement of quality Industrial Maintenance profession industry. This document specifies competencies expected of a competent skilled personnel and qualified industry-working experience. The career path of this job area can be expanded to Supervisory at level 3 and Managerial at level 4 & 5.

Industrial Maintenance Operations training is required for development of skilled personnel as they are the country's assets. Producing skilled workforce is in line with the Technical Vocational Education Training (TVET).

The demand for the employment of Industrial Maintenance skilled professional's personnel is promising due to the growth of the industry and nation. The job area for this profession is mostly significant in the Industrial Maintenance industry. Presently, there is official standardization of skill certification for Machine & Equipment Maintenance, sub sector of Mechanical & Electrical Service And Maintenance. Besides being used as a basis for training curriculum, this document will also provide opportunity for those

experienced industrial experts to be certified through Jabatan Pembangunan Kemahiran (JPK).

The NOSS document comprises Job Profiles Charts (JPC) of (a) Competency Unit (CU) titles, (b) Competency Profile (CP) and (c) Curriculum of Competency Unit (CoCu). The Competency Profile consists of competency unit titles, descriptors, work activities and performance criteria. The Curriculum of Competency Units (CoCu) comprise work activities, related knowledge, applied skills, attitude/safety/environmental, training hours, delivery mode, assessment criteria, employability skills (core abilities & social skills), tools, equipment and materials (TEM) and references. The information in the CoCu can be used by training centres to conduct training to help trainer and coach in meeting the industrial requirements. This document can also be used by the industry to determine the job scope, responsibilities, remuneration, and career enhancement in developing skilled personnel.

2. JOB COMPETENCIES

Industrial maintenance operation personnel will be able to perform the following competencies under the supervision of a related Suruhanjaya Tenaga (ST), Safety and Health and other personnel where applicable

- Material Fitting and Joining
- Machine Tool Maintenance (Mechanical)
- Machine Tool Maintenance (Electrical/Electronic)
- Automation System Maintenance
- Welding Machine Maintenance
- Industrial Rotating and Static Maintenance
- Material Handling Maintenance (Conveyor)
- Industrial Maintenance Supervision

3. NATURE OF WORK

Industrial maintenance operation usually works under the direction of an executive. They may work alone or as a member of a maintenance team depending on the type of machinery being repaired and the extent of the job. Most respective personnel work inside factories or other industrial areas although some outdoor work may be required due to the location of a particular piece of machinery. Work areas may be hot, greasy, and working in cramped or stooped positions or from the top of a ladder. Workers must follow safety precautions and use personal protective equipment (PPE); such as safety helmet, gloves, safety glasses, and hearing protectors.

Industrial maintenance operation personnel generally work 5-days a week. In emergencies, they may be called to the plant during off-duty hours. In some factories, they may work night or weekend shifts. They are rarely affected by seasonal changes in production. During slack periods when some workers are laid off, respective personnel are often kept to do major overhaul jobs which may result in considerable overtime.

4. EMPLOYMENT PROSPECTS

Excellent prospects exist for certified skilled personnel in the industry. They possess extensive skills, knowledge, high professional values and work ethics in contributing to the growth and development of the industry.

The Government policy Economic Transformation Programme (ETP) 2010-2020 and '*Transformasi Nasional 2050*' (TN50) promotes more capable skilled personnel to maximize their effectiveness and contribute continuous development towards fulfilling the TVET.

Other related occupation with respect to employment opportunities are:

- Lecturer
- Mechanic
- Technician
- Supervisor
- Planner
- Service Advisor
- Technical Service Executive
- Industrial Maintenance Specialist
- Sales Advisor
- Training Advisor
- Machine Inspector / Examiner

- Industrial Machine Vendor
- Insurance adjuster

Other related industries with respect to employment opportunities are:

- Industrial Machine Service Workshop
- Manufacturing Sector
- Advance Machining Sector
- Ground Handling
- Automation Sector
- Oil and Gas Sector
- Training Institution
- Building Maintenance
- Industrial Machine Marketing, Distribution and Sales sector
- Insurance company

5. QUALIFICATION

Apprentices are trained in training institutions and company. Pre-requisite for apply this program apprentice must have interest in maintenance fields. Other courses for skills advancement purposes can be developed in the following fields:

- Industrial Maintenance Supervisory/Senior Technician
- Industrial Maintenance Industry
- Industrial Machine Research and Development
- Building Maintenance Industry
- Overseas working exposure
- Other related courses