

TRAINING OCCUPATION: INDUSTRIAL MAINTENANCE OPERATIONS	
Competency Unit (CU) 3: MACHINE TOOL MAINTENANCE (ELECTRICAL/ ELECTRONIC)	Code : ME-010-3:2012-C03
Work Activity 1: Select machine tool to be maintained electrical/electronic (Single function machine)	Duration : 20 Hour
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Define contents of machine tool maintenance electrical/electronic schedule such as <ol style="list-style-type: none"> 1.1. Format of maintenance schedule table (Daily, Weekly, Monthly, Quarterly, Yearly) 1.2. Type of maintenance (Corrective, Preventive and Predictive) 1.3. Type of machines 1.4. Time interval 1.5. Duration 1.6. Verification (Prepare, Check and Approve) 1.7. Location 1.8. Etc 2. Explain types and functions of machine tool maintenance electrical/electronic equipments <ol style="list-style-type: none"> 2.1. Milling 2.2. Drilling 2.3. Lathe 2.4. Etc. 3. Describe job order instructions/ maintenance checklist <ol style="list-style-type: none"> 3.1. List of jobs 3.2. Person in charge 3.3. Type of job order 3.4. Type of maintenance list 3.5. Status of work 3.6. Department 3.7. Date and time start 3.8. Date and time completed 3.9. Etc 4. Describe machine tool maintenance electrical/electronic rules and regulation. <ol style="list-style-type: none"> 4.1. Manual Operation 4.2. Manual Installation 4.3. Standard Operating Procedure (SOP) 4.4. Etc. 	

Work Activity 2 : Select maintenance requirement	Duration : 4 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Describe types of machine tool maintenance electrical/electronic <ol style="list-style-type: none"> 1.1. Preventive 1.2. Corrective. 1.3. Predictive 	

Work Activity 3 : Perform electrical/electronic system maintenance	Duration : 48 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Describe machine tool (electrical and electronic) maintenance technical manual <ol style="list-style-type: none"> 1.1. Milling 1.2. Drilling 1.3. Lathe 1.4. Etc 2. List electrical and electronic drawing <ol style="list-style-type: none"> 2.1. Symbols, 2.2. Schematic Diagram 2.3. Etc. 3. Define type of tools for electrical/electronic maintenance <ol style="list-style-type: none"> 3.1. Hand tools 3.2. Power tools 3.3. Special tools (Insulation Tester, Clamp-amp meter, etc.) 3.4. Etc. 4. Explain electrical/electronic maintenance components <ol style="list-style-type: none"> 4.1. AC Motor 4.2. Solenoid Valve 4.3. Motor Starter 4.4. Control panel 4.5. Transformer 4.6. Speed Controller 4.7. Box-cooler unit (exhaust fan) 4.8. Etc. 5. Describe possible electrical/ electronic problems components <ol style="list-style-type: none"> 5.1. AC motor (coil fault, etc.) 5.2. Solenoid valve (dirty, coil fault, etc.) 5.3. Motor starter (contactor fault, etc.) 5.4. Control panel (short circuit, etc.) 5.5. Transformer (coil fault, etc.) 5.6. Speed controller (setting knob fault, etc.) 5.7. Box-cooler unit (exhaust fan motor, etc.) 5.8. Etc. 6. Describe electrical/ electronic safety procedures and Standard Operation Procedures. <ol style="list-style-type: none"> 6.1. Occupation Safety and Health Act (OSHA) 6.2. Institute Electrical Engineering Enactment (IEEE) 6.3. Akta Bekalan Elektrik (Pindaan 2015) 6.4. Manual Operation 6.5. Installation procedure 6.6. Etc. 	

Learning Objectives

At the end of learning session the apprentice will be able to:

1. Describe machine testing safety features according to Standard Operating Procedure (SOP)
 - 1.1. Occupation Safety and Health Act (OSHA)
 - 1.2. Institute Electrical Engineering Enactment (IEEE)
 - 1.3. Akta Bekalan Elektrik (Pindaan 2015)
 - 1.4. Manual Operation
 - 1.5. Installation procedure
 - 1.6. Etc.
2. Describe functionality test of the machine tools
 - 2.1. Free run
 - 2.2. Test run with workpiece
 - 2.3. Visual
 - 2.4. Vibration
 - 2.5. Noise
 - 2.6. Heat
 - 2.7. Etc.
3. Describe operation of the machine tools.
 - 3.1. AC Motor
 - 3.2. Solenoid Valve
 - 3.3. Motor Starter
 - 3.4. Control panel
 - 3.5. Transformer
 - 3.6. Speed Controller
 - 3.7. Box-cooler unit (exhaust fan)
 - 3.8. Etc.
4. Explain testing equipment
 - 4.1. Ammeter
 - 4.2. Multimeter
 - 4.3. Ohm-meter
 - 4.4. Insulation tester
 - 4.5. Vibration meter
 - 4.6. Volt meter
 - 4.7. Viscous meter
 - 4.8. Techo meter
 - 4.9. Thermo meter
 - 4.10. Etc.

Work Activity 5 : Produce machine tool maintenance report (electrical/electronic)	Duration : 4 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Identify types of machine tool (electrical/electronic) maintenance data <ol style="list-style-type: none"> 1.1. Technical data 1.2. Component 2. Recognise types of Checklist <ol style="list-style-type: none"> 2.1. Work checklist 2.2. Test checklist 3. Indicate types of report format <ol style="list-style-type: none"> 3.1. Manual 3.2. Computerize 	
TOTAL	88 Hours