MAINTAIN INDUSTRIAL PNEUMATIC SYSTEMS

UNIT CODE: ENG/OS/IPO/CR/04/5/A

UNIT DESCRIPTION

This unit covers competencies required to maintain industrial pneumatic system. It involves applying industrial pneumatic maintenance safety procedures, conducting routine/ preventative maintenance pneumatic system, troubleshooting industrial pneumatic systems for faults, conducting industrial pneumatic system maintenance-commissioning industrial pneumatic system and perform operation test, preparing industrial pneumatic system maintenance report.

ELEMENTS AND PERFORMANCE CRITERIA

Element These describe the key outcomes which make up workplace function	**Performance Criteria** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Apply Industrial pneumatic maintenance safety Procedures	1.1 Personal safety gear is prescribed as per rules and regulations of the ***Occupational Safety Act*** 1.2 Safety measures for the maintenance of the pneumatic system is defined as per OSHA and SOPs 1.3 Work place safety measures are adhered to according to SOPs
2. Conduct routine/ preventative maintenance pneumatic system	2.1 Draining of airline filters and checking for water traps is done regularly as per manufacturers recommendations 2.2 Lubrication of moving components is done as per SOPs 2.3 Adjustments of the moving parts is done regularly according to manufacturer specification 2.4 Cleaning of components is done regularly as per manufacturers recommendations 2.5 Compressed air leaks are checked per manufacturers recommendations
3. Troubleshoot industrial pneumatic systems for faults	3.1 Pre-operational checks are conducted on the industrial pneumatic system in accordance to the manufacturers' recommendations and SOPs 3.2 The functionality of the components for the pneumatic system is checked as per manufacturer's specifications 3.3 Troubleshooting is done to identify faults on the pneumatic system components
~~4.~~ Conduct industrial pneumatic system	4.1 Logs books, daily check charts and Pneumatic system reports are implemented

Element These describe the key outcomes which make up workplace function	**Performance Criteria** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
maintenance	4.2 Tools and equipment for maintenance are identified as per manufactures manual and SOPs 4.3 O-rings, seals, Circlip rings, gaskets and Cotter pins are serviced and or replaced according to SOPs 4.4 Filters are serviced and or replaced as per the manufacture's recommendation and SOPs 4.5 Pneumatic fittings and auxiliaries are serviced and or replaced according to SOPs 4.6 Control valves and non-return valves are serviced and or replaced according to SOPs 4.7 Tools and material inventory updated 4.8 Housekeeping is performed as per the SOPs 4.9 Pneumatic maintenance report is prepared and shared with appropriate personnel as per workplace procedure
5. Re-commission industrial pneumatic system and perform operation test	5.1 The laid down start-up procedures are followed per manufacturer's specification 5.2 Industrial hydraulic system is tested for functionality as per manufacturer's specification 5.3 The industrial hydraulic system is re-commissioned for operation
6. Prepare industrial pneumatic system maintenance report	6.1 Standard maintenance procedures are followed as recorded in maintenance manuals 6.2 Maintenance scheduling is documented according to manufacturer specifications 6.3 Maintenance report is developed and stored as per workplace procedure

RANGE

This section provides work environment and condition to which the performance criteria (PC) apply. It allows for different work environment and situation that will affect performance

Variable	**Range**
• *Pneumatic components* may include but not limited to:	• Rams • Linear and Rotary Actuators • Relays • Pneumatic operated tools • Directional/Control valves • Seals

Variable	Range
	• Piping • Manifold
• *Types of Compressors* may include but not limited to:	• Positive displacement • Reciprocating Compressors • Rotary Compressors • Dynamic flow compressor ▪ Axial flow compressors ▪ Radial flow compressors
• *Compressor Accessories* may include but not limited to:	• Intercoolers and after-coolers • Intake filters • Compressor controls
• *Maintenance* may include but not limited to:	• Repair • Inspection and modification • Overhaul • Lubrication • Servicing • Test running
• *Work completion details* may include but not limited to:	• Plant and maintenance records • Job cards • Check sheets • On device labelling updates • Reporting and/or documenting equipment defects.
• *Isolations* may include but not limited to:	• Mechanical or other associated processes
• *Regulations, Polices and Standards* may include but not limited to:	• Occupational Safety and Health Act • Company policies • Manufacturers' specifications
• *Potential failures /Indication of failures* may include but not limited to:	• Noise • Vibration • Odour • Cracks • Leaks • Loss of performance • Unintended motion • Color of lubricant
• *Safety equipment* may	• Pressure relief valve

Variable	Range
include but not limited to:	• Safety valve • Non return valve
• *PPE* may include but not limited to:	• Ear protection (muffs or plugs) • Working protective gloves • Safety boots
• *Hazards* may include but not limited to:	• Burns from high-pressure fluid • Injection of fluid into the skin • Fire Hazards • Bruises, cuts or abrasions from failing pneumatic lines • Injury of people due to unguarded rotating part • During maintenance of equipment and their parts. • Injury due to sudden release of residual pressurized air. • Slippage due to oily floor area. • Electric shock from motors/ A.C. Solenoids

REQUIRED KNOWLEDGE AND SKILLS

This section describes the skills and knowledge required for this unit of competency

Required Knowledge

- Relevant environmental, occupational health and safety legislation and regulations
- Personal protective equipment (PPE) and safety equipment.
- Types of compressor
- Compressor parts and accessories
- Hand and portable power tools
- Assess potential hazards.
- Scheduled and preventative maintenance on the system.
- Technical Drawing, pneumatic circuit diagrams and data
- Uses documentation.
- Pneumatic principles
- Pre- and post-operational inspections.
- Completes daily equipment logbook.
- Troubleshooting and basic repairs on equipment

- Emergency procedures.
- Identification and selection of tools and materials
- Identify and use relevant test equipment
- Testing techniques
- Dismantle and assemble components to specified tolerances
- Communicate effectively
- Basic First aid

Required Skills

The trainee needs to demonstrate the following fundamental skills

- Communication skills
- Numeracy skills
- Digital literacy skills
- Occupational health safety and Practices
- Environmental Literacy
- Employability skills
- Entrepreneurship skills

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	1.1 Observed safety at workplace and sound housekeeping 1.2 Identified different types of oil used in hydraulics 1.3 Identified pneumatic components and attachments 1.4 Selected and correctly used tools and equipment 1.5 Operated and monitored pneumatic system 1.6 Conducted and scheduled basic preventative maintenance 1.7 Performed pre- and post-operational tests 1.8 Conducted basic First Aid and Emergency evacuation
2. Resource Implications	2.1 Air Compressor 2.2 Pneumatic system/model 2.3 Pneumatic simulation 2.4 Relevant legislations, e.g. OSHA, Environmental Act; and regulations 2.5 Workshop tools and equipment 2.6 Pneumatic manuals
3. Methods of Assessment	Competency may be assessed through: 3.1 Observed behavior of the learners at workplace 3.2 Inspection of written operation procedures 3.3 Inspection of log books

4. Context of Assessment	Competency will be assessed individually in the actual workplace or through accredited institution
5. Guidance information for Assessment	Holistic assessment of other units relevant to the industry sector, workplace and job role is recommended