

MAINTAIN INDUSTRIAL HYDRAULICS SYSTEMS

UNIT CODE: ENG/OS/IPO/CR/03/5/A

UNIT DESCRIPTION

This unit covers competencies required maintain Industrial Hydraulics Systems. It involves applying industrial hydraulic maintenance safety procedures, conducting routine/preventative maintenance industrial hydraulic system, conducting industrial hydraulic system maintenance-commissioning industrial hydraulic system and perform operation test and preparing industrial hydraulic 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. <i>Bold and italicized terms are elaborated in the Range</i>
1. Apply Industrial hydraulic maintenance safety Procedures	1.1 Personal safety gear is prescribed as per rules and regulations of the <i>Occupational Safety Act</i> 1.2 Safety measures for the maintenance of the hydraulic 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 industrial hydraulic system	2.1 Fluid ounce prevention is done according to manufacturer's instructions 2.2 Pump components wear and damage is checked and repaired manufacturer's instructions 2.3 Cylinders and motors are checked regularly for damages due excess pressure and contamination manufacturer's instructions 2.4 Hoses and lines are inspected regularly for damages as per SOPs 2.5 Inspection for restricted flow is done as per SOPs
3. Troubleshoot hydraulic systems for fault	3.1 Testing of Industrial Steam turbine alarm systems 3.2 Carry out Periodic noise levels tests 3.3 Conduct Pre-operational checks 3.4 Check Exhaust steam discharge valves for function ability 3.5 Check Non-drive end and drive-end bearing temperatures using infra-red thermometer and recorded in the log book

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4. Conduct industrial hydraulic system maintenance	4.1 Logs books, daily check charts and hydraulic system reports are implemented 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 Hydraulic 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
5. Recommission industrial hydraulic 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 hydraulic 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
<ul style="list-style-type: none"> • <i>Hydraulic components</i> may include but not limited to: 	<ul style="list-style-type: none"> • Rams • Actuators • Relays • Hydraulic operated tools • Governors and relays

Variable	Range
	<ul style="list-style-type: none"> • Pumps • Directional valves • Piping • Seals • Manifolds
<ul style="list-style-type: none"> • <i>Maintenance</i> may include but not limited to: 	<ul style="list-style-type: none"> • Repair • Inspection and modification • Overhaul • Lubrication • Servicing • Test running
<ul style="list-style-type: none"> • <i>Work completion details</i> may include but not limited to: 	<ul style="list-style-type: none"> • Plant and maintenance records • Job cards • Check sheets • On device labeling updates • Reporting and/or documenting equipment defects.
<ul style="list-style-type: none"> • <i>Isolations</i> may include but not limited to: 	<ul style="list-style-type: none"> • mechanical or other associated processes
<ul style="list-style-type: none"> • <i>Regulations, Policies and Standards</i> may include but not limited to: 	<ul style="list-style-type: none"> • Occupational Safety and Health Act • Company policies • Manufacturers' specifications
<ul style="list-style-type: none"> • <i>Potential failures /Indication of failures</i> may include but not limited to: 	<ul style="list-style-type: none"> • Noise • Vibration • Odour • Cracks • Leaks • Loss of performance • Unintended motion
<ul style="list-style-type: none"> • <i>Safety equipment</i> may include but not limited to: 	<ul style="list-style-type: none"> • Pressure relief valve • Safety valve • Non return valve
<ul style="list-style-type: none"> • <i>PPE</i> may include but not limited to: 	<ul style="list-style-type: none"> • Gloves • Safety boots
<ul style="list-style-type: none"> • <i>Hazards</i> may include but not limited to: 	<ul style="list-style-type: none"> • Burns from hot, high-pressure fluid • Injection of fluid into the skin • Fire Hazards • Bruises, cuts or abrasions from

Variable	Range
	flailing hydraulic lines <ul style="list-style-type: none"> • Injury of people due to unexpected movement of equipment • During maintenance of equipment and their parts. • Injury due to sudden release of residual pressurized oil. • 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 Skills

The trainee needs to demonstrate knowledge of:

- Relevant environmental, occupational health and safety legislation and regulations
- Personal protective equipment (PPE) and safety equipment.
- Hand and portable power tools
- Assess potential hazards.
- Scheduled and preventative maintenance on the system.
- Technical Drawing, Hydraulic circuit diagrams and data
- Uses documentation.
- Hydraulic 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 hydraulic systems 1.3 Identified hydraulic components and attachments 1.4 Selected and correctly use tools and equipment 1.5 Operated and monitor hydraulic system 1.6 Conducted scheduled and 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 Hydraulic system/model 2.2 Hydraulic simulation 2.3 Relevant legislations, e.g. OSHA, Environmental Act; and regulations 2.4 Workshop tools and equipment 2.5 Hydraulic 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