Australian Government

PMAOPS304 Operate and monitor compressor systems and equipment

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

PMAOPS304 Operate and monitor compressor systems and equipment

Modification History

Release 1. Supersedes and is equivalent to PMAOPS304B Operate and monitor compressor systems and equipment

Application

This unit of competency covers the skills and knowledge required to operate and monitor a complex compressor system. The compressor system will integrate several plant items (single unit operations). Operation of the compressor system includes the operation of ancillary equipment that is integral to the system, such as:

- advanced lubrication and seal systems
- inter-stage coolers/heat exchangers
- scrubbers
- surge control systems
- instrument/control systems, such as programmable logic controllers (PLCs) or other process controllers.

The competency applies to compressor systems, such as:

- single/multi-stage rotary compressors (axial flow, centrifugal, turbine and screw)
- single/multi-stage reciprocating compressors.

This unit of competency applies to operations technicians who are required to demonstrate a significant understanding of the process and the equipment operation in order to identify and rectify operational problems, predict the potential impact of compressor output on the operation of the whole plant and facilitate output changes.

This unit of competency applies to an individual operating independently in a plant with local control or in liaison with the control room operator in a plant with a centralised control panel, such as distributed control system (DCS) type controls.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This competency does not require the operation of a central control panel.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Prepare for work**	1.1	Receive and give shift handover
		1.2	Identify work requirements
		1.3	Identify and control hazards
		1.4	Coordinate with appropriate personnel
		1.5	Check for recent work undertaken on compressor system
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of compressor system
2	**Operate compressor system**	2.1	Describe the type of compressor, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Adjust operational speeds and operating cycles as required
		2.4	Monitor or activate safety systems to ensure that any system shutdowns are controlled and conducted safely and effectively
		2.5	Adjust compressor system and its component plant items as appropriate to their type and duty to maximise performance

3	**Diagnose and take action on abnormal situations in accordance with procedures**	3.1	Monitor compressor and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Monitor impacts of any changes upstream and downstream and take action required by the procedures
		3.3	Recognise actual and developing situations which may require action
		3.4	Apply operational knowledge to resolve problems
		3.5	Take other actions on abnormal situations which cannot be resolved during the shift to ensure safety and the resolution of the situation
		3.6	Follow through items initiated until final resolution has occurred
4	**Isolate and de-isolate compressor and its component plant items**	4.1	Complete any required pre-start checks on compressor and auxiliary systems, including oil and water
		4.2	Start up/shut down compressor according to the compressor type and duty in liaison with other personnel
		4.3	Start up/shut down/changeover component plant items within unit according to their type and duty in liaison with other personnel
		4.4	Initiate load-up through the selection of appropriate speed or cycle
		4.5	Monitor and adjust upstream/downstream equipment as required
		4.6	Isolate entire compressor system and/or any component plant item
		4.7	Implement control measures to minimise damage and hazards to/from shutdown compressor
		4.8	Make safe for required work
		4.9	Check compressor/plant item is ready to be returned to servic

4.10 De-isolate and prepare compressor/plant item for return to service

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Hazards

Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- working at heights, in restricted or confined spaces, or in environments subjected to heat, noise, dusts or vapours
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather
- other hazards that might arise

Situations requiring action

Situations requiring action include one or more of the following:

- surging
- control of temperature and pressure
- variations in feed
- vibration

Actions on abnormal situations includes the following:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution.
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person

Start up/shut down

Start up/shut down includes the following:

- start up and shut down to/from normal operating conditions
- start up and shut down to/from isolated, cold or empty
- start up and shut down to/from other conditions/situations experienced on the plant

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Operate

Operate is to monitor, adjust/make change to the production unit and/or its component items to meet specifications, by one or more of the following:

- manually in the plant
- using local controller in the plant

Product Product includes anything produced by a process step and so includes:

- intermediate products, such as the product from one process step, which then becomes the feed for another

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - http://mskills.org.au/training-packages/info/