



Australian Government

PMAOPS328 Operate and troubleshoot heating furnace

Release: 1

PMAOPS328 Operate and troubleshoot heating furnace

Modification History

Release 1. Unit code and title changed. Application and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMAOPS323 Operate and monitor heating furnace.

Application

This unit describes the skills and knowledge required to operate a fired heating furnace for heating heat-transfer fluids, which may include natural and synthetic oils or other media, and other industrial uses as required in the workplace.

This unit applies to autonomous operators who are required to demonstrate a significant understanding of the process and the equipment operation in a plant with local control, or in liaison with the control-room operator in a plant with a centralised control panel. In the case of a large, complex plant, the operations technician would be part of a team during startup and shutdown procedures.

This unit 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.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Operations

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Operate heating furnace according to procedures	1.1 Receive and give shift handover 1.2 Communicate with personnel to identify and coordinate work requirements 1.3 Identify, control and report hazards 1.4 Check for recent work undertaken on heating furnace and address

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	outstanding and incomplete work 1.5 Check operational status of heating furnace 1.6 Perform routine checks and complete logs and paperwork, taking action on unexpected readings 1.7 Adjust heating furnace according to agreed operational parameters
2. Identify and respond to abnormal situations during operation	2.1 Monitor heating furnace frequently and critically throughout shift using own senses, and measured and indicated data 2.2 Monitor field data and instrumentation to ensure that product remains on specification 2.3 Identify impacts of changes upstream and downstream 2.4 Identify actual and developing situations that may require action 2.5 Take action to remedy abnormal situations according to operating procedures 2.6 Complete required documents outlining abnormal situation management and corrective action taken
3. Shut down and prepare heating furnace for maintenance	3.1 Prepare heating furnace to be shut down according to operating procedures 3.2 Complete pre-shutdown checks according to operating procedures 3.3 Shut down heating furnace according to operating procedures 3.4 Identify, control and report shutdown hazards 3.5 Monitor shutdown and identify abnormal situations which may require action 3.6 Take action to remedy abnormal situations according to operating procedures 3.7 Shut down and changeover duty and standby equipment according to operating procedures 3.8 Isolate heating furnace from energy sources
4. Prepare and start up heating furnace	4.1 De-isolate and prepare heating furnace to be returned to standby or service 4.2 Complete pre-start checks according to operating procedures 4.3 Start up heating furnace according to operating procedures 4.4 Identify, control and report start-up hazards

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.5 Monitor startup and identify abnormal situations that may require action 4.6 Take action to remedy abnormal situations according to operating procedures

Foundation Skills

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

- Learning skills to follow instructions, monitor process and select appropriate procedure.
- Reading skills to follow written procedures and documentation.
- Writing skills to complete workplace documentation.
- Oral communication skills to liaise and coordinate with team members and the control-room operator.
- Numeracy skills to monitor field data, instrumentation and process parameters.

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

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS323 Operate and monitor heating furnace.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>

Assessment Requirements for PMAOPS328 Operate and troubleshoot heating furnace

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit:

- at least 2 times, each in a separate work context, including:
 - shutting down in an emergency.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- all items on a schematic of the production unit, including:
 - principles of operation of plant and equipment
 - interactions between plant items and processes
 - operating parameters and integrity limits, and product specifications and tolerances including temperature, pressure and flow
 - operational shutdown processes and procedures, including cooling down, furnace pressure/vacuum and fuel/heat source isolation
 - the processes and procedures for starting a furnace, including heat input, warm-up of the reticulation system, systems operation, reticulation line pressure, heating fluid usage and supply, and component plant items
 - shutdown processes and procedures for internal inspection, including confirming furnace cooling down, vacuum/pressure, fuel/heat source isolation, and removal of combustion equipment and water from furnace
 - procedures for monitoring a furnace, including heating fluid reticulation line pressure/temperature, usage, supply and quality of heating fluid, combustion/heat source system, fuel system, combustion air supply, operation of control/safety devices, combustion management system, and component plant items
 - function, purpose and location of component plant items and troubleshooting techniques
 - emergency shutdown procedures
 - various modes of furnace storage and advantages and disadvantages of each
 - types and purpose of furnace fittings
- physics and chemistry to the level of being able to provide an overview of the science of the furnace process, including heating fluid properties

- furnace abnormal situations and required actions, including but not limited to:
 - fuel variations (rate and quality)
 - changes to heating requirements
 - coke, soot and scale build-up
 - flame pattern
 - weather conditions
- hierarchy of control
- furnace hazards:
 - possible causes
 - potential consequences
 - appropriate risk controls
 - reporting and escalation procedures.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - heating furnace
 - operating procedures
- abnormal situations must be relevant to heating furnace operations.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

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