Australian Government

PMAOPS360 Operate a metalliferous kiln/furnace

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to PMAOPS360A Operate a metalliferous kiln/furnace

Application

This unit of competency covers the skills and knowledge required to operate and monitor a metalliferous (or similar) kiln/furnace and ancillary equipment.

The kiln/furnace will typically be used in a metalliferous processing facility for the high temperature treatment of ores or other minerals causing the thermal decomposition of the feed, such as in calcining or reaction with a gas or reductant, such as in roasting. The feed and product are solids. It does not apply to the handling of molten metal.

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, contribute to start-up and shutdown processes, and operate and monitor equipment.

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 unit of 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 kiln/furnace
		1.6	Note any outstanding/incomplete work
		1.7	Check operational status of the kiln/furnace
2	**Operate kiln/furnace**	2.1	Describe the type of kiln/furnace, the component plant items and their duties
		2.2	Complete routine checks, logs and paperwork taking action on unexpected readings
		2.3	Adjust feed composition and rate, gas flows and temperatures to meet product requirements
		2.4	Change rate, grade or specification smoothly in accordance with procedures
3	**Diagnose and take action on abnormal situations in accordance with procedures**	3.1	Monitor kiln/furnace and its component plant items frequently and critically throughout shift using measured/indicated data and senses
		3.2	Describe impacts of any changes upstream and downstream
		3.3	Recognise actual and developing situations which may require action
		3.4	Apply operational knowledge to resolve problems
		3.5	Take 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 kiln/ furnace and its component plant items**	4.1	Complete any required pre-start checks
		4.2	Start up/shut down kiln/furnace according to its 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	Isolate entire kiln/furnace system and/or any component plant item
		4.5	Make safe for required work
		4.6	Check kiln/furnace system/component plant item is ready to be returned to service
		4.7	De-isolate and prepare kiln/furnace/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, 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

Routine problems

Routine problems are predictable with known solutions and include one or more of the following:

- variations in feed material
- control of air flow
- control of fuel flow
- control of feed rates and composition of feeds
- control of output product

Non-routine problems

Non-routine problems are unexpected problems, or variations of previous problems and must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- 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

Operational knowledge includes one or more of the following:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people

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 both

	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
Logs and reports	Logs and reports include one or more of the following: • paper or electronic-based logs and reports • verbal/radio reports • reporting items found which require action
Kiln/furnace/ancillary equipment	Kiln/furnace ancillary equipment includes: • equipment integral to the operation of the kiln/furnace, such as fans/blowers, feed equipment and utility supply
Work requirements	Work requirements will be identified from one or more of the following: • briefings • handovers • orders • compliance documentation • product specifications • nature and scope of tasks • achievement targets • operational conditions • lighting conditions • plant or equipment defects • hazards and potential hazards • coordination requirements or issues

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875