



Australian Government

MEM07033 Operate and monitor basic boiler

Release: 1

MEM07033 Operate and monitor basic boiler

Modification History

Release 1. Supersedes and is equivalent to MEM07033B Operate and monitor basic boiler

Application

This unit of competency defines the skills and knowledge required to perform start-up, take-over/handover, monitor, shutdown and storage of a basic boiler used for all purposes, including the generation of steam.

All work is carried out to applicable state/territory and national work health and safety (WHS) legislation, standards and codes of practice.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, as appropriate should also be selected.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
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1	Determine job	1.1	Follow standard operating procedures (SOPs)
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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	requirements	1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	Carry out pre-operational checks	2.1	Undertake pre-operational checks of boiler to plant operating procedures
		2.2	Identify maintenance requirements and report in accordance with procedures
3	Maintain health and safety standards in work area	3.1	Identify hazards and potential hazards and report according to SOPs
		3.2	Select hazard prevention/control measures, as required
4	Start boiler and conduct hand-over/take-over procedures	4.1	Start boiler and bring online safely, consistent with workplace procedures and production requirements
		4.2	Confirm operating status of boiler
		4.3	Maintain operating log and communicate boiler status/operation according to workplace procedures
5	Operate, monitor and shut down boiler	5.1	Operate boiler and monitor consistent with production and safety requirements
		5.2	Conduct boiler water quality tests and adjust boiler water quality to manufacturers' recommendations and workplace procedures, as required
		5.3	Act upon boiler failures/emergencies according to workplace procedures and notify downstream users, if necessary

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

		5.4	Shut down boiler consistent with workplace procedures, production and safety requirements
6	Carry out boiler shutdown for an internal inspection	6.1	Shut down boiler for internal inspection
		6.2	Clean boiler internally and externally to manufacturers' recommendations and workplace procedures
7	Store boiler in shutdown mode	7.1	Identify manufacturers' recommendations and workplace procedures required for shutdown storage mode
		7.2	Store boiler in identified shutdown mode

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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, accessibility of the item, and local industry and regional contexts) are included.

Pre-operational checks include one or more of the following:

- feed water supply
- boiler water level
- fuel supply/heat source
- boiler valves - their operation and position
- combustion air supply
- combustion equipment

Boilers include the following:

- single fixed combustion air supply, non-modulating single heat source and fixed firing rate

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, accessibility of the item, and local industry and regional contexts) are included.

Hazards include one (1) or more of the following:

- chemical
- thermal
- manual handling
- guarding of machinery
- illumination of work area
- rubbish and combustibles
- leakage of steam and fuel

Monitor includes one (1) or more of the following:

- steam pressure
- flame and combustion conditions
- feed system and condensate returns
- fuel system
- water level
- combustion management system
- water management system
- boiler and steam manifold fittings
- soot blowers

Handover includes the following:

- previous load requirements
- maintenance issue, including equipment isolated for maintenance
- operational incidences
- completing/reading operating log
- general inspection of boiler to detect any defects
- accept responsibility of boiler
- noted equipment malfunctions
- required equipment tests

Storage mode includes one (1) or more of the following:

- wet
- dry
- open condition
- closed condition

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07033 Operate and monitor basic boiler

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- safely conducting pre-operational checks of the boiler and reporting any faults or hazards
- starting and bringing the boiler online and confirming its operating status
- monitoring the boiler operation and conducting water quality tests, as required
- reacting effectively to any boiler emergency situations
- shutting down the boiler in the required condition, cleaning and putting into storage mode.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- pre-operational checks, including:
 - feed water supply
 - boiler water level
 - fuel supply/heat source
 - boiler valves their operation and position
 - combustion air supply
 - combustion equipment
- procedures for identifying and reporting maintenance
- statutory requirements and workplace procedures for identifying and reporting hazards in the work area
- processes for starting a boiler, including:
 - heat input
 - warm up of the reticulation system
 - steam traps and steam line purge
 - systems operation
 - reticulation line pressure
 - steam usage

- supply
- processes for confirming operational status of boiler
- procedures for maintaining boiler operating log
- procedures for communicating boiler status and operation
- principles of boiler operation
- boiler fittings
- preparing boiler for inspection
- procedures for monitoring a boiler, including:
 - steam reticulation line pressure
 - usage, supply and quality of steam
 - combustion/heat source system
 - feed water system
 - fuel system combustion air supply
 - water level
 - boiler steam pressures
- operation of boiler control/safety devices
- location of inspection and explosion doors
- procedures for conducting boiler water quality tests
- feed water systems and treatment
- emergency procedures, including:
 - identification of emergency
 - isolation of heat source
 - selection and application of appropriate fire-fighting equipment
 - notification of downstream users
- processes and procedures, including:
 - confirming water level
 - cooling down
 - boiler pressure/vacuum
 - fuel/heat source isolation
 - removal of combustion equipment and water from boiler
 - isolation from any common connection
 - the opening of all access points required for inspection
- procedures for cleaning the boiler internally and externally
- various modes of boiler storage
- procedures for storing the boiler in open or closed condition.

Assessment Conditions

- Assessors must:
 - have vocational competency in operating and monitoring a basic boiler at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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