



Australian Government

Department of Education, Employment and Workplace Relations

MEM07033B Operate and monitor basic boiler

Release: 1

MEM07033B Operate and monitor basic boiler

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing start-up, take-over/hand-over, monitoring, shut-down and storage of a basic boiler. It includes inspection procedures as specified in manufacturers' recommendations and workplace procedures, and identification of maintenance requirements and hazard control measures.
------------------------	--

Application of the Unit

Application of the unit	<p>All work is carried out to applicable State/Territory and National OHS legislation, standards and codes of practice.</p> <p>The boilers covered by this unit would typically have the following features: single fixed combustion air supply, non-modulating single heat source and fixed firing rate.</p> <p>The unit covers boilers used for all purposes, including the generation of steam.</p> <p>Band: A</p> <p>Unit Weight: 6</p>
--------------------------------	---

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
-----------------------------	--

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select and use personnel protective equipment	1.1. Personal protective clothing and equipment is selected and used correctly and in accordance with standard workplace procedures.
2. Carry out pre-operational checks	2.1. Pre-operational checks of boiler are undertaken correctly to plant operating procedures. 2.2. Maintenance requirements and visual faults are reported according to standard workplace procedures.
3. Maintain health and safety standards in work area	3.1. Hazards and potential hazards are identified and reported according to standard workplace procedures. 3.2. Hazard prevention/control measures are selected and used as required.
4. Start boiler	4.1. Boiler is started and brought on line safely, consistent with workplace procedures and production requirements.
5. Conduct hand-over/take-over procedures	5.1. Operating status of boiler is confirmed. 5.2. Operating log is maintained and boiler status/operation is communicated according to workplace procedures.
6. Operate and monitor boiler	6.1. Boiler is operated and monitored consistent with production and safety requirements. 6.2. Boiler water quality tests are conducted to manufacturer's recommendations and workplace procedures. 6.3. Boiler water quality is adjusted as required to manufacturer's recommendations and workplace procedures. 6.4. Boiler failures/emergencies are acted on according to workplace procedures and downstream users are notified, if necessary.
7. Carry out boiler operational shut-down	7.1. Boiler is shut down consistent with workplace procedures, production and safety requirements.
8. Carry out boiler shut-down for an internal inspection	8.1. Boiler is shut down for internal inspection according to manufacturer's recommendations and workplace procedures. 8.2. Boiler is cleaned internally and externally to manufacturer's recommendations and workplace procedures.
9. Store boiler in	9.1. Required storage mode is identified.

ELEMENT	PERFORMANCE CRITERIA
shut-down mode	9.2. Boiler is stored to manufacturer's recommendations and workplace procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- selecting and using personal protective clothing and equipment
- performing pre-operational checks of boiler
- identifying and reporting maintenance requirements
- identifying and reporting hazards and potential hazards in work area
- responding to boiler failures/emergencies
- applying hazard prevention/control measures
- starting boiler and bringing on line
- confirming operating status of boiler
- maintaining operating log
- communicating boiler status information
- monitoring boiler
- conducting boiler water quality tests
- adjusting boiler water quality
- shutting down boiler
- cleaning boiler internally and externally
- storing boiler

Required knowledge

Look for evidence that confirms knowledge of:

- personal protective clothing and equipment use and applications
- pre-operational checks such as feed water supply, boiler water level, fuel supply/heat source, boiler valves their operation and position, combustion air supply and combustion equipment
- procedures for identifying and reporting maintenance
- statutory requirements and workplace procedures for identifying and reporting hazards in the work area
- hazard prevention and control measures

REQUIRED SKILLS AND KNOWLEDGE

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

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to operate and monitor a basic boiler. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with operating and monitoring a basic boiler or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Pre-operational checks

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

Boiler

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

Hazards

Chemical and thermal hazards, manual handling, guarding of machinery, illumination of work area, rubbish and combustibles, leakage of steam and fuel etc.

Monitored

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

Storage mode

Wet and dry storing, open or closed condition

Unit Sector(s)**Unit sector**

Co-requisite units

Co-requisite units		

Competency field

Competency field	Machine and process operations
------------------	--------------------------------