



Australian Government

Department of Education, Employment and Workplace Relations

MEM07034A Operate and monitor intermediate class boiler

Release: 1

MEM07034A Operate and monitor intermediate class 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 single or multiple intermediate class boilers and associated equipment to legislative requirements, standards and codes of practice.
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Application of the Unit

Application of the unit	<p>This unit applies to the start-up, take-over/hand-over and shut-down of intermediate class boilers. Boilers covered by this unit would typically have the following features: modulating combustion air supply, modulating single heat source, modulating firing rate, and or superheaters, economisers, and other associate equipment.</p> <p>The unit applies to boilers used for all purposes including steam generation and other industrial uses as required in the workplace. The boilers may be singular or in a battery of boilers.</p> <p>Work includes inspection procedures as specified in the manufacturer's recommendations and workplace procedures, identification of maintenance requirements and hazard control measures.</p> <p>All work is carried out to applicable State/Territory and National OHS legislation, standards and codes of practice, including relevant aspects of NOHSC 1006 (1995), AS 3873 (Operation and maintenance of steam plant) and AS2593 1995 (Boilers - unattended and limited attendance)</p> <p>Where basic boiler operation (e.g. single fixed combustion air supply, non-modulating single heat source and fixed firing rate) only is required, Unit MEM07033B (Operate and monitor basic boiler) should be selected.</p> <p>Band: A</p> <p>Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM07033B	Operate and monitor basic boiler

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Carry out pre-operational checks	1.1. Pre-operational checks of boiler and associated equipment are carried out according to standard operating procedures. 1.2. Maintenance requirements are identified and reported in accordance with standard operating procedures.
2. Maintain health and safety standards in work area	2.1. Hazards and potential hazards in work area are identified and reported in accordance with statutory requirements and workplace procedures. 2.2. Personal protective equipment and clothing is selected and used as appropriate, according to statutory requirements and workplace procedures. 2.3. Hazard prevention/control measures are selected and used as required, in accordance with statutory requirements and workplace procedures
3. Start up boiler	3.1. Boiler is started and brought on line safely, consistent with workplace procedures and production requirements.
4. Conduct hand-over/take-over procedures	4.1. Operating status of the boiler is confirmed in accordance with manufacturer's recommendations and workplace procedures. 4.2. Boiler status and operation is communicated according to workplace procedures and statutory requirements.
5. Operate and monitor intermediate class boiler and associated equipment	5.1. The boiler and associated equipment is operated and monitored consistent with production and safety requirements. 5.2. Boiler water quality tests are conducted to manufacturer's recommendations and workplace procedures. 5.3. Water quality is maintained according to manufacturer's recommendations and workplace procedures. 5.4. Boiler failures and emergencies are responded to in accordance with statutory requirements, manufacturer's recommendations and workplace procedures.
6. Shut down boiler and associated equipment	6.1. Operational shut-downs of boiler and associated equipment are carried out in accordance with work-place procedures, production and safety

ELEMENT	PERFORMANCE CRITERIA
	<p>requirements.</p> <p>6.2. Shut-downs of boiler and associated equipment for internal inspection are carried out in accordance with workplace procedures, production and safety requirements.</p> <p>6.3. Boiler is isolated in accordance with statutory requirements, manufacturer's recommendations and workplace procedures.</p> <p>6.4. Boiler is cleaned internally and externally to manufacturer's recommendations and workplace procedures.</p>
7. Store boiler in shut-down mode	<p>7.1. Appropriate storage mode is identified</p> <p>7.2. Boiler and associated equipment is stored in shut-down mode to manufacturer's recommendations and workplace procedures.</p>

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:

- following, standard operating procedures and statutory requirements
- performing preoperational checks of boiler
- performing maintenance checks
- orally reporting routine information
- identifying hazards, hazardous situations and control measures
- using personal protective clothing and equipment
- selecting the most appropriate prevention/control measure for a given situation
- starting up boilers, including those fitted with associated equipment such as superheaters and economisers
- monitoring boilers, including checks of combustion management system and superheater and economiser operation
- checking operating status
- recording routine and familiar information in operating log and other standard workplace forms
- performing water quality tests to manufacturer's recommendations and workplace

REQUIRED SKILLS AND KNOWLEDGE

procedures

- using testing equipment
- adjusting water quality
- responding to typical emergency situations
- notifying downstream users
- performing operational and inspection shut-down, including procedures for associated equipment, such as superheaters and economisers
- isolating boiler from any common connection between the boiler and other boilers on line and all access points required for inspection

Required knowledge

Look for evidence that confirms knowledge of:

- pre-operational checks
- procedures for identifying and reporting maintenance requirements
- statutory requirements and workplace procedures for identifying and reporting hazards in the work area
- use and application of personal protective equipment
- safe work practices and procedures
- prevention and control measures
- the 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, associated equipment such as superheaters and economisers
- the process for confirming operational status of boiler
- procedures for maintaining an operating log and communicating boiler status
- procedures for communicating boiler status and operation
- principles of intermediate boiler operation - single and battery
- boiler fittings
- preparing boiler for inspection
- feed water systems and treatment, including de-aerator function and purpose
- procedures for monitoring an intermediate class 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, combustion management system, associated equipment such as superheaters and economisers
- function, purpose and location of associated equipment:
 - superheater
 - economiser
 - air heater
 - feed water heater
 - attemperator

REQUIRED SKILLS AND KNOWLEDGE

- superheater safety valves
- economiser relief valves
- main steam stop valve
- procedures for conducting boiler water quality tests
- procedures for adjusting boiler water quality
- procedures such as identification of emergency isolation of heat source, operation of boiler, selection and application of fire fighting equipment and notification of downstream users
- operational shut-down processes and procedures such as confirming water level, cooling down, boiler pressure/vacuum and fuel/heat source isolation
- shut-down processes and procedures for internal inspection, such as confirming boiler cooling down, vacuum/pressure, fuel/heat source isolation, removal of combustion equipment and water from boiler
- isolation procedures and safety issues
- procedures for cleaning boiler internally and externally
- various modes of boiler storage, which may include integral associated equipment such as superheaters and economisers
- the reasons for selecting particular storage mode
- procedures for storing a boiler in shut-down mode

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 intermediate class boilers. 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 intermediate class boilers 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 should not require language, literacy and numeracy skills beyond those required in this unit. 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	Modulating combustion air supply, modulating single heat source, modulating firing rate, and or superheaters, economisers, single and battery
Hazards	Chemical and thermal hazards, manual handling, machine guarding, illumination of work area, rubbish and combustible materials, steam and fuel leaks etc.
Associated equipment	Superheater, superheater safety valves, economiser, economiser relief valves, air heater, feed water heater, attemperator, main steam stop valve
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	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Machine and process operations
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