



Australian Government

UEGNSG137A Operate and Maintain Gas Station Water Bath Heaters

Release 1

UEGNSG137A Operate and Maintain Gas Station Water Bath Heaters

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers the monitoring, operating and maintenance of gas station Water Bath Heaters and associated equipment in accordance with relevant legislation, codes, regulations and procedures.

It encompasses gas fired and electric Water Bath Heaters.

Application of the Unit

Application of the Unit

2)

This competency standard shall apply to the following the types of gas facilities, subject to all Workplace Health and Safety (WHS)/Occupational Health and Safety (OHS) and duty of care requirements being met for the workplace:

- Trunk Receiving Stations (TRS)
- Pressure Reduction Stations

This unit is intended as an AQF 3 competency for new and existing workers in the gas industry. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice 3)

During Training:

Competency development activities are subject to regulations directly related to licensing, Workplace health and safety and where applicable contracts of training such as apprenticeships.

In the workplace:

A 'high risk work licence' may be required for performing maintenance on Turbine engines, heaters and boilers. Check with your state regulator such as 'WorkSafe' or 'WorkCover' for more information. Pressure equipment such as Water Bath heaters used in Australia are subject to periodic external and internal inspection as determined by AS3788 as well as the typical commissioning or re-commissioning inspection. Persons performing these inspections must be suitably qualified and licensed.

The skills and knowledge described in this unit are not subject to licence regulation other than those directly related to Workplace Health and Safety (WHS) /Occupational Health and Safety (OHS), gas/electricity/water industry safety and compliance, industrial relations, environmental protection, telecommunications, anti-discrimination and training.

Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age at which persons can operate certain equipment. Other conditions may apply to this competency under State and Territory legislative and regulatory requirements.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:

UEGNSG141 A	Apply Workplace Health and Safety regulations, codes and practices in the gas industry
UEGNSG005 A	Prepare to work in the Australian gas industry
UEGNSG132 A	Carry out basic work activities in a gas industry work environment
UEGNSG140 A	Apply with environmental policies and procedures in the utilities industry
UEGNSG134 A	Establish a utilities infrastructure work site

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 3	Writin 3	Numera 3
	g	cy

Employability Skills Information

Employability Skills 5)

This unit contains Employability Skills. The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit

Employability Skills

5)

of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit *Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.*

Elements and Performance Criteria**ELEMENT****PERFORMANCE CRITERIA****1 Prepare to operate & maintain gas station water bath heaters**

- 1.1 WHS/OHS and environmental measures for the site are identified, obtained and understood.
- 1.2 Work requirements for the work are interpreted from plans, specifications and instructions
- 1.3 Relevant requirements and established procedures for the work are discussed with relevant persons to establish and confirm the work schedule and respective responsibilities.
- 1.4 WHS/OHS, environmental and sustainable energy policies and procedures are received and confirmed.
- 1.5 Hazards are identified, WHS/OHS risks are assessed and control measures are prioritised, implemented and monitored according to established procedures.
- 1.6 Scope of the responsibility under the relevant work permit and/or relevant notification is received and confirmed to access, isolate/de-energise systems and perform work according to requirements and established procedures
- 1.7 Equipment, tools and personal protective equipment needed to carry out the work are identified, scheduled, obtained and checked for correct operation and safety.
- 1.8 Appropriate persons are consulted to ensure the work is coordinated effectively with others involved
- 1.9 Materials, plans, diagrams, drawings and resources required for work are confirmed,

ELEMENT**PERFORMANCE CRITERIA**

		scheduled and obtained in accordance with established procedures
	1.10	Relevant responsibilities associated with first aid and other related work safety procedures for an incident at the worksite are checked and confirmed.
	1.11	Third party issues are referred to appropriate persons in accordance with established procedures.
	1.12	Site preparation, safety plan and the work schedule are confirmed in accordance with established procedures.
2 Operate & maintain gas station water bath heaters	2.1	WHS/OHS risk control measures, schedule of work and standard operating procedures for carrying out the work are followed.
	2.2	Appropriate materials, tools, equipment and measuring devices are selected and used correctly and safely.
	2.3	Hazardous activities such as lifting, climbing, working in confined spaces, or aloft, and use of power tools, techniques and practices are conducted safely in accordance with given instructions and to requirements
	2.4	Work is carried out efficiently, to the required standard without waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles.
	2.5	Hazard warnings and safety signs are recognised and WHS/OHS risks and incidents are reported to the immediate authorised persons for directions according to established procedures
	2.6	Information on gas temperature, water levels and utility supply gas is collected and reported in accordance with established procedures.
	2.7	Scheduled maintenance of components conducted in accordance with the work schedule and established procedures
	2.8	Water bath heater components are maintained and operated in accordance with established procedures
	2.9	Faults and operational conditions of the components are identified, repaired or replaced and reported in accordance with organisational requirements

ELEMENT	PERFORMANCE CRITERIA
3 Complete work and relevant documentation	2.10 Procedures for referring non-routine events to the immediate authorised persons for directions are followed. 2.11 Routine quality checks are carried out in accordance with work instructions 3.1 WHS/OHS risk control work completion measures and procedures are followed. 3.2 Work site is tidied and made safe in accordance with established procedures 3.3 Tools, equipment and any surplus resources and materials are cleaned, checked and securely stored. 3.4 Appropriate persons are notified of work completion according to established procedures 3.5 Work completion documentation is completed accurately and provided to appropriate persons in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) *This describes the skills and knowledge and their level, required for this unit.*

Evidence shall show that knowledge has been acquired of safe working practices for carrying out work in a gas industry environment.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies. The extent of the required skills and knowledge is provided below. It forms an integral part of this unit.

KS01-G137A Water Bath Heater Maintenance and operation

Evidence shall show an understanding of operating and maintaining gas fired and electric water bath heaters in accordance with relevant legislation, standards, codes and established procedures to an extent indicated by the following aspects:

T1. Fundamentals of dew point control and gas heating

- Joule Thompson effect
- Relationship of Pressure, Temperature and Volume

T2. Water bath heaters

- Types and applications: gas fired and electric
- Operation
- Components
- Skid layouts

T3. Operating modes

- Dual heater skid operation
- Automatic
- Manual
- Set point Control

T4. Temperature control systems

T5. Fuel gas supply systems

T6. Component venting and purging operations

T7. Start-up and shut-down operation

T8. Heater run changes

T9. Routine inspection requirements

T10. Maintenance requirements including:

- Gas burner maintenance including pilot and main burner control both 'natural' and 'forced draft'

- Temperature monitoring and control
 - Water condition monitoring and corrosion inhibitors
- T11. Manufactures specifications, manuals and procedures.
- T12. Organisations manuals and procedures
- T13. Relevant Legislation, Standards, Codes and Regulations including:
- Regulator (Workcover) pressure vessels inspection requirements
 - AS1210 - 1997 Pressure vessels
 - AS3788 Pressure Vessel in-service inspections
 - AS4343 Pressure equipment - Hazard levels
 - AS 2971 - 2002, Serially produced pressure vessels
 - AS5601 Gas installations
- T14. Reporting and documentation requirements
- T15. Fault-finding and trouble-shooting water bath heaters

Evidence Guide

EVIDENCE GUIDE

8) The Evidence Guide forms an integral part of this Unit and shall be used in conjunction with all components parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

8.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment,

the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 8.2

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines — UEG11". Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and range
 - Demonstrate an understanding of the required skills and knowledge as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant Anti-Discrimination legislation, regulations, policies and workplace procedures
- Demonstrate performance across a representative range of contexts from the prescribed items below.
 - Carry out work on water bath heaters in accordance with relevant legislation, code, regulations and procedures as described in 9.) Range Statement and including:
 - A. Ideas described as identifying and interpreting correctly drawings, diagrams, schedules, procedures and manuals relevant to the work to be undertaken.
 - B. Selecting correct materials, equipment, tools, personal protection equipment and measurement devices
 - C. Operating and maintaining water bath heaters and associated equipment including utility supply gas and temperature control systems
 - D. Operating, adjusting/testing, fault finding and maintaining pressure measurement, controls and relief devices
 - E. Purging and venting components

- F. Completing required documentation and reporting.
- G. Dealing with unplanned events by drawing on required skills and knowledge, procedures/ protocols to provide appropriate solutions incorporated in the holistic assessment with the above listed items, for example encroachment and/or contact with assets

Context of and specific resources for assessment

8.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- WHS/OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this Competency Standard Unit.
- Appropriate environmental regulation and work practices.
- Appropriate organisational requirements.

These should be part of the formal learning/assessment environment.

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment. Assessment must also integrate the employability skills.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to locating, proving and protecting utility assets.

Method of assessment**8.4)**

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 "Assessment Guidelines".

Note: Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the specified Essential Knowledge and Associated Skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the required skills and knowledge described in this unit.

Concurrent assessment and relationship with other units**8.5)**

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

UEGNSG132 Carry out work activities in a utilities industry
A work environment

UEGNSG140 Apply with environmental policies and
A procedures in the utilities industry

UEGNSG134 Establish the work site
A

BSBFLM312B Contribute to team effectiveness

BSBFLM303C Contribute to effective workplace relationships

Range Statement

RANGE STATEMENT

9) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall be demonstrated in relation to operating, fault finding, repair, replacement and maintenance of gas fired and electric water bath heaters typically located at:

- Trunk Receiving Stations (TRS)
- Pressure Reduction Stations

Note:

Fault finding is limited to the component level.

This does not include electrical work that requires either a full or restricted electrical licence.

The following constants and variables included in the element/Performance Criteria in this unit are fully described in the Definitions Section of this volume and form an integral part of the Range Statement of this unit:

- Local and remote monitoring, adjusting and controlling
- Regulation of gas temperature
- Water bath condition monitoring
- Recording and reporting
- Regulation of the system
- Equipment
- Organisational and statutory requirements

Unit Sector(s)

Gas Sector

Competency Field

Competency Field

11)

Gas systems operations