



Australian Government

Department of Education, Employment and Workplace Relations

PMAOPS520C Manage utilities

Revision Number: 1

PMAOPS520C Manage utilities

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency covers management of utilities used by a whole site or group of plants with a view to improving the efficiency of usage.
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Application of the Unit

Application of the unit	In a typical scenario, a senior plant technician manages the use of utilities which maybe centrally produced and controlled, by all units within the site as a whole (or a significant plant area) and takes actions which will lead to a more efficient use of these utilities. Utilities is used to mean: • steam (saturated and/or superheated) • air (instrument, safety, process and/or mechanical) • water (cooling and/or process) • fuel (gas, oil) • other heating/cooling mediums (oil, 'Dowtherm', brine) • electricity. The plant technician would: • identify sources and uses of the relevant utilities • check the efficiency of use of the utility • take action to increase the efficiency of use of the utility - the action might range from implementing changes to reporting problems and recommendations to coordinating others implementing the changes. Generally this would be a significant role of a senior plant technician who in the exercise of that role would consult and liaise with a range of other personnel and technical experts, both internally and external to the company, within company guidelines. This unit does not apply to the routine monitoring of water systems or utilities which are covered by <i>PMAOPS204B Use utilities and services</i>.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
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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. Identify source and use of all utilities on plant.	1.1. Obtain current services diagram or schematic for plant 1.2. Identify all items of equipment using utilities 1.3. Identify source of each utility 1.4. Identify utility properties (eg pressure, voltage, current) as supplied 1.5. Determine required utility properties (eg from engineering specification) for each item of equipment using each utility.
2. Determine actual consumption of utilities.	2.1. Get information showing consumption of utilities by the plant and plant equipment 2.2. Get information showing actual utility properties as used by each plant item 2.3. Physically check each item of equipment for signs of inefficient utility use, eg faulty steam traps, leaks 2.4. Compile report/database showing actual usage of utilities and observed problems.
3. Determine efficiency of use.	3.1. Determine theoretical consumption of utilities for equipment items from engineering specifications, by calculation or other methods 3.2. Compare actual consumption of utilities with theoretical consumption 3.3. Determine inefficient users of utilities 3.4. Compile report/database showing efficiency of use of utilities.
4. Take required action to improve utility efficiency.	4.1. Rank inefficient users in priority order for remediation based on costs and business requirements 4.2. Investigate and determine cause(s) of inefficiency in the higher ranked users 4.3. Develop plans to remove the causes of inefficiency 4.4. Identify any safety, health and environmental (HSE) implications of planned actions and address prior to any implementation of changes 4.5. Consult with relevant stakeholders regarding HSE implications and the implementation of these plans 4.6. Initiate appropriate action for items within scope of authority 4.7. Follow through on items to facilitate a timely completion 4.8. Report/make recommendations on required improvements which are beyond scope of authority to action.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

Ability to:

- identify all utility consuming items on a schematic of the plant, describe the function of each and the purpose of the utility supplied
- describe the nature/condition of the utility entering and leaving each stage of the process, the changes which have occurred in that stage and why they have occurred
- describe the causes and remedies of common problems in the use of each utility used.

Competence also includes the ability to isolate the causes of problems and to be able to distinguish between causes of problems/alarm/fault indications such as:

- poor/inappropriate quality supply of utility
- equipment failure, eg faulty steam trap, fouled heat exchanger
- operational problem (inappropriate usage pattern of utility).

Required knowledge

The knowledge referred to in the Evidence Guide for this unit includes:

- schematics and flow diagrams for the utilities distribution system
- usage of utilities by plants and equipment
- sources of utilities
- utility properties
- requirements for utilities, properties, usage patterns, supply
- efficiencies and usage at the plant or equipment

Competence includes an understanding of the utility usage of the plant and its equipment. It also requires an understanding of each utility used and how its use may be more or less efficient.

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, the Range Statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment of this unit should include demonstrated competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Typically this unit will be assessed by a project aimed at improving the efficiency of use of utilities. It may not be appropriate to wait until implementation of change (in Element 4) is complete, and it is acceptable to assess from the plans for implementation. This unit of competency requires a significant body of knowledge which will be assessed through questioning and the use of what-if scenarios both on the plant (during demonstration of normal operations and walk-throughs of abnormal operations) and off the plant.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to undertake a structured analysis of the use of utilities and to justify the recommendations for improvement based on the data. Consistent performance should be demonstrated. In particular look to see that: • plant data is obtained in a manner which does not interfere with production • plant drawings (eg P&IDs) and engineering specifications are interpreted correctly • health, safety and environmental implications of any changes are identified and addressed, by applying the hierarchy of control, prior to any changes being implemented • priorities for action consider all relevant factors such as plant key performance indicators, health, safety and environmental implications, simple, quick solutions versus those requiring a capital project, and other relevant business factors. This will typically be assessed by one or more utilities

EVIDENCE GUIDE	
	improvement projects on an operating plant. One complex project, or a number of simple projects, are required to demonstrate competence.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. It may be appropriate to co-assess this unit with • <i>PMAOPS511B Determine energy transfer loads</i> • <i>PMAOPS512B Determine mass transfer loads.</i> However, these are not prerequisites or co-requisites as there are other ways of obtaining the data.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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. Add any 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.

Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
Context	This unit of competency includes all such items of equipment and unit operations which use utilities.
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State 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.

Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		
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