



Australian Government

PMAOPS500 Optimise production systems

Release: 1

PMAOPS500 Optimise production systems

Modification History

Release 1. Supersedes and is equivalent to PMAOPS500A Optimise production systems

Application

This unit of competency covers the skills and knowledge required to analyse and optimise complex operating production systems. It applies to discrete projects which aim to resolve identified production problems, such as a need for improved quality, reduced variability, higher yields, less waste or better control.

This unit of competency is applicable to the optimisation of an entire plant, or for large sites, an entire process system within the site.

This unit of competency applies to senior technicians or those in similar roles who are required to apply in-depth knowledge of process and plant operations and problem solving in order to gather historical plant operating or product quality data, review the data for trends or dependencies, investigate cause and effect responses, develop a solution/improvement and take action to ensure that the improvement is implemented and effective.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1	Identify process or system for review	1.1	Review process or plant performance to determine likely areas of improvement
		1.2	Gather data on the process or system design
		1.3	Design the data collection system for the required data

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|---|-------------------------------------|-----|--|
| 2 | Collect and analyse data | 2.1 | Collect or review available data from the process or plant |
| | | 2.2 | Analyse the data for trends or dependencies |
| | | 2.3 | Postulate possible cause and effect scenarios |
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| 3 | Develop tests or trials | 3.1 | Propose controlled tests or trials to review the plant or process patterns |
| | | 3.2 | Discuss possible solutions to cause with relevant people |
| | | 3.3 | Arrange for required tests or controls to be undertaken in appropriate timeframe |
| | | 3.4 | Collect further data from tests or trials |
| | | 3.5 | Review plant or process data and compare with original data |
| | | 3.6 | Prepare further tests or trials as required, or until possible solutions are developed |
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| 4 | Develop improvement solution | 4.1 | Agree required improvement solution with appropriate people |
| | | 4.2 | Arrange for required improvement solution to be undertaken in appropriate timeframe |
| | | 4.3 | Follow items initiated through until final resolution has occurred |
| | | 4.4 | Check effectiveness of solution and take action |
| | | 4.5 | Complete reports to procedure |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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

Regulatory framework The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements

All operations to which this unit applies are subject to stringent health, safety and environment (HSE) requirements, which may be imposed through state/territory 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.

Hazards Hazards include one or more of the following:

- electricity
- gas
- gases and liquids under pressure
- structural hazards
- structural collapse
- equipment failures
- industrial (machinery, equipment and product)
- equipment or product mass
- noise, rotational equipment or vibration
- plant services (steam, condensate and cooling water)
- limited head spaces or overhangs
- working at heights, in restricted or confined spaces, or in environments subjected to heat, dusts or vapours
- fire and explosion
- flammability and explosivity
- hazardous products and materials
- unauthorised personnel
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- extreme weather

- other hazards that might arise

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, include one or more of the following:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMAOPS500A Optimise production systems

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>

Assessment Requirements for PMAOPS500 Optimise production systems

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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, and include the ability to:

- analyse and interpret schematics, technical information, performance data and operational practices
- design and apply data collection system
- apply problem isolation and problem-solving techniques to multi-variable processes
- develop solutions/improvements
- evaluate effectiveness of solutions/improvements
- communicate and negotiate effectively with internal and external stakeholders
- complete written/electronic records
- perform complex calculations.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- plant equipment, its characteristics and limitations
- process chemistry, physics and biochemistry as relevant (e.g. to the extent of writing chemical equations and identifying factors controlling reaction rate and yield or equivalent, or determining mass or heat transfer rates for a process)
- problem isolation techniques
- problem analysis techniques
- systems operating parameters, system integrity limits, product specifications and tolerances
- principles of operation of plant/equipment
- hierarchy of control
- hazards that may arise in the job/work environment, and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.
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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
 - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
 - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or practical, assessment must occur using a sufficiently rigorous simulated environment reflecting 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.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- 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.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition, the assessor or anyone acting in subject matter expert role in assessment must demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they must assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed

- being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
- having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
- conducting on-the-job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.
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