



Australian Government

PMASUP540 Analyse equipment performance

Release: 1

PMASUP540 Analyse equipment performance

Modification History

Release 1. Supersedes and is equivalent to PMASUP540B Analyse equipment performance

Application

This unit of competency covers the skills and knowledge required to analyse performance of plant, equipment and equipment components and recommend improvements. It applies to all work environments and sectors within the chemical, hydrocarbons and refining industry.

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 in order to calculate the theoretical performance of an item of equipment, gather data to determine the actual performance of the item of equipment, calculate actual versus theoretical performance, and make recommendations based on the performance verification results.

The technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this unit of competency.

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

Pre-requisite Unit

Nil

Competency Field

Support

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1	Determine theoretical performance	1.1	Identify item of plant or equipment to be analysed
		1.2	Locate and interpret design specification
		1.3	Identify process materials being, or to be, processed during verification trial
		1.4	Determine process material properties under process conditions

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| | | 1.5 | Calculate theoretical performance of components with that material under those conditions |
| 2 | Conduct trial | 2.1 | Design verification trial to be compatible with theoretical analysis |
| | | 2.2 | Determine measurements needed from trial to yield required data |
| | | 2.3 | Select equipment suitable to give required measurements |
| | | 2.4 | Arrange for verification trial with relevant process personnel |
| | | 2.5 | Set up required measurement equipment |
| | | 2.6 | Supervise trial and ensure trial conditions are appropriate |
| | | 2.7 | Collect trial data for analysis |
| 3 | Verify performance of plant/equipment | 3.1 | Compare theoretical with actual performance |
| | | 3.2 | Determine significance of variation between theoretical and actual performance |
| | | 3.3 | Investigate any suspicious results and take action |
| 4 | Recommend required action | 4.1 | Determine action to bring performance to desired level |
| | | 4.2 | Initiate the corrective action in accordance with company procedures |
| | | 4.3 | Determine measures to increase equipment productivity |
| | | 4.4 | Re-check performance after corrective action is implemented |

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.

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 PMASUP540B Analyse equipment performance

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 PMASUP540 Analyse equipment performance

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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:
- design and implement verification trial appropriate to the plant/equipment, theoretical analysis and required data
- undertake theoretical/mathematical and practical analysis of the process
- recommended changes that are justified based on the comparison of trial and theoretical data
- calculate equipment and component performance from the design specification
- determine equipment and design performance from practical trials
- determine the 'limiting component' in the performance of an item of equipment or a process
- determine possible performance of an item of equipment/process if practical improvements were made to the 'limiting item'

predict interactions between materials, equipment and process and their impacts on performance.

Knowledge Evidence

Evidence must be provided that demonstrates sufficient knowledge to interact with relevant personnel and be able to analyse equipment performance, including knowledge of:

- methods of identifying and calculating theoretical performance
- ways of trialling, trial design and implementation
- methods of data analysis to determine trial outcomes
- methods of interpreting information deduced from trial data
- all items on a schematic (e.g. piping and instrumentation diagrams (P&IDs) and process flow diagrams (PFDs) of the system and the function and principles of operation of each
- systems operating parameters
- system integrity limits
- process control philosophies and strategies
- process parameters and limits
- product specifications and tolerances
- principles of operation of plant/equipment
- science (e.g. physics, chemistry and biochemistry) relevant to process and materials
- organisation procedures

- duty of care obligations
- hierarchy of control.

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.
- Simulation may be used for part only of this unit.
- 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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