



Australian Government

Department of Education, Employment and Workplace Relations

PMASUP540A Analyse equipment performance

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This competency covers the analysis of the performance, and performance verification, of existing equipment. This competency is typically performed by a senior technician who will take the lead in the data gathering phase and then analyses the data.

This competency applies to technicians who will set up and operate performance verification trials and then analyse the results to determine actual compared to theoretical performance of equipment and equipment components. It includes:

- calculating the theoretical performance of an item of equipment

- gathering data to determine the actual performance of the item of equipment

- calculation of actual versus theoretical performance

- making recommendations as to the appropriate action to be taken based on the performance verification results.

Prerequisites

This unit **has no** prerequisites.

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This unit **has no** prerequisites.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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Element	Performance Criteria
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 processes/to be processed during verification trial. 1.4 Determine process material properties under process conditions. 1.5 Calculate theoretical performance of component(s) 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 appropriate action.
- 4 Recommend required action
 - 4.1 Determine appropriate 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 Recheck performance after corrective action is implemented.

Required Skills and Knowledge

Not applicable.

Evidence Guide

Assessment context and methods

Assessment for this unit of competency will be on an operating plant. 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. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation.

Assessment might typically be by an analysis project.

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 and off the plant.

Critical aspects

Competence must be demonstrated in the ability to carry out the analysis without undue disruption to the process.

Consistent performance should be demonstrated. In particular look to see that:

trial design is appropriate

data taken during trial matches that required for the analysis

the analysis is carried out in a structured manner

recommended changes can be justified based on the comparison of trial and theoretical data.

Resource implications

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 projects will be required as will a bank of questions, which will be used to probe the reasoning behind the observable actions.

Other assessment advice

In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units.

In a major hazard facility, it may be appropriate to assess this unit concurrently with:

PMAOHS401A - Assess risk.

Essential knowledge

Knowledge and understanding of the materials, equipment and process sufficient to predict their interactions and their impacts on performance.

Knowledge of the enterprise's procedures and policies along with the ability to implement them within appropriate time constraints and in a manner relevant to the job.

Competence includes the ability for the practical completion of the job to:

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'.

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Range Statement

This competency unit includes the analysis of plant, equipment and equipment components. This competency applies to all work environments and sectors within the chemical, hydrocarbons and oil refining industry, but does require both a theoretical/ mathematical and a practical analysis of the process.

The competency does not require a knowledge of industry sectors and materials other than that in which the technician works. It assumes an understanding of the operation of all relevant equipment and processes but does not necessarily require them to be used personally.

Typical problems include:

worn equipment/components

validation of new equipment/components to design specification

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Unit Sector(s)

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