Australian Government

Department of Education, Employment and Workplace Relations

PMC555030C Analyse equipment performance

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the analysis of the performance, and performance verification of existing equipment. It is based on *PMBTECH501A Analyse equipment performance*. It involves calculating the theoretical performance components, gathering data, calculating performance and making recommendations based on verification results.

Application of the Unit

Application of the unit	This unit of competency applies to technicians who are responsible for setting up and operating performance verification trials and analysing the results to determine actual performance compared to theoretical performance of equipment and equipment components. It applies typically to the extrusion, automated casting or moulding sectors of the industry. This competency applies to all work environments and sectors within the industry, but does require both a theoretical/mathematical and a practical analysis of the process at a level equivalent to an analysis of screw performance in an extruder. The competency does not require 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. This competency is typically performed by a senior technician who will take the lead in the data gathering phase and then analyse the data.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine theoretical performance	1.1. Identify item of plant and plant components to be analysed 1.2. Locate and interpret design specification 1.3. Identify process materials being processed/to be processed during verification trial 1.4. Determine process material properties under process conditions 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. Check trial design to ensure occupational health and safety (OHS) issues are identified and addressed 2.3. Determine measurements needed from trial to yield required data 2.4. Select equipment suitable to give required measurements 2.5. Consult with relevant stakeholders 2.6. Arrange for verification trial with relevant process personnel 2.7. Set up required measurement equipment 2.8. Supervise trial and ensure trial conditions are appropriate 2.9. Collect trial data for analysis
3. Verify performance of components	3.1. Calculate actual performance from trial data 3.2. Compare theoretical with actual performance 3.3. Determine significance of variation between theoretical and actual performance 3.4. 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. Check that recommended action addresses any OHS issues 4.3. Consult with relevant stakeholders 4.4. Initiate the corrective action in accordance with company procedures 4.5. Determine measures to increase equipment productivity

ELEMENT	PERFORMANCE CRITERIA
	4.6. Recheck performance after corrective action is implemented

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Required skills include the ability to: • predicting the interactions of the materials, equipment and process and their impacts on performance • implementing the enterprise's procedures and policies within appropriate time constraints and in a manner relevant to the job • high levels of numeracy and literacy to interpret technical specifications and reports • advanced numeracy allowing the calculation and interpretation of statistics, product formulae and process conditions • identifying hazards associated with the trial and implementing controls by applying the hierarchy of control
Required knowledge
Required knowledge includes: • enterprise requirements • calculation of 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'

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, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	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.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In particular look to see that: • a thorough understanding of process materials, their additives and the rheological, heat and other effects of processing to the design of equipment and components are applied to predict practical performance results • material and process interactions should also understood and able to be applied to interpreting data and making judgements about the state of the equipment/component.
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. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation or case studies/scenarios may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual plant and will include 'walk-throughs' of the relevant competency components. A bank of scenarios/case studies/what ifs and questions will be required to probe the reasoning behind observable actions.
Method of assessment	It may be appropriate to assess this unit concurrently with relevant teamwork and communication units. It may be appropriate to assess this unit concurrently with other relevant units.

EVIDENCE GUIDE	
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate 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. 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) may also be included.	
Procedures	All operations are performed in accordance with standard procedures and work instructions
Equipment components	This competency unit includes the analysis of equipment components such as: • screws and casters or items of equipment or processes
Typical problems	Typical problems include: • worn components • validation of new components to design specification • component performance analysis in order to upgrade process performance

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units		