



Australian Government

PMBTECH406 Diagnose production equipment problems

Release: 1

PMBTECH406 Diagnose production equipment problems

Modification History

Release 1. Supersedes and is equivalent to PMBTECH406A Diagnose production equipment problems

Application

This unit of competency covers the skills and knowledge required to diagnose production equipment problems. It applies to product faults, including reject products and other faults, and production faults/problems.

This unit of competency applies to advanced operators, technicians or those in similar roles who are required to determine the possible causes of product/production faults; investigate the likely equipment, plant and/or process causes of the faults; isolate the most probable cause; recommend the solution and monitor its implementation.

This unit of competency applies to an operator/technician applying specialised theoretical and technical knowledge and well developed skills in situations that require autonomy, discretion and judgement. The operator/technician will take the lead role in the activity but will need to liaise with a range of people at all levels in the organisation to obtain information and to implement the solution. The operator/technician will have detailed operational and process knowledge but is not required to demonstrate 'hands on' operation of equipment as part of this competency.

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

Pre-requisite Unit

Nil

Competency Field

Technical

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

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

- | | | | |
|---|---------------------------|-----|-------------------------------------|
| 1 | Identify faults in | 1.1 | Examine products/production process |
|---|---------------------------|-----|-------------------------------------|

	products/product ion	1.2	Identify faults
		1.3	Categorise faults according to type/likely cause
		1.4	Prioritise faults for action
2	Determine most probable possible cause(s) of fault	2.1	Analyse fault to determine possible causes
		2.2	Investigate possible causes to eliminate less probable causes
		2.3	Short list probable causes
		2.4	Check hypothesis of cause(s) is supported by the data available
		2.5	Identify most probable cause
3	Implement solution to fault	3.1	Develop recommended solution to fault
		3.2	Check health, safety and environment (HSE) implications of solution and modify solution as appropriate
		3.3	Communicate the recommendation as appropriate
		3.4	Check recommendation has been understood and can be implemented
		3.5	Check all hazard controls are in place
		3.6	Monitor progress of implementation
		3.7	Modify recommended solution as required
4	Check fault solution has worked	4.1	Monitor product/process for fault
		4.2	Monitor HSE impacts of changes
		4.3	Repeat analysis and solution process if required
		4.4	Update records and procedures to reflect successful solution

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Applicable legislation, regulations, standards and codes of practice include:

- HSE legislation, regulations and codes of practice relevant to the workplace, manual handling, hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent 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 such requirements the legislative 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, and include one or any combination of:

- technical specifications
- technical drawings
- test procedures
- 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.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- hazardous products and materials
- vapours or other atmospheric hazards
- interaction of polymers, additives and other materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- structural hazards
- equipment failures
- machinery, equipment and product mass
- other hazards that might arise.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMBTECH406A Diagnose production equipment problems

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>

Assessment Requirements for PMBTECH406 Diagnose production equipment problems

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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 demonstrate the ability to:

- read and interpret test results, technical information, product specifications, instruments/control panels, material labels and safety data sheets (SDS)
- examine products/process to identify faults via one (1) or more of:
 - visual examination
 - examination of product quality or other records
 - examination of inspection records
 - examination of test results
 - specific examination testing undertaken as part of a product improvement activity
- analyse the faults to identify all feasible causes of the problem
- investigate possible causes to short list probable causes including one (1) or more of:
 - talking with operators and others
 - checking machine histories for prevailing process conditions
 - checking current process/equipment conditions
 - carrying out small tests to determine the likelihood of a causal link between a condition and a fault
- confirm most probable cause based on available data
- develop and communicate solution to the fault which meets safety requirements
- monitor implementation of the solution and review and make adjustments as required
- communicate effectively with team/work group and supervisors
- complete workplace records
- document updates to procedures
- write equipment/process condition specifications.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to fulfil their job role including knowledge of:

- how the process/equipment works
- characteristics of materials and their behaviour in relation to process conditions and stages of production

- impact of variations process conditions on the product
- impacts of equipment failure/change/variation on the product
- changes to materials at various stages of production
- quality/inspection/testing regime and relationship of results of to process conditions and equipment faults
- types of product faults, including variations in:
 - colour
 - surface finish
 - size/shape
 - physical properties
 - chemical properties
 - biological/biochemical/microbiological properties
- types of process/equipment condition problems, including:
 - settings, such as temperature and pressure
 - rates, such as feed rate and flow rate
 - setting and adjustment of equipment parts
 - worn and broken equipment parts
- product faults that can be caused by process/equipment problems and possible solutions
- organisation procedures relevant to the work environment/job role
- hierarchy of control
- hazards that may arise in the job/work environment and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- The diagnosis and solving of a number of faults with different types of causes is required, including:
 - product defect with process condition cause
 - product defect with equipment problem cause
 - process fault/problem with process condition or equipment cause.
- 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 where personal safety or environmental damage are limiting factors assessment must occur using a sufficiently rigorous simulated environment that reflects 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.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
 - walk-throughs
 - pilot plant operation
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews.
- 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 shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall 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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