



Australian Government

PPMEPG401 Troubleshoot and rectify power generation system

Release: 1

PPMEPG401 Troubleshoot and rectify power generation system

Modification History

Release	Comments
Release 1	This version released with PPM Pulp and Paper Manufacturing Training Package Version 3.0.

Application

This unit of competency describes the skills and knowledge required to identify, diagnose and rectify and report on processes and equipment faults in the power generation system of a manufacturing facility.

This unit applies to senior operators and production specialists who troubleshoot and rectify complex system faults that occur in continuous power generation operations.

Licensing requirements apply to this unit where the turbine equipment falls under the category for which a high risk work licence is required. Users are advised to check with the relevant regulatory authority for current requirements.

Pre-requisite Unit

Nil

Unit Sector

Electrical Power Generation (EPG)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify and diagnose causes of system faults	1.1 Prepare for rectification of power generation system according to operational requirements and workplace health and safety and environmental procedures 1.2 Identify safety hazards and determine risk control measures with relevant personnel 1.3 Interpret abnormal plant conditions and system alarms to determine type and location of fault

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.4 Identify faults through physical inspections of plant, equipment and processes 1.5 Identify and locate the cause and source of fault and take appropriate actions 1.6 Access and refer to relevant historical data to confirm fault diagnosis 1.7 Communicate diagnosis to relevant personnel according to workplace procedures
2. Rectify faults	2.1 Notify power authorities of planned shutdown according to regulatory requirements 2.2 Shut down and isolate equipment according to operating procedures and regulatory requirements 2.3 Repair or replace faulty equipment according to equipment specifications 2.4 Adjust process and equipment to restore normal operations 2.5 Verify and communicate restoration to normal operations to relevant personnel
3. Record and report troubleshooting and rectification activities	3.1 Document variations from required production output and systems operation faults according to workplace requirements 3.2 Record and report troubleshooting process and corrective action to relevant personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Interpret information from a range of documentation and test results
Writing	Complete accurate detailed records and reports for system and product faults, diagnostic and corrective action processes using the required format

Skill	Description
Oral Communication	• Provide comprehensive information about problems with equipment and products using clear language and industry terminology • Provide clear, unambiguous information about return to normal operations to system operators and other personnel
Numeracy	• Interpret numerical settings on instruments, gauges and data recording equipment • Interpret system and product data • Record detailed numerical data for system and product test results • Use measuring equipment to measure and inform calculations

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
PPMEPG401 Troubleshoot and rectify power generation system	PPMEPG440 Troubleshoot and rectify power generation system	Changes to elements, performance criteria, foundation skills, performance evidence and knowledge evidence Assessment conditions updated	Not equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=12998f8d-d0ac-40bc-a69e-72a600d4fd93>

Assessment Requirements for PPMEPG401 Troubleshoot and rectify power generation system

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has identified, diagnosed and rectified faults in plant, equipment and processes relevant to power generation systems on at least two occasions according to operational requirements, including for each occasion:

- selected and used appropriate troubleshooting methods to identify plant, equipment and process faults
- diagnosed causes and sources of faults on system and associated processes
- communicated effectively and worked safely with others when undertaking troubleshooting and rectification activities
- completed accurate, detailed records on troubleshooting and rectification activities and actions undertaken.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- workplace and legislative health and safety requirements and risk measures relevant to operating, troubleshooting and rectifying power generation systems, including emergency procedures, handling chemical and hazardous substances, high risk load shifting, licensing requirements, plant clearance and permit systems
- environmental requirements relevant to power generation systems
- troubleshooting methods applicable to the operation of power generation systems, including disposal procedures
- manufacturer specifications and operating procedures for power generation systems, including shutdown and electrical isolation procedures
- power generation systems, processes and associated services sufficient to troubleshoot, including:
 - plant layout

- theory of operation
- causes and effects of adjustments made to power generation system and processes
- relationships between power generation system and associated services
- types, causes and effects of power distribution systems and power generation plant shutdowns
- effect of steam quality on turbine operation
- operational tolerances of the turbine system and the effect of operating outside these tolerances
- AC/DC generation principles
- output control and regulation principles
- power factor characteristics, effects and correction techniques
- principles of operation of transformers and circuit protection systems
- electronic and other control systems, operation and application to make appropriate adjustments that control power generation systems.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a manufacturing facility or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - power generation system, including chemical products
 - electronic control systems that include digital control system, touch screens or robotics
 - tools, equipment and consumables used to troubleshoot and rectify power generation systems
 - personal protective equipment required for troubleshooting power generation systems
 - proforma or recording system for recording diagnostic and corrective action processes
- specifications:
 - workplace and standard operating procedures relating to troubleshooting and rectifying power generation systems, including health and safety, environmental risks and hazards identification, plant isolation and quality requirements
 - manufacturer specifications and operating procedures
- relationships:
 - relevant personnel for the purposes of communicating information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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