



Australian Government

PPMEPG301 Perform power generation operations

Release: 1

PPMEPG301 Perform power generation operations

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 prepare for, start up, monitor and shut down power generation systems that are steam generated and produce power output of less than 500kW or use gas fired turbines that produce power greater than 500kW.

The unit applies to production operators and technicians who perform power generation operations and **respond to contingencies** that occur working with complex integrated equipment and continuous operations.

No licensing, legislative or certification requirements apply to this unit at the time of publication. This unit should not be used 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 appropriate unit and licensing 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. Prepare for power generation operations	1.1 Identify power generation requirements and specifications to plan operations and processes in conjunction with power authorities 1.2 Identify workplace health and safety hazards, assess risks and determine control measures 1.3 Identify process control points according to operational

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	specifications 1.4 Select, fit, use and maintain personal protective equipment according to job requirements and task to be undertaken 1.5 Communicate power generations requirements and specifications, workplace health and safety and environmental requirements and operating procedures to relevant personnel
2. Inspect, start up and monitor power generation system	2.1 Conduct system inspections and pre-start-up safety checks according to regulatory requirements, workplace health and safety and operating procedures 2.2 Confirm plant status by observation and inspection 2.3 Complete routine maintenance to ensure optimum system performance 2.4 Coordinate and start up generation system distribution and ancillary systems and bring on-line 2.5 Monitor system or plant condition during start-up to detect abnormal conditions 2.6 Detect deviations from operational specifications and rectify common faults or refer complex faults to specialist technician
3. Shut down, inspect and maintain system	3.1 Coordinate shutdown of power generation system according to maintenance schedule 3.2 Notify power authorities of planned shutdown according to regulatory requirements 3.3 Shut down process supplies according to workplace health and safety and operating procedures 3.4 Isolate and shut down power generation system according to workplace and regulatory requirements 3.5 Inspect system and record or report further maintenance requirements
4. Respond to unplanned shutdowns	4.1 Respond to unplanned faults and stoppages according to operating, emergency and workplace health and safety procedures 4.2 Rectify, isolate and/or contain faulty plant for continued production according to manufacturer specifications and operating procedures 4.3 Shut down process supplies where fault cannot be rectified

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.4 Assess effects of unplanned shutdown to determine impact on operations 4.5 Notify relevant personnel to rectify and make plant ready for restart
5. Record and report production information	5.1 Record production and power generation operation information according to workplace requirements 5.2 Report problems or variations with production and plant 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 workplace procedures and documentation
Writing	Complete records accurately and legibly using clear language and industry terminology
Oral communication	Provide information about start-up and shutdown operations, problems or variations with production, quality and system using clear language and industry terminology
Numeracy	- Interpret numerical settings on instruments, gauges and data recording equipment - Record numerical data for power generation system and operational performance

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
PPMEPG301 Perform power generation	PPMEPG320 Manage a power generation	Merges two units Changes to unit title,	Not equivalent

Code and title current version	Code and title previous version	Comments	Equivalence status
operations	system startup	elements, performance criteria, foundation skills, performance evidence and knowledge evidence Assessment conditions updated	
PPMEPG301 Perform power generation operations	PPMEPG330 Coordinate power generation system shutdown	Merges two units Changes to unit title, 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 PPMEPG301 Perform power generation operations

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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 planned for, coordinated, and safely started up and shut down power generation operations for at least two operational intervals, including for each operational interval:

- determined and monitored process control points
- monitored, assessed causes and rectified system condition and unplanned shutdown
- used and interpreted electronic control systems during operations
- completed routine maintenance on plant
- applied safe use and handling of chemicals and materials
- recorded and reported accurate operational data
- communicated effectively and worked safely with others when undertaking power generation operations.

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 relevant to performing power generation operations, including emergency procedures, handling chemical and hazardous substances, high risk load shifting, licensing requirements, plant clearance and permit systems
- relevant workplace and legislative environmental sustainability requirements and practices for power generation operations, including workplace biotechnological applications and processes
- methods used to identify and manage hazards and risks that apply to power generation operations
- local power authority regulations and reporting requirements for power generation systems

- purpose, features and operation of power generation and distribution systems, operating parameters and allowable variations, including:
 - plant layout
 - operation and application of electronic and other control systems
 - electrical isolation procedures
 - principles of operation of transformers and circuit protection systems
 - AC/DC generation principles
 - electrical output control and regulation principles
 - power factor characteristics and effects
 - effect of steam quality on turbine operation
 - operational tolerances of the turbine system and effects of operating outside these tolerances
 - methods used to test power systems and diagnose deviations from operational specifications
 - types, uses and characteristics of materials and supplies for power generation operations
 - effect of process adjustments on productivity during operation
 - application of electronic and other control systems used to operate, control and make appropriate adjustments to power generation operations
 - causes of and responses used for unplanned shutdowns
- standard operating procedures specific to power generation operations
- procedures for communicating, recording and reporting for system operation, production outcomes and equipment faults.

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 that is either steam generated and produces power output of less than 500kW or uses gas fired turbine that produces power greater than 500kW
 - chemical products and systems
 - high and low voltage transformers
 - steam or gas turbine driven alternators
 - switchboards
 - water systems and auxiliary plant
 - circuit breakers
 - AC/DC generation and distribution systems
 - maintenance tools and equipment and consumables for power generation systems

- personal protective equipment required for operating power generation systems
- electronic control systems that include digital control system, touch screens or robotics used to control power generation system
- proforma or recording system for recording system and production data and information on power generation operations
- specifications:
 - workplace and standard operating procedures relating to power generation operations, including health and safety, risks and hazards identification, plant isolation, quality, housekeeping and environmental requirements
 - manufacturer specifications and maintenance schedules for power generation plant and system
 - local power authority regulations for starting up power generation systems
- 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.

Links

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