Australian Government

Department of Education, Employment and Workplace Relations

FPPEPG210A Monitor and control power generation system

Release: 1

FPPEPG210A Monitor and control power generation system

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor

This unit describes the outcomes required to monitor and control power generation systems in the pulp and paper industry

General legislation, regulatory, licensing and certification requirements applicable to this unit are detailed in the range statement

Specific high risk licensing requirements for this unit may be applicable and are to be met separately and prior to the achievement of this unit

Application of the Unit

Application of the unit

This unit applies to operators who monitor and control power generation systems in the pulp and paper industry. This work typically involves complex integrated equipment and continuous operations

This unit generally applies to those who:

- confirm operational status
- monitor and control power generation and ancillary plant operation, and
- record and document power generation and ancillary plant performance

to meet safety, quality and productivity requirements

It does not include managing power generation system startups, shutdowns, or troubleshooting and rectifying power generation systems

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

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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.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm operational status	1.1. Operational status is confirmed within Occupational Health and Safety (OHS) regulations, environmental and safe working requirements/practices, Standard Operating Procedures (SOP), and housekeeping requirements 1.2. Production requirements are checked at start of shift to plan the day's activities as required 1.3. Continuing process supplies are maintained 1.4. Power generation processes are confirmed to be within operational specifications 1.5. Turbine performance is recorded in the operational log 1.6. Operational status is communicated to relevant personnel
2. Monitor and control power generation and ancillary plant operation	2.1. Power generation and ancillary plant operation is monitored and controlled within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements 2.2. Operational status is confirmed by inspection, observations and other information 2.3. Process supplies are monitored as required 2.4. Turbine pressures, temperatures and flows are measured as required 2.5. Turbine and generation control adjustments are made to maintain operation within specification 2.6. Power output demand and distribution systems operation is monitored and maintained to meet client requirements
3. Record and document power generation and ancillary plant performance	3.1. Power generation and ancillary plant performance is recorded and documented within OHS regulations, environmental and safe working requirements/practices, SOP, and housekeeping requirements 3.2. Pressures, temperatures and flows are documented as required 3.3. Operating log is maintained 3.4. Maintenance requirements are identified and documented as required

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the skills and knowledge required for this unit.

Required skills

- Uses required forms of communication in monitoring and controlling power generation systems
- Reads and interprets required documentation, procedures and reports, within level of responsibility
- Accesses, navigates and enters computer-based information
- Interprets instruments, gauges and data recording equipment
- Responds to monitoring and warning devices
- Identifies and actions problems within level of responsibility
- Monitors and controls process control points
- Maintains situational awareness in the work area
- Uses measuring equipment as required
- Conducts routine checks
- Uses tools and equipment
- Operates high risk equipment as required
- Analyses and uses sensory information to adjust process to maintain safety, quality and productivity
- Uses electronic and other control systems to control equipment and processes as required

Required knowledge

- Procedures, regulations and legislative requirements relevant to power generation systems including OHS, environmental including relevant sustainability requirements/practices, SOP, isolation procedures, safe working requirements, risks and hazard identification and housekeeping
- Relevant forms of communication
- Basic problem-solving techniques consistent with level of responsibility
- Working knowledge of power generation plant, processes, layout and associated services including operating parameters, variation and associated adjustments within level of responsibility
- Electrical isolation procedures
- Principles of operation of transformers and circuit protection systems within level of responsibility
- Power distribution systems
- AC/DC generation principles
- Output control and regulation principles

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REQUIRED SKILLS AND KNOWLEDGE

- Power factor characteristics and effects
- Effect of steam quality on turbine operation
- Application of high risk equipment as required
- Sensory information that indicates a deviation from standard operating parameters
- Sufficient knowledge of electronic and other control systems, operation and application to make appropriate adjustments that control power generation systems, within level of responsibility

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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

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence should be relevant to the work. It should satisfy the requirements of the elements and performance criteria and include consideration of:

- the required knowledge and skills tailored to the needs of the specific workplace
- applicable OHS regulations, environmental and safe working requirements/practices, SOP and housekeeping requirements
- applicable aspects of the range statement
- practical workplace demonstration of skills in monitoring and controlling power generation systems

Context of and specific resources for assessment

A workplace assessment must be used to assess:

- the application of required knowledge on the job
- the application of skills on the job, over time and under a range of typical conditions that may be experienced in power generation system operations

Access to the full range of equipment involved in integrated continuous manufacturing for power generation systems in a pulp or paper mill is required

Method of assessment

A combination of assessment methods should be used. The following examples are appropriate for this unit:

- observation of applied skills and knowledge on the job
- workplace demonstrations via a mock-up or simulation that replicate part/s of the job
- answers to written or verbal questions about specific skills and knowledge
- third-party reports from relevant and skilled personnel
- written evidence e.g. log sheet entries, checklist entries, test results

Assessment processes and techniques must be culturally appropriate and in keeping with the language

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EVIDENCE GUIDE

and literacy capacity of the learner and the work being performed. This includes conducting an assessment in a manner that allows thoughts to be conveyed verbally so that the learner can both understand and be understood by the assessor (e.g. use plain English and terminology used on the job)

A holistic assessment with other units relevant to the pulp and paper industry, mill and job role is recommended

Additional information on approaches to assessment for the pulp and paper industry is provided in the Assessment Guidelines for this Training Package

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.

Productivity requirements may include:

- energy efficiency
- waste minimisation
- evaporation minimisation, including landfill and waste water reduction
- environmentally safe waste disposal
- consideration of resource utilisation, including fibre efficiency
- minimising delays
- chemical recovery maximisation
- meeting key performance indicators
- line speed
- handovers
- quality checks
- meeting output targets i.e. net tonnes per employee per annum
- machine/process time availability i.e. time the machine or process is making product

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RANGE STATEMENT

- machine/process production rate

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RANGE STATEMENT

Management and operation of power generation may include:	• availability of required supplies • electricity generation • regulation and distribution systems
Materials and supplies may include:	• water • air • steam • electricity • gas
Equipment may include:	• boilers • 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 • protective equipment • measuring and recording equipment • computer systems • electronic screens and alarms • process control systems • analogue and digital instrumentation • fully automated, semi-automated, manually operated plant and equipment appropriate to the power generation process
Electronic control systems may include:	• Digital Control System (DCS) • touch screens • robotics
Legislation, regulatory, licensing and certification requirements may include:	• OHS and environmental requirements (local, state and commonwealth) • activity or task specific high risk licensing requirements • operator endorsement requirements • local power authority rules and regulations
Documentation, procedures and reports may include:	• SOP • quality procedures • environmental sustainability requirements/practices • plant manufacturing operating manuals • enterprise policies and procedures • oil or chemical spills and disposal guidelines

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RANGE STATEMENT

	• plant isolation documentation • safe work documentation e.g. plant clearance, job safety analysis, permit systems • operational logs and reports • maintenance logs • Materials Safety Data Sheets (MSDS) • process and instrument diagrams
Maintenance may include:	• operator level maintenance as per site agreements • operator maintenance schedules • maintenance systems • maintenance suppliers • proactive maintenance strategies e.g. Total Productive Maintenance (TPM), Reliability Centred Maintenance (RCM)
Actions may include:	• process adjustments • reporting to authorised person • rectifying problem within level of responsibility
Communications may include	interaction with: • internal/external customers and suppliers • team members • production/service coordinators • maintenance services • operational management • statutory authorities
Situational awareness may include	awareness of: • traffic • pedestrians • location of equipment • product • hazards • obstruction • unexpected movement
Forms of communication may include:	• written e.g. log books, emails, incident and other reports, run sheets, data entry • reading and interpreting documentation e.g. SOP, manuals, checklists, drawings • verbal e.g. radio skills, telephone, face to face, handover

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RANGE STATEMENT

	• non-verbal e.g. hand signals, alarms, observations • signage e.g. safety, access
Sensory information may include:	• visual • sound • feel • touch • smell • vibration • temperature

Unit Sector(s)

Not Applicable

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