



Australian Government

MSFGG4006 Operate complex glass processing plant control systems

Release: 1

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Modification History

Release 1 - New unit of competency

Application

This unit of competency covers operating a complex glass processing plant control panel utilising control loops and a broad range of control algorithms to control plant areas and multiple products/process streams. It will typically be located in a control room and require managing multiple complex tasks.

The technician/central control room operator takes overall responsibility for the operation of all equipment and processes within the plant area and may include optimisation of the area using the control system.

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

Pre-requisite Unit

Competency Field

Unit Sector

Glass and Glazing

Elements and Performance Criteria

Elements describe the essential outcomes.

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

- | | |
|---------------------------------|---|
| 1 Use operator interface | 1.1 Keyboards, track ball and monitor and/or stand-alone controllers are used to access control system/panel |
| | 1.2 Glass processing task is monitored using the operator interfaces selecting appropriate controller modes |
| | 1.3 Historical data and information are accessed as required |
| | 1.4 Messages and alarms are monitored and acknowledged with appropriate action taken |
| | 1.5 Advanced control features are accessed and managed as |

			appropriate
2	Access control information	2.1	Relevant data and information are accessed from the control system by applying systems knowledge
		2.2	Status of individual pieces of equipment is determine from the control panel readings and the information used to identify potential faults
		2.3	Fluctuations and variations in process through the interpretation of existing trends and control schematics are minimised
		2.4	Overall operating effectiveness of the plant area is determine and related to the required targets for the area
		2.5	Process variations/irregularities to procedures are recoded as necessary
3	Control process variations and monitor operations	3.1	Historical data on plant operations are used to assist the identification of problems and all available information processed to identify potential faults
		3.2	Required set point/output changes are undertaken to meet plant area and process requirements
		3.3	Production is adjusted in response to test results and control panel information
		3.4	Key process and environmental variables are monitored and appropriate action taken
		3.5	Controller settings are adjusted in accordance with procedures with advanced control features utilised as appropriate
		3.6	Plant area is optimised in accordance with guidelines
		3.7	Calibration operations are made as appropriate
		3.8	Coordination with stakeholders external to the plant area is undertaken as required
		3.9	Adjustments and variations to specifications/schedules are recorded and communicated to appropriate personnel
4	Facilitate planned and unplanned process start-ups and shutdowns	4.1	Procedures to planned startup and shutdown processes are selected and applied
		4.2	Procedures to unplanned shutdown processes are selected

- and applied where required
- 4.3 Required emergency responses are implemented
 - 4.4 Necessary information is communicated to all personnel affected by events
 - 4.5 Required information is logged regularly
- 5 Respond to alarms or out of specification conditions and control hazards
- 5.1 System(s) affected by the alarm or condition are identified, prioritised and appropriate action taken
 - 5.2 Alarm or incidents are responded to promptly by following procedures
 - 5.3 Any out of specification material is dealt with in accordance with procedures and the problem/solution communicated to appropriate personnel
 - 5.4 Incident information is recorded as required and details of the alarm and action taken communicated to the next shift at change over
 - 5.5 Incidents are followed up to confirm that appropriate action has been taken
 - 5.6 Hazards in the production/processing work area are identified and the risks arising from those hazards assessed
 - 5.7 Measures to control risks are implemented in line with procedures and duty of care
- 6 Resolve other problems within scope of responsibility
- 6.1 Possible problems in equipment, control systems or process are identified to determine problems needing action
 - 6.2 Possible fault causes are established and problems rectified using appropriate solution within area of responsibility
 - 6.3 Initiated control actions are followed through until final resolution has occurred with problems outside area of responsibility reported to designated person

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

Range of Conditions

Specifies 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. Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit scope includes:

- equipment and unit operations which form part of the glass processing control system, such as:
 - process control systems (e.g. distributed control systems)
 - use of multiple control systems
 - personal computers
 - printers
 - fire and gas detection/protection systems
 - emergency shutdown systems
 - communication systems

Typical problems for glass processing plant include:

- operating without advanced control features
- loss of power/utilities
- analysing failure modes
- variation/loss of feed
- unstable control of pressure, temperature level and flows
- control equipment failure
- process plant trips
- change in atmospheric conditions (rain, temperature, wind and lightning)
- emergency situations

Work health and safety (WHS) requirements include:

- Commonwealth, state or territory legislation and regulations
- organisational safety policies and procedures
- the use of personal protective equipment and clothing
- firefighting equipment
- first aid equipment
- hazard and risk control and elimination of hazardous materials and substances
- manual handling, including lifting and carrying

Alarms or abnormal conditions include:

- emergencies, including emergency shutdown
- partial or complete controller failure

Appropriate action includes:

- determining problems needing action
- determining possible fault causes
- rectifying problem using appropriate solution within area of responsibility
- following through items initiated until final resolution has occurred
- reporting problems outside area of responsibility to designated person

Procedures include:

- work instructions
- standard operating procedures
- processing data and requirements
- batch sheets
- temporary instructions
- any instructions provided for the smooth running of the plant

Organisational requirements include:

- verbal, written or computer-based procedures
- legal, organisational and site guidelines, policies and procedures relating to own role and responsibility
- quality assurance
- procedural manuals
- quality and continuous improvement processes and standards
- WHS procedures
- emergency and evacuation
- ethical standards
- recording and reporting
- access and equity principles and practices
- equipment use, maintenance and storage
- environmental management (waste disposal, recycling and re-use guidelines)

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73>

Assessment Requirements for MSFGG4006 Operate complex glass processing plant control systems

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Performance Evidence

- Consistently:
 - recognise early warning signs of equipment/processes needing attention or with potential problems
 - determine and analyse the range of possible plant problem causes and the most likely cause
 - take appropriate action to ensure a timely return to full performance
 - recognise obvious problems in related plant areas and make an appropriate contribution to their solution
- Distinguish between causes of problems/alarms/fault indications, such as:
 - instrument failure/malfunction
 - electrical failure/malfunction
 - mechanical failure/malfunction
 - equipment design deficiencies
 - product parameters (temperature, flows, pressure and levels)
 - process control system malfunction
 - power/utility failures
 - software problems
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems
- Avoid backtracking, work flow interruptions or wastage
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity

Knowledge Evidence

- Interactions between control loops
- Interactions between plant units within the entire plant
- The architecture and location of the glass process/production equipment
- Specific glass plant process operations
- Interactions between glass plant items/processes
- Glass product specifications and tolerances
- Systems operating parameters
- System integrity limits
- Process control philosophies and strategies

- Emergency shutdown procedures
- Basic science of upstream and downstream glass processes
- Impact of external factors (e.g. variations in weather and feed)
- Complex process drawings (e.g. piping and instrumentation diagrams (P&ID), probability of failure on demand (PFD) and cause and effect)
- Basis of control for glass processing plant/s
- Instrumentation and control systems, including feed forward, feedback and open control
- Instrumentation and control system components (e.g. relevant primary sensing devices, final control elements, and transducers/transmitters)
- Control loops, including P&ID control, set points, controlled variable and indicated variable
- Interaction between multiple control loops, including cascade control
- Impacts of changing controller settings and the limits within which changes can be made
- Effective communication techniques
- Organisational procedures

Assessment Conditions

- Assessors must:
 - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
 - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
 - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to control systems for glass processing plant and equipment, workplace documentation, procedures and job requirements.

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