



Australian Government

Department of Education, Employment and Workplace Relations

NWP355A Monitor, operate and control membrane filtration processes

Revision Number: 1

NWP355A Monitor, operate and control membrane filtration processes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor This unit of competency describes the outcomes required to monitor, operate and control membrane filtration plant, including micro and ultra filtration; and to measure and report on system performance and process quality control. The ability to identify faults, determine and apply technical adjustments, conduct chemical dosing procedures and produce technical reports are essential to performance.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge required for operational staff with a specific responsibility for ensuring that membrane filtration processes in treatment plants conform to organisational standards and comply with statutory requirements.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills This unit of competency contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency. Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Monitor membrane filtration plant performance.	1.1 Monitor test results and <i>processes</i> to maintain the parameters of operation. 1.2 Identify and report process faults and the operational condition of plant according to <i>organisational and statutory requirements</i>. 1.3 Correctly select, fit and use required safety equipment, including personal protective equipment.
2 Control chemical use.	2.1 Use, handle and store chemicals according to organisational procedures and statutory requirements. 2.2 Determine chemical dosing according to plant processes and organisational procedures and statutory requirements. 2.3 Maintain chemical supply and usage records according to statutory requirements.
3 Operate and control membrane filtration processes.	3.1 Carry out <i>routine plant inspections</i> according to organisational and plant requirements 3.2 Conduct and analyse process <i>tests</i> and determine performance against plant operational requirements. 3.3 Make integrated <i>process adjustments</i> to improve system performance according to organisational and statutory requirements. 3.4 Collect, interpret and record process data according to organisational and plant requirements.
4 Compile process reports.	4.1 Compile <i>reports</i> from plant and system data to meet organisational and statutory requirements. 4.2 Report observations outside defined parameters for further action.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- identify and correct operational problems
- produce reports and logs
- use safety and personal protective equipment
- interpret plans, charts and instructions
- interpret policies, procedures and standards
- communicate with employees and customers
- use communication equipment
- give and receive instructions
- determine chemical dosing requirements
- perform system calculations
- operate computerised equipment
- identify control system faults
- sample and test products.

Required knowledge:

- system layout
- system processes
- lock out procedures for mechanical and electrical installations
- policies, procedures and legislation
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- risk factors and potential hazards involved with membrane filtration processes
- interpretation of material safety data sheets
- equipment operation, capacity and limitations
- chemical dosing calculations
- pipes and fittings
- pumping and valving systems
- mechanical and electrical control systems
- principles that form the basis of membrane filtration processes for water or wastewater treatment.

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, the Range Statement and the Assessment Guidelines for the Training Package.

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

The candidate should demonstrate the ability to monitor, operate and control membrane filtration processes, including:

- monitoring test results and processes
- identifying and reporting faults
- conducting routine plant inspections
- taking samples and performing basic tests
- preparing and applying chemical dosing
- making basic process adjustments according to instructions
- collecting data and completing required documentation.

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- relevant codes, standards, and government regulations.

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and/or assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence

EVIDENCE GUIDE

- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.

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. Add any 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.

Processes may include:

- micro filtration
- ultra filtration.

Organisational and statutory requirements may include:

- by-laws and organisational policies
- standard operating procedures
- Australian Drinking Water Guidelines
- National Water Quality Management strategy
- environment protection
- occupational health and safety, including the use of personal protective equipment
- chemicals
- dangerous goods
- lifts and cranes
- Environment Protection Authority regulations
- World Health Organisation standards
- licensing agreements
- electrical standards.

Routine plant inspections may include:

- the use of equipment, including:
- electronic monitoring and metering systems
- chart recording systems
- basic hand tools
- sampling and laboratory testing equipment
- computerised equipment
- on- and off-road vehicles
- communication equipment
- personal protective equipment.
- interaction and communication with other employees, other authorities and the general public
- visual observation
- implementation of reporting procedures that may also include procedures for the implementation of by-laws, organisational policies and statutory requirements.

Tests may include:

- turbidity
- colour
- pH

RANGE STATEMENT

Process adjustments may include:

- transmembrane pressure.
- pre-treatment
- pH correction
- backwash frequency
- clean in place cycles.

Reports may include:

- chemical usage
- environmental reports
- plant performance data.

Unit Sector(s)

Not applicable.

Competency field

Competency field Treatment