



Australian Government

NWPTRT060 Assess and improve membrane bioreactor processes

Release: 1

NWPTRT060 Assess and improve membrane bioreactor processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP - National Water Training Package.

Application

This unit involves the skills and knowledge required to assess and improve membrane bioreactor (MBR) processes.

It includes evaluating MBR process performance, investigating MBR plant configuration and options for process optimisation. It also includes developing and recording a plan for process optimisation.

This unit applies to workers responsible for operating an MBR plant ensuring system operations are coordinated and monitored to ensure compliance with organisational and statutory requirements. Those undertaking this unit would work autonomously, usually with supervisory responsibilities, while performing complex tasks in a range of contexts.

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

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

PERFORMANCE CRITERIA	
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Evaluate membrane bioreactor processes	1.1 Review existing process performance and maintenance data against relevant organisational and legislative

	requirements
	1.2 Identify the impact of changing influent water quality on membrane processes
	1.3 Identify any additional sampling and testing required for valid evaluation of current process performance
	1.4 Identify the impact of mixed liquor on membrane processes
2 Investigate membrane bioreactor plant configuration	2.1 Review existing fault reports and other plant asset information
	2.2 Investigate the operational status of plant components with reference to manufacturer and plant design specifications
	2.3 Contribute to plant configuration investigations to identify potential operational improvements
	2.4 Identify hazards, assess risks and control measures according to workplace procedures
3 Investigate options for membrane process optimisation	3.1 Review current membrane processes with reference to organisational protocol to identify potential deficiencies
	3.2 Identify and investigate new or additional chemicals and related dosing options
4 Develop and record a plan for process optimisation	4.1 Plan a trial to test the performance of the determined optimisation options
	4.2 Compile report with recommendations on optimisation options

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

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

Non-essential conditions may be found in the NWP - National Water Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT060 Assess and improve membrane bioreactor processes

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- analysing problems and recommending appropriate remedial solutions
- assessing effectiveness of treatment chemicals by conducting a range of tests
- assessing fault reports and investigating the current operational status of membrane bioreactor (MBR) components
- conducting investigations and reporting on operational and control system problems
- identifying and responding to risks and hazards
- identifying data and planning additional data collection through appropriate sampling and testing
- identifying impacts of mixed liquor on membrane processes
- interpreting a range of complex and technical documents including at least one of the following:
 - codes of practice
 - national and industry standards
 - organisational policies
 - regulatory, legislative, licensing and organisational requirements
 - specifications
- operating a MBR process
- planning trials to test the performance of the determined optimisation options and compiling recommendation reports
- reviewing existing process performance with reference to historical or seasonal data, differences in influent water quality and flow and plant configuration

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- activated sludge processes relevant to MBRs
- effluent water quality
- factors affecting the selection of chemicals in membrane cleaning in place (CIP) processes

- MBR system layout
- membrane cleaning methods
- membrane performance concepts
- membrane plant and equipment
- preservation of membranes
- range and characteristics of operational performance measures
- range of appropriate measuring and testing procedures
- relevant legislation, industry standards and workplace policies and procedures
- risk and hazard management principles
- safety data sheets, site manifests and dangerous goods handling
- strategies to evaluate process performance and maintenance data
- workplace data recording and reporting requirements

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

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