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| Title | Describe processes, process control, and monitoring, in a drinking-water or wastewater treatment plant | | |
| Level | 4 | Credits | 5 |

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| Purpose | <p>People credited with this unit standard are able to describe: the types of processes and their relationships, in a drinking-water or wastewater treatment plant; the functions, limitations, and interactions of the constituent parts of drinking-water or wastewater treatment plant process control; the interconnection methods used in process control in a drinking-water or wastewater treatment plant; the function of, and information contained in, piping and instrumentation (P and I) drawings; the purpose and features of Supervisory Control and Data Acquisition (SCADA); and process monitoring and alarms in drinking-water and wastewater treatment plants.</p> |
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| Classification | Water Industry > Water - Generic |
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| Available grade | Achieved |
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Explanatory notes

Definition

Wastewater may include stormwater and sewage systems.

Outcomes and evidence requirements

Outcome 1

Describe the types of processes and their relationships, in a drinking-water or wastewater treatment plant.

Evidence requirements

- 1.1 Process chains are described in relation to the drinking-water or wastewater treatment plant.
- 1.2 Automation of processes is described in terms of changes to quality and efficiency.
- 1.3 Circuit types are described in terms of their inputs and outputs.

Range circuit types include but are not limited to – closed, open, feedback, feed forward.

Outcome 2

Describe the functions, limitations, and interactions of the constituent parts of drinking-water or wastewater treatment plant process control.

Range constituent parts – digital sensors, analog sensors, measuring instruments; measuring instruments – signal processes; dedicated programmable logic controllers (PLCs), actuators.

Evidence requirements

2.1 The measurement of drinking-water or wastewater treatment plant process control is described in terms of the function and operation of constituent parts.

2.2 The constituent parts of drinking-water or wastewater treatment process control are described in terms of their limitations.

Range accuracy, repeatability.

2.3 The constituent parts of drinking-water or wastewater treatment process control are described in terms of the reasons for, and importance of, their calibration.

2.4 The constituent parts of drinking-water or wastewater treatment process control are described in terms of their interactions.

Outcome 3

Describe the interconnection methods used in process control in a drinking-water or wastewater treatment plant.

Evidence requirements

3.1 Automated process control is described in terms of the interconnection methods used.

Range electric signals – analog, digital; pneumatic signals, hydraulic signals, radio telemetry, fibre optics.

Outcome 4

Describe the function of, and information contained in, P and I drawings.

Evidence requirements

4.1 P and I drawings are described in terms of their function, and the information they contain.

Range instrumentation symbols, process lines; electrical, pneumatic, hydraulic, data lines, tags, interconnection references, symbol standards.

Outcome 5

Describe the purpose and features of SCADA.

Evidence requirements

5.1 SCADA is described in terms of its purpose and features.

Range features – data acquisition, alarms, plant status, trends, database, set points, reports, networking;
control – automated, manual; operator interface.

Outcome 6

Describe process monitoring and alarms in drinking-water and wastewater treatment plants.

Evidence requirements

6.1 Process monitoring is described in terms of treatment outputs.

Range process monitoring purposes, text-based displays, graphics-based displays, alarm display, alarm generation.

6.2 Process alarm generation is described in terms of signal value changes.

Range process variable values, deviations, rates of change.

6.3 Process monitoring equipment is described in terms of hardware and software components.

Range dedicated process monitors, PLCs, proprietary software, SCADA.

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| Planned review date | 31 December 2021 |
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Status information and last date for assessment for superseded versions

| Process | Version | Date | Last Date for Assessment |
|--------------|---------|-------------------|--------------------------|
| Registration | 1 | 19 September 2008 | 31 December 2018 |
| Review | 2 | 16 March 2017 | N/A |

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| Consent and Moderation Requirements (CMR) reference | 0101 |
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Infrastructure Industry Training Organisation qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.