

Title	Demonstrate knowledge of the selection and specification of equipment for industrial measurement and control systems		
Level	5	Credits	15

Purpose	<p>This unit standard is intended for use in the training and assessment of industrial measurement and control.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – identify process and environmental information required for equipment selection; – specify details for equipment installations in accordance with process and environmental requirements; – specify equipment construction materials in accordance with process and environmental requirements; and – select equipment for given process applications.
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Classification	Industrial Measurement and Control > Industrial Measurement and Control - Theory
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been designed for learning and assessment off-job.
- 2 Reference
AS/NZS 60079.14:2017 *Explosive atmospheres - Part 14: Design selection, erection and initial inspection*;
and all subsequent amendments and replacements.
- 3 Definitions
Equipment – any components of a measurement or control system installed outside a controlled environment. It includes sensing elements and final control elements in contact with process materials such as transmitters or control valve positioners which do not directly contact process materials but are installed in close proximity to the process, and equipment such as local control panels, junction boxes and other similar equipment which are exposed to the general process environment.
I/P – current to pneumatic convertor.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.

Process and environmental – any features of an installation that may require special consideration during design, equipment selection, operation or maintenance. These conditions or requirements may relate to properties of the process material, such as pressure, temperature or corrosiveness, but may also arise from external factors such as the presence of contaminants or flammable materials in the atmosphere surrounding equipment, high vibration levels, or high ambient temperatures.

4 Range

- a Measurements may be expressed in Système Internationale (SI) or Imperial units, and, where required, converted from Imperial units to SI units and vice versa.
- b Recognised industrial standards are to be used for calculations.
- c All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with legislation, policies, procedures, ethical codes and standards, and industry practice; and where appropriate, manufacturers' instructions, specifications, and data sheets.
- d Candidates are required to provide evidence for specification and selection of at least one measurement and at least one control device/system.

Outcomes and performance criteria

Outcome 1

Identify process and environmental information required for equipment selection.

Range process pressure and temperature, materials, flow rates, process fluid properties and composition, pressure and temperature ratings, normal, extreme and abnormal conditions, ambient environmental conditions.

Performance criteria

1.1 Data for equipment selection are obtained from process specification.

Range may include but is not limited to – upstream and downstream pressure, flow rate, density, viscosity, temperature; evidence of three is required.

1.2 Vendor information is used to identify equipment properties.

1.3 Specific requirements for the equipment selected are identified.

Range may include but is not limited to – area classification and zoning, corrosive or wet environment, corrosive or erosive process fluids, reliability; evidence of three is required.

1.4 Instrument range is determined.

Range design conditions, maximum and minimum conditions, process turndown.

Outcome 2

Specify details for equipment installations in accordance with process and environmental requirements.

Performance criteria

- 2.1 Equipment to meet process specification is identified using vendor information and a report is prepared.
- 2.2 Specific equipment for the requirements is selected.
- Range may include but is not limited to – area classification and zoning, corrosive or wet environment, corrosive or erosive process fluids, high reliability; evidence of three is required.
- 2.3 Construction materials are specified in accordance with factors affecting the design of an installation.
- 2.4 Ancillary equipment is identified.
- Range may include but is not limited to – I/P converter, positioner, air regulator, limit switch, isolating valves, bypass valve, three or five valve manifolds; evidence of three is required.

Outcome 3

Specify equipment construction materials in accordance with process and environmental requirements.

Performance criteria

- 3.1 Construction materials are specified in accordance with environmental requirements.
- Range may include but is not limited to – carbon steel, cast iron, stainless steels, non-ferrous metals, plastics; evidence of two is required.
- 3.2 Construction materials are specified in accordance with material in contact with process media.
- Range may include but is not limited to – stainless steel, Inconel, Stellite, Viton, Buna S, ceramics, Hastelloy C, tantalum; evidence of three is required.

Outcome 4

Select equipment for given process applications.

Range may include but is not limited to – steam, natural gas, fuel oil, raw water, waste water, acids, alkalis, wet and dry food products; evidence of two applications is required.

Performance criteria

4.1 Equipment meets specified requirements of the application.

Range may include but not limited to – span, environment, integrity, explosion protection, piping pressure, temperature ratings; evidence of two is required.

4.2 Equipment properties are recorded on specification sheets in accordance with industry practice.

Range may include but is not limited to – Hazardous Area Classification, temperature rating; corrosion resistance; electrical properties; evidence of two is required.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 August 2009	31 December 2027
Rollover and Revision	2	28 June 2018	31 December 2027
Review	3	30 January 2025	31 December 2027

Consent and Moderation Requirements (CMR) reference

0003

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.