



Australian Government

UEEIC0030 Set up and adjust advanced PID process control loops

Release: 1

UEEIC0030 Set up and adjust advanced PID process control loops

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to set up and adjust advanced proportional-integral-derivative (PID) process control loops.

It includes working safely and to standards, following set-up and adjustment procedures, applying knowledge of process requirements, testing and reporting.

Permits may be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

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

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEIC0047 Use instrumentation drawings, specifications, standards and equipment manuals

UEEIC0041 Solve problems in pressure measurement components and systems

UEEIC0038 Solve problems in density/level measurement components and systems

UEEIC0039 Solve problems in flow measurement components and systems

UEEIC0043 Solve problems in temperature measurement components and systems

UEEIC0029 Set up and adjust PID control loops

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to tune control loop with advanced functions

2 Tune control loop for advanced functions

PERFORMANCE CRITERIA

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

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied
- 1.2** WHS/OHS risk control measures and workplace procedures are followed in preparation for the work
- 1.3** Safety hazards that have not previously been identified are noted and risk control measures implemented
- 1.4** Relevant person/s is consulted to ensure work is coordinated effectively with others involved on the worksite
- 1.5** Advanced control loop parameters are identified by reviewing process specifications and equipment instructions
- 1.6** Tools, equipment and testing devices required for work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.7** Preparatory work is checked to ensure no damage has occurred and work is in accordance with relevant industry standards
- 1.8** Need to inspect, test and measure live work is determined in accordance with WHS/OHS requirements and workplace procedures
- 1.9** Circuits/machines/plant are inspected, tested and isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out the work are followed

- | | |
|----------|---|
| 2.2 | Testing/measuring devices are connected and set up in accordance with relevant industry standards and control system for advanced functions |
| 2.3 | Control set-point is determined and control loop adjusted in accordance with relevant industry standards and process specifications |
| 2.4 | Process is observed and decisions made in consultation with process operation personnel to readjust control loop settings to ensure process demand and output quality are met |
| 2.5 | Process control loops are readjusted, as required, and checked |
| 2.6 | Methods for dealing with unexpected situations are discussed with relevant person/s and documented |
| 2.7 | Unplanned situations are dealt with safely and with the approval of relevant person/s in accordance with workplace procedures |
| 2.8 | Quality inspection is conducted of process output to ensure control loop is tuned in accordance with workplace procedures |
| 2.9 | Tuning is carried out efficiently without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy principles |
| 3 | Complete and report control loop tuning activities |
| 3.1 | WHS/OHS risk control work completion measures and workplace procedures are followed |
| 3.2 | Worksite is cleaned and made safe in accordance with workplace procedures |
| 3.3 | Control loop settings are documented and relevant person/s notified in accordance with workplace procedures |

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 UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI110A Set up and adjust advanced PID process control loops.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0030 Set up and adjust advanced PID process control loops

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

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

- adjusting control loops to satisfy process demand and quality
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - risk control measures
- carrying out tuning without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy principles
- connecting and setting up testing/measuring devices
- dealing with unplanned situations with the approval of authorised person/s
- determining control set-point and adjusting control loop in accordance with relevant industry standards and process specifications
- determining the need to inspect, test and measure live work
- documenting control loop settings in accordance with workplace procedures
- identifying advanced control loop parameters
- inspecting and isolating circuits/machines/plant
- inspecting quality of process output to ensure control loop is tuned
- obtaining tools, equipment and testing devices required for work
- preparing to tune control loops with advanced functions
- tuning control loop for advanced functions.

Knowledge Evidence

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

- configuration of advanced control loops, including cascade, ratio and feed forward
- inspection and testing procedures
- isolation procedures
- problem-solving techniques
- relevant advanced control loop parameters

- relevant advanced process control, including:
 - connection of controllers
 - process controllers
 - testing of control modes
 - tuning and installation of control loops
- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions
- relevant testing/measuring devices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace quality, instructions, policies and procedures.

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 suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable 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:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to setting up advanced process measuring and control instruments
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>