



Australian Government

UEEIC0029 Set up and adjust PID control loops

Release: 1

UEEIC0029 Set up and adjust PID 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 proportional-integral-derivative (PID) control loops

It includes working safely, applying problem-solving procedures, evaluating performance, using measuring devices, providing solutions to control problems and documenting solutions.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

No other 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

UEECD0043 Solve problems in direct current circuits

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

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to work on process control loops

PERFORMANCE CRITERIA

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

- 1.1** WHS/OHS processes and workplace procedures for a given work area are identified, obtained and applied
 - 1.2** WHS/OHS risk control work preparation measures and workplace procedures are followed
 - 1.3** Scope of control problem is obtained from documentation and/or from work supervisor to determine work to be undertaken
 - 1.4** Advice is sought from the work supervisor to ensure the work is coordinated effectively with others
 - 1.5** Sources of materials required for work are determined in accordance with workplace procedures
 - 1.6** Tools, equipment and testing devices required to carry out work are obtained and checked for correct operation and safety
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- 2.1** WHS/OHS risk control work measures and workplace procedures are followed
 - 2.2** Need to test and measure live work is determined in accordance with WHS/OHS requirements and workplace procedures
 - 2.3** Process controller/transmitters/converters and control loops are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
 - 2.4** Measured and calculated values are used for solving

2 Solve process control loops problems

		process control loops problems
	2.5	Unexpected situations are dealt with safely and in accordance with workplace procedures
	2.6	Problems are solved without damage to apparatus, the surrounding environment or services using sustainable energy principles
3 Complete work and provide status report/s	3.1	WHS/OHS risk control work completion measures and workplace procedures are followed
	3.2	Status report/s is completed and work supervisor 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.

Setting up and adjusting problems in PID controllers must include at least two of the following:

- determining the operating parameters of a controller in an existing control loop
- configuring/tuning a controller in an existing control loop to comply with specified operating parameters
- configuring/tuning a controller to comply with a specified function

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI106A Set up and adjust PID 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 UEEIC0029 Set up and adjust PID control loops

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Performance Evidence

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

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
 - using risk control measures
- checking and isolating process controller/transmitters/converters and control loops
- completing status reports and/or notifying work supervisor
- dealing with unplanned situations in accordance with workplace procedures
- determining sources of materials required for work
- determining to test and measure live work
- measuring and calculating values for solving process control loop problems
- obtaining and checking tools, equipment and testing devices for correct operation and safety
- obtaining scope of control problem from documentation and/or from work supervisor
- preparing to work on process control loops
- solving process control loop problems
- solving problems without damage to apparatus, the surrounding environment or services using sustainable energy principles.

Knowledge Evidence

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

- isolation procedures
- problems-solving techniques
- process control loop principles, including:
 - connection of controllers
 - introduction to control systems, including control loop components, purpose of control loop components, open and closed loop control, control loop block diagram, direct acting and reverse acting controllers

- process control terminology
- process controllers, including proportional-integral-derivative (PID) functions, applications of PID modes of control, applications of controller options, checking/adjustment of controllers and reset windup
- testing of control modes
- types of control and control modes
- process characteristics
- relevant industry standards
- relevant manufacturer specifications and operating instructions
- tuning and installation of control loops
- relevant process controller/transmitters/converters and control loops
- job safety assessments or risk mitigation processes
- relevant tools, equipment and testing devices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, including
 - status reports
- relevant workplace instructions, policies and procedures
- sustainable energy principles.

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 solving problems in process control loops
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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