



Australian Government

UEEIC0032 Set up electronically controlled robotically operated complex systems

Release: 1

UEEIC0032 Set up electronically controlled robotically operated complex systems

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 electronically controlled and robotically operated complex systems.

It includes working safely, applying knowledge of electronic circuits and the integration to robotically operated equipment and systems, gathering and analysing data, applying problem-solving techniques, and developing and documenting solutions and alternatives.

Typical circuits are those encountered in meeting performance requirements and compliance standards, revising machine operating parameters and dealing with machine malfunctions.

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

Pre-requisite Unit

Where prerequisite pathways have been identified, all competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s)

Common Unit Group

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

UEECD0019 Fabricate, assemble and dismantle utilities industry components

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

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEIC0020 Fault find and repair analogue circuits and components in electronic control systems

UEEIC0001 Analyse complex electronic circuits controlling fluids

UEEIC0018 Diagnose and rectify faults in digital controls systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Electrical Pathway Group

UEEEL0003 Arrange circuits, control and protection for electrical installations

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

UEEEL0009 Evaluate and modify low voltage lighting circuits, equipment and controls

UEEEL0010 Evaluate and modify low voltage socket outlets circuits

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

Instrumentation and Control Pathway Group

UEECD0045 Solve problems in multiple path extra-low voltage (ELV) a.c. circuits

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

UEEIC0030 Set up and adjust advanced PID process control loops

UEEIC0048 Verify compliance and functionality of instrumentation and control installations

UEEIC0031 Set up and configure human-machine interface (HMI) and industrial networks

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare electronically controlled and robotically operated system

2 Set up electronically controlled and robotically operated system

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** Hazards are identified, WHS/OHS risks assessed, and control measures and workplace procedures implemented in preparation for work
- 1.3** Scope of work to be undertaken is determined from performance specifications, situation reports and in consultation with relevant person/s
- 1.4** Activities are planned to meet scheduled timelines in consultation with person/s involved in the work
- 1.5** Strategies are determined and solution developed and implemented in accordance with workplace procedures
- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
- 2.2** Controls and integrated robot systems are applied in developing analytical solutions to machine parameters/faults and operation
- 2.3** Parameter specifications and performance requirements in relation to each circuit and robot device are obtained in accordance with workplace procedures and relevant industry standards
- 2.4** Setting up maintenance and/or modification activity is carried out to provide the most effective solution/s in accordance with workplace procedures
- 2.5** Unplanned events are dealt with safely and effectively in accordance with regulatory requirements and workplace policy and procedures
- 2.6** Quality of work is monitored in accordance with performance agreement and/or workplace procedures or relevant industry standards

3 Document and report results of system set-up and actions taken

- 3.1** Set-up maintenance activity and/or modification is inspected and tested to determine their effectiveness and modified, as required
- 3.2** Set-up maintenance activity and/or modification is documented to include details of fault findings, calculations and assumptions
- 3.3** Set-up maintenance activity and/or modification is reported to appropriate person/s to determine suitable action/s to be taken based on fault-finding analysis
- 3.4** Justification for analysis findings and any actions to be undertaken in relation to the work activity are documented for inclusion in work/project records in accordance with relevant standards and 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 electronically controlled and robotically operated complex systems must include at least two types of machines and include the following:

- typical systems encountered in meeting performance requirements and industry standards
- revising machine operating parameters
- dealing with machine malfunctions

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI130A Set up electronically controlled robotically operated complex systems.

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 UEEIC0032 Set up electronically controlled robotically operated complex systems

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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 problem-solving techniques
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using of risk control measures
- planning set-up of electronically controlled and robotically operated complex systems
- documenting and reporting on the results of the set-up and actions taken
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- determining strategies for analysing circuit and robot performance effectively
- documenting instruction for implementing any actions resulting from the analysis that incorporates risk control measure to be followed
- documenting justification of actions to be implemented in accordance with relevant industry standards and workplace procedures
- identifying the operation of electronic and robot controls
- inspecting and testing the results of the analysis
- obtaining circuit control and robot parameters, specifications and performance requirements appropriate to each situation.

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:

- electronic interfacing to robotic processes
- interfacing electronics with robot functions, including:
 - robot types and selection and pre-selection planning
 - robot installation, including pre-installation design, layout and system documentation

- interfacing of robot controller with other external control systems
- robot sensor devices, characteristics and application
- diagnostic functions
- maintenance scheduling and procedures
- special features, including safety, palletising and sub-routines
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant problem-solving techniques
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace 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, equipment currently used in industry
- resources that reflect current industry practices in relation to setting up electronically controlled and robotically operated complex systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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