



Australian Government

UEEIC0041 Solve problems in pressure measurement components and systems

Release: 1

UEEIC0041 Solve problems in pressure measurement components and 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 pressure measuring components and systems and provide solutions to a pressure measurement problem as it applies to a process and control work function.

It includes working safely, setting up and calibrating pressure measuring components and system, using problem-solving techniques, using measuring devices, and providing solutions derived from measurements and calculations to predictable problems in pressure measurement components and systems.

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

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

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|--|---|
| 1 Prepare to work on pressure measurement components and system | <ul style="list-style-type: none">1.1 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are obtained and applied1.2 Hazards are identified, risks assessed and control measures implemented1.3 Nature of the pressure measurement problem is identified from documentation or appropriate person/s to determine the scope of work to be undertaken1.4 Appropriate person/s is consulted to ensure work is coordinated effectively with others1.5 Materials required for the work are determined in accordance with workplace procedures1.6 Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety in accordance with workplace procedures |
| 2 Solve a pressure measurement problem | <ul style="list-style-type: none">2.1 WHS/OHS risk control work measures and workplace procedures are followed2.2 Need to inspect, test or measure electrical components of live work is determined in accordance with job requirements and workplace safety procedures2.3 Pressure measurement apparatus is checked and isolated in accordance with WHS/OHS requirements and workplace procedures2.4 Relevant methods are used to solve measurement problem from tests and calculated values, as they apply to pressure measurement components and systems2.5 Unplanned situations are responded to in accordance with workplace procedures and with the approval of an authorised person/s2.6 Problems are resolved using sustainable energy principles and without damage to apparatus, the surrounding environment or services in accordance with workplace procedures |
| 3 Complete work and document work activities | <ul style="list-style-type: none">3.1 WHS/OHS work completion risk control measures and workplace procedures are followed |

- 3.2 Worksite is cleaned and made safe in accordance with workplace procedures
- 3.3 Justification for solutions used to resolve pressure measurement problem is documented
- 3.4 Work completion is documented and appropriate 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.

Pressure measurement apparatus and system fault finding, maintenance or development work functions must include at least three of the following:

- determining the operating parameters of a pressure measuring system
- setting up and calibrating a pressure measuring system
- developing a pressure measuring system to comply with a specified function and operating parameters

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI102A Solve problems in pressure measurement components and 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 UEEIC0041 Solve problems in pressure measurement components and 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 relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including applying risk control measures
- applying sustainable energy principles and practices
- completing work and documenting work activities
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- documenting completed work
- identifying pressure measurement components and systems
- solving problems in pressure measurement components and systems.

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:

- pressure transmitters and converters
- pressure measurement terms and transducers, including:
 - applications and common relationships
 - pressure and the relationship between applied pressure, density, mass, force, area and the height of liquid columns
 - transducer types, applications, connections and input/outputs (I/O) - measurement and evaluation
- manometers ,including:
 - types of manometers
 - operating principles of manometers
 - gauge pressure measurement
 - wet leg
 - manometer applications

- manometer limitations
- absolute, gauge and atmospheric pressure measurement, including:
 - absolute and gauge pressure
 - absolute zero pressure
 - atmospheric pressure
 - barometers
 - absolute pressure gauges
- mechanical pressure measuring devices, including:
 - gauges: bourdon tube, spiral and helical
 - other mechanical pressure elements: bellows, capsule and slack/stiff diaphragms
 - pressure measurement using elastic deformation gauges
 - term: flexibility spring rate
- electrical pressure measuring devices, including:
 - electrical sensors for pressure measurements, including capacitive, piezo, inductive and strain gauge
 - testing elements and electrical signal transmission devices
- dead weight testers, including:
 - law of hydraulics
 - dead weight tester operating principles
 - dead weight tester operating procedures
 - terms: backlash, hysteresis and repeatability
 - calibration of gauges
 - precautions
 - bourdon tube gauges calibration
- testing and installation of pressure measurement devices, including:
 - testing
 - calibration
 - installation of pressure measurement devices within pressure vessel systems
 - isolation, seal, vent, drain and bypass valves location and operation sequence
- pressure transmitters and converters, including:
 - principle of operation of moment, motion and forced balanced transmitters for pneumatic, electrical, and electronic transmitter
 - applications of transmitters, converters and connections
 - calibration of transmitters
 - principle of operation of signal converters
 - applications of pressure converters
 - calibration of pressure converters
- problem solutions in pressure measurement systems
- relevant job safety assessments or risk mitigation processes, including risk control measures
- relevant manufacturer specifications

- relevant materials, tools and equipment
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices
- testing and installation of pressure measurement devices, including device calibration
- live electrical components.

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 workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated 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 other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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