Australian Government

# Assessment Requirements for UEEIC0039 Solve problems in flow measurement components and systems

**Release: 1**

# Assessment Requirements for UEEIC0039 Solve problems in flow measurement components and systems

## 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, 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 safe work practices
  - implementing risk control measures
- applying sustainable energy principles and practices
- completing work and documenting work activities
- connecting pneumatic, hydraulic and electric equipment
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- identifying flow measurement components and system
- identifying specifications, industry standards and equipment manuals
- solving problems in flow measurement 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:

- introduction to flow measurement in closed conduits, including:
  - basic principles of fluid flow
  - International System of Units (SI) units pertaining to flow and conversion factors to SI units
  - volumetric and mass flow
  - Reynolds numbers
  - behaviour of fluid flow in pipes
  - correction methods
  - flow terminology

  - pressure loss
  - integration
  - uses of flow meters
  - types and applications of flow transducers
  - transducers input/outputs - measurement and evaluation
  - transducer connections
- differential pressure flow measurement, including:
  - Bernoullis theorem and square root head law
  - calculations of the differential pressure
  - calibration of the associated secondary instrument
  - installation and types of differential pressure flow meters and primary elements
- differential pressure flow measurement circuits, including define turndown and accuracy, output signals, square root extractors, scaling factors and signal scaling
- electromagnetic, vortex and ultrasonic flow meters, including:
  - construction, operating principles, performance, application and installation
  - installation of vortex and ultrasonic flow meters
  - operating principles and applications of ultrasonic flow meters
- flow measurement in closed conduits, including:
  - basic principles of fluid flow
  - behaviour of fluid flow in pipes
  - correction methods and flow terminology
  - integration, pressure loss, and Reynolds numbers
  - SI units pertaining to flow and conversion factors to SI units
  - types and applications of flow transducers, connections, and transducer input/outputs (I/O) - measurement and evaluation
  - uses of flow meters
  - volumetric and mass flow
- mass flow measurement and volumetric flow rate correction, including:
  - applications, installation, operating principles and performance of mass flow meters
  - calculations of corrected flow rate
  - calibration of corrected systems components
  - mass flow measurement
  - volumetric flow rate correction
- mechanical flowmeters for liquid service, including:
  - operating principles of mechanical flow meters
  - performance of mechanical flow meters
  - applications of mechanical flow meters
  - installation of mechanical flow meters
  - operating principles of gas flow meters
  - performance of gas flow meters

  - applications of gas flow meters
  - installation of gas flow meters
- open-channel flow measurement and flow meter calibration, including:
  - calculations of the head generated
  - flow meter calibration
  - installation of open channel flow meters
  - non-linear head/flow relationships
  - open channel flow measurement
  - operating principles of secondary instruments
  - principles of fluid flow in open channels
  - principles of head/flow relationships
- problems in flow measurement systems
- relevant job safety assessments or risk mitigation processes, including risk control measures
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures, including safe work practices
- specifications, industry standards and equipment manuals
- sustainable energy principles and practices
- variable area flow meters and turbine flow meters, including;
  - applications, installation, and operating principles and performance of variable area and turbine meters
  - density correction calculations and scaling factors
  - variable area meters performance factors.

# 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

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6