Australian Government

Assessment Requirements for UEERE0045 Solve basic problems in micro-hydro systems

Release: 1

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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 one occasion and include:

- understanding the nature of the problem
- using established routines to solve apparatus/system problems
- providing viable solutions to apparatus/system problems
- documenting justification for the solutions used
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- applying sustainable energy principles and practices
- checking isolation of circuits/machines/systems
- coordinating work with relevant person/s
- determining live electrical testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices.

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:

- micro-hydro systems, including:
  - system components and configuration encompassing:
    - structural differences between the Pelton, turbo impulse, Francis and propeller type, Michell or Banki cross-flow turbines and Pumps as Turbines (PATs)
    - system configuration for each turbine type identifying all major components
    - for impulse and cross-flow turbine types, the comparison of bucket and blade shapes, nozzle shapes and types, types of hydraulic and electrical controllers/governors, speed increasers and over speed clutches and their basic operation and appropriate application

    - operational parameters and efficiency of different turbines
    - circumstances under which battery storage would be used
    - respective merits and suitability of various turbine types for various micro-hydroelectric applications
    - operation of hydraulic rams or similar water pumps:
        - typical efficiencies of hydraulic ram systems and appropriate applications
    - advantages and disadvantages of water energy storage systems with other energy storage systems, such as battery banks
- micro-hydro systems standards encompassing:
    - relevant Australian Standards AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules), AS/NZS 4509 Stand-alone power systems and AS 4086.2 Secondary batteries for use with stand-alone power systems - Installation and maintenance associated with the installation, maintenance and operation of micro-hydro small-scale generation units
- micro-hydro systems drawings encompassing:
    - schematic and wiring diagrams for the micro-hydro system showing the general circuit layout and protection between the micro-hydro system, batteries, inverter and loads
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- 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 suitable 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
- resources that reflect current industry practices in relation to solving basic problems in

micro-hydro systems

- 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