



Australian Government

Assessment Requirements for UEERA0023 Design hydrocarbon refrigerated 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 required operating functions and parameters from the design specification
- developing the design within the safety, regulatory and functional requirements and budget limitations
- documenting and presenting design effectively
- successfully negotiating design alteration requests
- obtaining approval for final design
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- designing hydrocarbon refrigeration systems
- preparing to design hydrocarbon refrigeration 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:

- hydrocarbon refrigeration systems design, components and piping design requirements, safe working practices and relevant standards, codes and regulations, including:
 - technical standards, regulations and codes for hydrocarbon refrigeration systems:
 - standard philosophy and format
 - standards, regulations and codes that apply to hydrocarbon refrigeration systems
 - equipment manufactures specifications
 - hydrocarbon refrigeration system design requirements:
 - applications of hydrocarbon refrigeration systems:
 - domestic refrigerators
 - commercial refrigeration

- thermodynamic properties of hydrocarbon
 - hydrocarbon phase diagram
 - hydrocarbon properties tables and chart
- hydrocarbon refrigeration cycle:
 - Ph diagram representation
 - expansion, evaporation, compression and condensation processes
- performance analysis of hydrocarbon refrigeration systems:
 - refrigerating effect
 - heat of rejection
 - heat of compression
 - coefficient of performance
 - effects of suction superheating on cycle efficiency
 - effects of liquid sub-cooling on cycle efficiency
- actual hydrocarbon refrigeration cycles:
 - superheating inside and outside the refrigerated space
 - liquid-suction heat exchangers
 - pressure drop in piping due to friction and dynamic losses
- hydrocarbon refrigeration system components and piping:
 - design preliminaries:
 - system operating parameters
 - project specifications
 - equipment selection criteria
 - selection tables, charts and catalogues
 - materials used with hydrocarbon refrigerants
 - heat exchanger selection:
 - selection of evaporators
 - selection of condensers
 - compressor selection
 - liquid expansion devices selection
 - system load balance point
 - refrigeration line design and sizing
 - automatic controls
 - safety:
 - safety data sheets (SDS)/material safety data sheets (MSDS) for hydrocarbon refrigerants
- problem-solving techniques
- relevant WHS/OHS legislated requirements
- relevant workplace budget, quality, policies and procedures
- relevant workplace documentation.

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
- 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>