



Australian Government

**Assessment Requirements for UEERA0020
Design complex industrial refrigeration
systems and select equipment**

Release: 1

Assessment Requirements for UEERA0020 Design complex industrial refrigeration systems and select equipment

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:

- developing outlines of alternative designs
- developing the design within the safety, regulatory, functional requirements and budget limitations
- documenting and presenting design effectively
- negotiating design alteration requests successfully
- obtaining approval for final design
- dealing with unplanned events
- applying relevant industrial refrigeration system processes and methods
- applying relevant work health and safety (WHS)/occupational health and safety (WHS/OHS) requirements, including using risk control measures
- designing complex commercial refrigeration system
- preparing to design complex industrial refrigeration system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- complex industrial refrigeration system design, safe working practices and relevant standards, codes and regulations including:
 - AS/NZS 1677 Refrigerating systems SAA refrigeration code
 - ANSI/IIAR standards
 - ANSI/ASHRAE standards
 - IIAR bulletins
- moderate and low temperature industrial refrigeration systems:
 - direct, flooded and pumped liquid recirculation systems
 - evaporators
 - multi-staged compression

- direct staging
- cascade staging
- compound compressors
- de-superheaters and liquid injection
- direct expansion intercoolers
- open and closed intercoolers
- basic designs of accumulators/intercooler vessels
- oil cooling methods
- oil stabilisation, return and oil recovery in flooded systems
- multiple evaporators and multiple compressors:
 - parallel evaporators
 - multiple temperature systems
 - evaporator pressure regulators
 - temperature control methods
 - parallel compressors
 - pipe work layout
 - methods of establishing pressure drop in dry and wet suction lines
- indirect refrigeration systems:
 - classification according to AS/NZS 1677 Refrigerating systems SAA refrigeration code
 - applications
 - evaporators
 - heat exchangers, types, construction and selection
 - secondary refrigerants
 - brines
 - antifreeze solutions
- flooded systems:
 - applications
 - equipment
 - accumulators
 - level controls
 - liquid recirculation pumps
 - liquid pressure relief valve
- cryogenic systems:
 - applications and equipment
 - system components
 - refrigerants
 - design safety
 - economics
 - cascade systems

- basic control sequences:
 - maintaining evaporator conditions
 - staging and suction pressure control
 - maintaining condenser conditions
 - control of intermediate pressure, methods of industrial refrigeration compressor capacity control
- system design:
 - required cooling capacity per day
 - running time and required system cooling capacity
 - system capacity control for peak and low load
 - refrigeration system diagrams
 - refrigerant, equipment, major component, controls, piping and accessory selection
- problem-solving techniques
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- 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>

