



**Australian Government**

# **UEERA0014 Design ammonia refrigerated systems**

**Release: 1**

# UEERA0014 Design ammonia refrigerated 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 design ammonia refrigerated systems.

It includes designing ammonia refrigerated systems based on a design brief and customer requirements, applying relevant industry standards, selecting components and documenting system design.

The skills and knowledge described in this unit may, in some jurisdictions, require a licence or permit to practice in the workplace subject to regulations for undertaking refrigeration and air conditioning work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

UEERA0005 Apply safety awareness and legal requirements for ammonia refrigerant

UEERA0016 Design commercial refrigeration systems and select components

UEERA0034 Establish heat loads for commercial refrigeration and/or air conditioning applications

UEERA0042 Evaluate thermodynamic and fluid parameters of refrigeration systems

UEERA0038 Establish the thermodynamic parameters of refrigeration and air conditioning systems

UEERA0001 Analyse the operation of HVAC air and hydronic systems

UEERA0002 Analyse the psychrometric performance of HVAC/R systems

and

UEERA0003 Analyse the thermodynamic performance of HVAC/R systems

or

UEERA0094 Verify functionality and compliance of refrigeration and air conditioning installations

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

- UEECD0042 Solve problems in ELV single path circuits
- UEECD0020 Fix and secure electrotechnology equipment
- UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
- UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work
- UEERA0059 Prepare and connect refrigerant tubing and fittings
- UEERA0036 Establish the basic operating conditions of vapour compression systems
- UEERA0035 Establish the basic operating conditions of air conditioning systems
- UEERA0050 Install refrigerant pipe work, flow controls and accessories
- UEERA0081 Select refrigerant piping, accessories and associated controls
- UEERA0031 Diagnose and rectify faults in air conditioning and refrigeration control systems
- UEERA0092 Solve problems in low voltage refrigeration and air conditioning circuits
- UEERL0005 Locate and rectify faults in low voltage (LV) electrical equipment using set procedures
- UEERL0004 Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring
- UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply
- UEERL0002 Attach cords, cables and plugs to electrical equipment for connection to 1000 V a.c. or 1500 V d.c.

## Competency Field

Refrigeration and air-conditioning

## Unit Sector

Electrotechnology

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Prepare to design ammonia refrigeration systems**

### PERFORMANCE CRITERIA

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

#### **1.1** WHS/OHS requirements and workplace procedures for a given work area are identified, obtained and applied

- 1.2 Scope of the refrigeration system is determined from design specifications and/or in consultation with relevant person/s
  - 1.3 Safety systems are identified, obtained and applied in accordance with relevant industry standard
  - 1.4 Work supervisor and/or customer/s are consulted to determine functions and parameters of the system required in accordance with design specifications and workplace documentation
  - 1.5 Design development work is planned in accordance with workplace procedures for timelines in consultation with others involved
- 2 Design ammonia refrigeration systems**
- 2.1 WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
  - 2.2 Relevant ammonia refrigeration system analysis, components and piping are applied to developing the system design in accordance with workplace procedures and relevant industry standards
  - 2.3 Safety, functionality and budgetary considerations are incorporated in the design specifications
  - 2.4 Equipment required is selected in accordance with the design specifications and workplace procedures
  - 2.5 Location of components is documented in accordance with workplace procedures and operation of system functions
  - 2.6 System design draft is checked for compliance with the design brief and regulatory requirements
  - 2.7 System design is documented for submission to relevant person/s for approval
  - 2.8 Unplanned events are dealt with in accordance with problem-solving techniques and workplace procedures
- 3 Obtain approval for engineering computer applications design**
- 3.1 System design is presented to customer and/or relevant person/s in accordance with workplace procedures
  - 3.2 Requests for alterations to the design are negotiated with relevant person/s in accordance with workplace

procedures

- 3.3 Final design is documented and approval obtained from relevant person/s in accordance with workplace procedures
- 3.4 Quality of work is monitored in accordance with workplace procedures and relevant industry standards

## 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.

Designing ammonia refrigeration systems must include at least two different systems of the following:

- two single-stage, or
- two multi-stage, or
- one single-stage and one multi-stage

Designing ammonia refrigeration systems must include at least the following:

- one major component, including:
  - condenser
  - compressors
  - evaporator
  - flash chamber/flash intercooler
- associated components and controls

## Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ181A Design ammonia refrigerated systems.

## Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>