



Australian Government

UEERA0019 Design complex control systems for refrigeration or heating, ventilation, air conditioning 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.

Application

This unit involves the skills and knowledge required to design complex control systems for heating, ventilation and air conditioning/refrigeration (HVAC/R) systems.

It includes applying processes and methods of complex control systems for a HVAC/R system, safety and relevant industry standards; developing alternative design schemes based on design brief and customer requirements; and documenting system designs.

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

UEERA0021 Design control systems for refrigeration or heating, ventilation and air conditioning systems

UEERA0060 Produce HVAC/R control system diagrams

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

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 complex HVAC/R control 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** WHS/OHS risk control measures and workplace procedures are followed in preparation for the work
- 1.3** Scope of the HVAC/R system is determined from the

- design brief and/or consultations with relevant person/s
- 1.4** Design development work is planned in accordance with workplace procedure for timelines in consultation with others involved
- 2 Design complex HVAC/R control systems**
- 2.1** Relevant complex control processes and methods are applied to the design
- 2.2** Alternative concepts for design are evaluated in accordance with the design brief
- 2.3** Safety, functionality and budgetary considerations are incorporated in the design specifications
- 2.4** System design draft is checked for compliance in accordance with the design brief and relevant industry standards
- 2.5** System design is documented for submission to relevant person/s for approval
- 2.6** Unplanned events are dealt with in accordance with problem-solving techniques and workplace procedures
- 3 Obtain approval for complex HVAC/R control systems 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 control systems for HVAC/R must include at least the following:

- two different complex control systems

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ146A Design complex control systems for refrigeration or heating, ventilation, air conditioning systems.

Links

Companion Volume implementation guides are found in VETNet - -

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