



Australian Government

UEERA0060 Produce HVAC/R control system diagrams

Release: 1

UEERA0060 Produce HVAC/R control system diagrams

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 produce heating, ventilation and air conditioning/refrigeration (HVAC/R) control system diagrams.

It includes applying safe working practices, interpreting technical data and specifications, applying knowledge of HVAC/R control systems drawing protocols, using appropriate drawing tools and documenting design.

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

Pre-requisite Unit

UEERA0001 Analyse the operation of HVAC air and hydronic systems

UEERA0002 Analyse the psychrometric performance of HVAC/R systems

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 produce HVAC/R control system diagrams

2 Produce HVAC/R control system diagrams

PERFORMANCE CRITERIA

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

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| 1.1 | Work health and safety (WHS)/occupational health and safety (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 work is determined from project specifications and/or discussions with relevant person/s |
| 1.4 | Relevant person/s is consulted to ensure the work is coordinated effectively with others involved on the worksite |
| 1.5 | Software tools and equipment required for work are obtained in accordance with workplace procedures |
| 2.1 | WHS/OHS risk control measures and workplace procedures for carrying out the work are followed |

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| | 2.2 | Relevant control diagrams and layouts required are determined in accordance with project specifications |
| | 2.3 | Technical data of control system components is interpreted to determine parameters for inclusion in accordance with project specifications |
| | 2.4 | Relevant software tools are used to produce diagrams in accordance with project specifications |
| | 2.5 | Diagrams are checked for accuracy in accordance with project specifications and workplace procedures |
| | 2.6 | Unplanned events are dealt with in accordance with workplace procedures and safe work practices |
| 3 | Complete and report HVAC/R control system diagrams | |
| | 3.1 | Completed control diagrams are submitted to relevant person/s for accuracy in accordance with project specifications and workplace procedures |
| | 3.2 | Alterations, additions and/or corrective instructions are followed and diagrams are re-submitted for final approval in accordance with project specifications and workplace procedures |
| | 3.3 | Copies of completed diagrams are filed in accordance with workplace procedures |

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.

Producing control system design diagrams must include at least the following:

- two different HVAC/R projects

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ130A Produce HVAC/R control system

diagrams.

Links

Companion Volume implementation guides are found in VETNet - -

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

Assessment Requirements for UEERA0060 Produce HVAC/R control system diagrams

Modification History

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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 extent of the drawing work accurately
- determining appropriate types of diagrams and their layouts correctly
- including appropriate technical data parameters in the diagrams
- checking and correcting diagrams accurately
- filing copies of completed drawing securely
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (WHS/OHS) requirements, including using risk control measures
- completing and reporting heating, ventilation and air conditioning/refrigeration (HVAC/R) control system diagrams
- preparing to produce HVAC/R control system diagrams
- producing HVAC/R control system diagrams.

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:

- HVAC/R control system fundamentals, safe working practices and relevant standards, codes and regulations, including:
 - control fundamentals:
 - control terminology
 - refrigeration system characteristics
 - HVAC system characteristics
 - control system characteristics
 - control system components
 - control system diagrams and symbols
 - product knowledge

- types of control equipment:
 - electrical:
 - classification of circuits
 - two position control
 - floating control
 - sensors
 - controllers
 - flow control devices
 - control systems diagrams
 - electronic:
 - operating principles
 - sensors
 - controllers
 - control system diagrams
- control systems applications:
 - refrigeration
 - air conditioning
 - air handling system controls
 - ventilation
 - heating
 - building airflow system control
 - airflow control
 - singles and multi-zones
 - chiller/boiler and distribution system control (chilled water, boiler and distribution systems)
- relevant manufacturer specifications
- relevant safe job safety assessments or risk mitigation processes
- relevant software tools and equipment
- 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 workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in 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
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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