



Australian Government

UEERA0094 Verify functionality and compliance of refrigeration and air conditioning installations

Release: 1

UEERA0094 Verify functionality and compliance of refrigeration and air conditioning installations

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 verify the functionality and compliance of refrigeration and air conditioning installations.

It includes testing and visual inspection for verifying that a refrigeration and air conditioning system and components are safe and complies with requirements and functions as intended. It also includes working safely, conducting compliance tests, conducting visual inspections, identifying non-compliance defects and completing mandatory reporting requirements. Individuals will typically work remotely without direct supervision or as part of a commissioning, service or maintenance team.

To undertake this unit, the learner must have a Trainee Refrigerant Handling Licence as it includes work on refrigeration and air conditioning equipment that carries the risk of a fluorocarbon refrigerant being emitted.

The skills and knowledge described in this unit require a national Refrigerant Handling Licence as it includes work on refrigeration and air conditioning equipment that carries the risk of a fluorocarbon refrigerant being emitted while decanting the refrigerant or manufacturing, installing, commissioning, servicing, maintaining or decommissioning refrigeration and air conditioning equipment.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 V alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to refrigeration, air conditioning or electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Those holding the Full Refrigeration and Air Conditioning Refrigerant Handling Licence issued by the Australian Refrigeration Council, or a Certificate III in Refrigeration and Air-conditioning trade qualification or equivalent meet the requirements of this unit and its prerequisite requirements.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

Pre-requisite Unit

UEECO0010 Participate in refrigeration and air conditioning work and competency development activities

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

UEERA0044 Find and rectify faults in single phase motors and associated controls

UEERA0045 Find and rectify faults in three phase motors and associated controls

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

UEERA0079 Safely handle refrigerants and lubricants

UEERA0062 Recover and charge refrigerants

UEERA0053 Install, commission, service and maintain medium temperature systems

UEERA0052 Install, commission, service and maintain low temperature systems

UEERA0051 Install, commission, service and maintain air conditioning systems

UEERE0001 Apply environmentally and sustainable procedures in the energy sector

UEERL0004 Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring

UEERL0005 Locate and rectify faults in low voltage (LV) electrical equipment using set procedures

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 verify refrigeration and air conditioning installation

PERFORMANCE CRITERIA

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

- 1.1** WHS/OHS hazards, risk control methods, relevant standards, codes and legislation are obtained and applied
- 1.2** Safety hazards which have not previously been identified are noted on job safety assessment and established risk control measures implemented
- 1.3** Appropriate person/s is consulted to ensure the verification work is coordinated effectively with others involved on the worksite
- 1.4** Location of refrigeration and air conditioning system components are determined from specifications and diagrams
- 1.5** Refrigeration and air conditioning inspection and tests are appropriately sequenced in accordance with job schedule
- 1.6** Materials needed for the tests and verification are obtained in accordance with workplace procedures and checked against job requirements
- 1.7** Tools, equipment and testing devices needed to verify compliance are obtained in accordance with workplace procedures and checked for correct operation and safety

2 Visually inspect the refrigeration and air conditioning installation

- 2.1** Circuits/machines/plant are checked and isolated in accordance with WHS/OHS requirements and workplace procedures

- 2.2 Pipe work is checked for appropriate type and size
 - 2.3 Pipe work accessories and components are validated as being suitably located, securely fixed and suitably protected from damage or corrosion
 - 2.4 Refrigeration and air conditioning system components and accessories are validated as being appropriately rated in accordance with manufacturer and design specifications
 - 2.5 Evidence that equipment complies with safety and functional requirements is cited in accordance with workplace procedures
 - 2.6 Unexpected situations are responded to in a manner that minimises risk to personnel and equipment, discussed with appropriate person/s and documented in accordance with workplace procedures
 - 2.7 Visual inspection is carried out efficiently without waste of materials, damage to or contamination of apparatus and the surrounding environment or services using sustainable energy practices
- 3 Conduct refrigeration and air conditioning compliance tests**
- 3.1 Testing or measuring on live electrical work and operating system is conducted in accordance with WHS/OHS requirements and workplace safety procedures
 - 3.2 Circuits/machines/plant are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
 - 3.3 Electrical tests are conducted to verify that the electrical circuit within the refrigeration and air conditioning installation is safe and functions as intended
 - 3.4 Refrigeration and air conditioning tests are conducted to verify that the refrigeration equipment and pipe work within the refrigeration installation is safe and functions as intended
 - 3.5 Unexpected situations are responded to in a manner that minimises risk to personnel and equipment, discussed with appropriate person/s and documented in accordance with workplace procedures
 - 3.6 Refrigeration/air conditioning testing is carried out

		efficiently without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
4 Report refrigeration and air conditioning inspection and verification findings	4.1	Worksite and equipment are cleaned and made safe in accordance with established procedures
	4.2	Non-compliance defects are identified and reported in accordance with workplace procedures
	4.3	Recommendations for rectifying defects are made in accordance with workplace procedures
	4.4	Work completion is documented and appropriate person/s notified 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.

Inspecting, testing and verifying the functionality and compliance of refrigeration and air conditioning systems must include at least two of the following systems:

- cool rooms/freezer rooms
- merchandising and display cabinets
- residential air conditioning
- package air conditioning

Verification must include conducting the following:

- visual inspections of the system, components, pipe work controls and accessories
- electrical tests, including isolation, testing of insulation resistance of equipment, resistance of the internal circuits of equipment, polarity of supply and equipment, continuity of earthing, and correct electrical connections and load current
- refrigeration tests, including pressure

testing, leak testing, evacuation testing, controls tests, refrigerant charge, and operating pressures and temperatures

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ109A Verify functionality and compliance of refrigeration and air conditioning installations.

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 UEERA0094 Verify functionality and compliance of refrigeration and air conditioning installations

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 two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including:
 - using risk control measures
 - using personal protective equipment (PPE)
- acting within regulatory limits, implementing legislation, industry standards, codes of practice and regulations
- applying sustainable energy principles and practices
- completing reporting in accordance with workplace procedures
- conducting all refrigeration tests safely and correctly, including:
 - pressure testing, leak testing, evacuation testing, controls tests, refrigerant charge, operating pressures and system operation
- conducting electrical tests safely and correctly, including:
 - isolation, testing of insulation resistance of equipment, resistance of the internal circuits of equipment, polarity of supply and equipment, continuity of earthing, and correct electrical connections and load current
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- identifying non-compliant defects from test results
- identifying visual defects
- planning refrigeration and air conditioning installation compliance inspections and testing
- reading and interpreting drawings and requirements related to the installation
- recommending appropriate corrective actions
- selecting, obtaining and checking relevant equipment, materials, tools and testing devices required to carry out the work
- using manufacturer specifications and manuals.

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:

- refrigeration and air conditioning installation functionality tests and verification methods
- refrigeration and air conditioning installation tests and verification methods, including visual inspections, mandatory tests and verification requirements
- refrigeration testing requirements and procedures, including:
 - controls
 - leak test
 - operating pressures and temperatures
 - pressure test
 - refrigerant charge
- vacuum electrical testing requirements and procedures, including:
 - isolation and tagging off
 - continuity of earthing: correct electrical connections
 - isolation testing: insulation resistance of equipment
 - load current
 - polarity of supply and equipment
 - resistance of the internal circuits of equipment
 - insulation resistance of the equipment
- relevant environmental and sustainable principles and practices, including:
 - environment protection
 - sustainable energy
 - sustainable resources
- relevant equipment, materials, tools and testing devices, including:
 - air pressure and flow measurement and testing devices
 - electrical measuring and testing devices, including multimeters, megohm meters (insulation resistance tester) and ammeters
 - pressure testing and leak testing equipment and tools, including oxygen-free dry nitrogen cylinder and regulator
 - refrigerant pressure and temperature measuring and testing devices
 - refrigerant PPE
 - refrigeration and electrical hand and power tools
 - vacuum pump and electronic vacuum measuring device
- relevant industry standards, codes of practice and regulations
- relevant installation specifications and drawings
- relevant job safety assessments or risk mitigation processes, including electrical safe working practices
- relevant refrigeration and air conditioning manufacturer specifications and instructions
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures

- verifying compliance and functionality of refrigeration and air conditioning installations.

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 PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.
- As well as meeting these Assessment Conditions, to achieve competency in this unit, the assessment must include an assessment of the Performance Evidence and Knowledge Evidence under the direct supervision of the Registered Training Organisation's Assessor who meets the requirements specified above.

Links

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