



Australian Government

UEERA0067 Repair and service secondary refrigeration systems

Release: 1

UEERA0067 Repair and service secondary refrigeration 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 repair and service secondary refrigeration systems.

It includes maintaining the effective and efficient operation of refrigeration equipment using non-phase changing secondary refrigerant systems. It also includes applying safe working practices, utilising service manuals and refrigeration principles to test and perform maintenance operations to these systems and to locate defective components and repair faults, and completing reports on service and performance outcomes.

The skills and knowledge in this unit will be applied by refrigeration and air conditioning technicians during the service and repair of secondary refrigerant systems.

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 volt (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.

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

UEERA0053 Install, commission, service and maintain medium temperature systems

Competency Field

Refrigeration and air-conditioning

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to service secondary refrigeration system

PERFORMANCE CRITERIA

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

1.1 Type of secondary refrigeration system components and operation are identified

1.2 WHS/OHS requirements and workplace procedures and safety data sheets (SDS) are identified and risk control measures implemented, including wearing personal protective equipment (PPE)

1.3 Safety hazards not previously identified are assessed, documented and risk control measures devised and implemented

1.4 Extent of faults is determined from reports, documentation, observation and discussions with appropriate person/s

1.5 Appropriate person/s is consulted to ensure the work is coordinated effectively with others involved on the worksite

1.6 Tools, equipment and testing devices needed to carry out refrigeration work are obtained in accordance with workplace procedures and checked for correct operation and safety

2 Carry out secondary refrigeration maintenance requirements

2.1 WHS/OHS requirements, regulations, workplace procedures and risk control measures are followed

2.2 Components are checked and isolated in accordance with WHS/OHS requirements and procedures

2.3 Refrigeration maintenance tests are performed on the primary cooling source, operating pressures, operating current, refrigerant charge, secondary flow rates and condenser cooling system, and system faults or non-compliance documented to operational

specifications

- 2.4** Refrigeration operational maintenance tests are performed on the secondary refrigerant pumping/circulation devices, pressure and flow rates recorded, and faults or non-compliance to system specification documented
 - 2.5** Chemical integrity, including the dilution rate, anti-bacterial and anti-corrosion rates of the secondary refrigerant, is checked using test kit and following approved WHS/OHS procedures, including PPE, and results or non-compliance are documented
 - 2.6** Secondary refrigerant pipe work is checked for leaks and stability and its insulation is checked for soundness
 - 2.7** Refrigeration system components, evaporators, blowers, other heat exchangers, heat recovery or defrost systems are checked for correct operation and cleanliness
 - 2.8** Control system operation, including safety controls and any faults or non-conformity to system specifications are documented in accordance with WHS/OHS guidelines and workplace practices
- 3 Repair secondary refrigeration system**
- 3.1** Justification for solutions used to solve refrigeration system problems is documented in accordance with workplace procedures
 - 3.3** Repair work is documented and appropriate person/s notified in accordance with workplace procedures
 - 3.4** Repairs to refrigeration system components are performed to achieve compliance to design operation and manufacturer recommendations for effective operation
 - 3.5** Refrigeration control system are adjusted, as required, to achieve compliance to design operation and manufacturer recommendations for effective operation
 - 3.6** Record of flows, pressures and temperatures obtained before and after repair are compared to refrigeration specifications and contingency measures implemented, as required, to ensure compliance to design operation and manufacturer recommendations for effective operation

4 Complete reports on refrigeration maintenance and repair activities

- 4.1** Work area is cleaned and made safe in accordance with workplace procedures and practices
- 4.2** Refrigeration service/maintenance and repair activities on secondary refrigeration system and relevant non-compliance specification after repair are documented and reported to appropriate person/s

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.

Servicing and repairing secondary refrigeration systems must include at least two of the following system types:

- chilled water or glycol/brine system
- condenser water system
- defrost system
- heat recovery system
- thermal storage system

Servicing and repairing secondary refrigeration systems must include the following components:

- cycling controls
- heat exchangers
- primary refrigerant flow controls
- pumps
- safety controls
- evaporators/cooling coils, forced and natural draft
- secondary refrigerant flow controls
- secondary refrigerant piping, insulation and associated equipment

Spparatus must include at least the following:

- chilled water systems (primary system)
- ice bank systems

Systems must include at least the following:

- cool rooms
- freezer rooms
- merchandising and display cabinets
- other commercial or industrial applications

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ182A Repair and service secondary refrigeration systems.

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 UEERA0067 Repair and service secondary refrigeration systems

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 two separate occasions and include:

- applying relevant legislation, industry standards and practices
- applying relevant work health and safety (WHS)/occupational health and safety (WHS/OHS) requirements and workplace procedures and practices, including using risk control measures
- applying sustainable energy principles and practices
- servicing and repairing secondary refrigeration systems, including:
 - applying logical diagnostic methods
 - dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
 - identifying faults and competency needed to rectify them
 - rectifying faults in system controls
 - using fault scenarios to test the cause of system faults
 - verifying that the system operates correctly.

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:

- applicable standards and codes
- basics of secondary refrigeration systems, including:
 - operation
 - applications
 - types and safe handling of secondary refrigerants,
 - need for use of anti-bacterial and corrosion inhibitor
 - use of personal protective equipment (PPE)
- control system, pressure, temperature and safety
- control valves, balance and operational

- documentation and reports
- maintenance procedures for secondary refrigeration systems
- maintenance requirements, including pumps, chemical integrity of refrigerant, cooling coils/freezing coils operation, leak detection additives, leak testing, pipe work and insulation, control valves and control system
- major components types, location, purpose, operation and safety
- refrigerant disposal Environment Protection Authority (EPA) requirements
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant refrigeration system industry standards and codes of practice
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- repairs to secondary refrigerant systems, including:
 - cooling coils/freezing coils
 - system leaks, pipe work or insulation
 - control valves, control system components
 - chemical integrity of refrigerant
- secondary refrigeration systems
- service and repair of secondary refrigeration systems
- tools and equipment for maintenance work.

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.

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