



Australian Government

UEERA0078 Resolve problems in ultra-low temperature refrigeration systems

Release: 1

UEERA0078 Resolve problems in ultra-low temperature 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 fault find and repair ultra-low temperature refrigeration systems, including compound and cascade systems.

It includes working safely and to legislative, industry standards and code requirements; using effective problem-solving techniques by applying knowledge of the components and operations of ultra-low temperature refrigeration systems; completing work and documenting solutions.

The skills and knowledge in this unit will be applied by refrigeration and air conditioning technicians during the service and repair of ultra-low temperature refrigeration systems

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 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

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

Competency Field

Refrigeration and air-conditioning

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to resolve problems in ultra-low temperature refrigeration systems

2 Resolve problems in ultra-low temperature refrigeration systems

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 in accordance with legislative, standard and code requirements and workplace procedures
- 1.2** Hazards not previously identified are noted and risk control measures implemented
- 1.3** Details of the problem are obtained from documentation and/or from supervisor to determine the scope of work to be completed
- 1.4** Advice is sought from supervisor, as required, to ensure work is coordinated effectively with others
- 1.5** Materials required for the work are identified and obtained in accordance with workplace procedures
- 1.6** Tools, equipment and testing devices required for the work are obtained and checked for correct operation and safety
- 2.1** Need to test or measure live work is determined in accordance with legislative, standard and code requirements and workplace procedures
- 2.2** Circuits/machines/plant are checked as being isolated, where necessary, in accordance with legislative, standard and code requirements and workplace procedures

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| | <p>2.3 Problems are diagnosed using observations, measurements, calculations and comparisons with normal operating values of systems and components</p> <p>2.4 Information needed to resolve problems, including system specifications, ‘as-installed’ drawings, maintenance and service records, are obtained and evaluated against normal operating parameters</p> <p>2.5 Problems are resolved safely and with the approval of authorised person/s, as required</p> <p>2.6 Problems are resolved without damage to apparatus, circuits, the surrounding environment and/or services using relevant sustainable energy practices</p> |
| 3 Complete work and document problem-solving activities | <p>3.1 Worksite is cleaned and made safe in accordance with workplace procedures</p> <p>3.2 Justification for solutions used to resolve problems are documented in accordance with workplace procedures</p> <p>3.3 Completion of work tasks are documented and appropriate person/supervisor notified in accordance with workplace procedures</p> |

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.

Solving problems in ultra-low temperature refrigeration systems must include at least the following:

- three operational problems related to ultra-low temperature refrigeration systems
- one compound or one cascade system

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ117A Resolve problems in ultra-low

temperature 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 UEERA0078 Resolve problems in ultra-low temperature 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 legislations, industry standards, codes of practice and regulations
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - applying safe working practices
 - hazard identification and reporting
 - implementing risk control measures
- completing work and documenting problem-solving activities and justification for the solutions used in ultra-low temperature refrigeration systems
- determining need to test or measure live work
- isolating circuits/machines/plant
- obtaining and assessing relevant information to resolve problems, including:
 - ‘as-installed’ drawings
 - maintenance and service records
 - system specifications
 - manufacturer specifications and manuals
- preparing to resolve problems in ultra-low temperature refrigeration systems
- resolving problems in ultra-low temperature refrigeration systems effectively
- using methodical fault-finding techniques
- using relevant tools, equipment and testing devices.

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:

- maintenance schedules
- normal operating parameters of ultra-low temperature refrigeration systems
- operating and control principles of ultra-low temperature refrigeration systems

- relevant manufacturer specifications
- relevant measurements and calculations
- relevant risk mitigation processes, including:
 - environmental and sustainable energy principles and practices
 - risk control measures
 - safe working practices
- relevant standards, codes of practice and regulations
- relevant tools, equipment and testing devices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- suitability of refrigerants for each application
- system faults and testing methods
- system specifications, 'as-installed' drawings, maintenance and service records
- ultra-low temperature refrigeration systems, including:
 - applications
 - characteristics
 - components
 - compound and cascade systems
 - construction
 - design features
 - typical layout arrangements.

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.

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