Australian Government

Assessment Requirements for UEERA0046 Install and commission ammonia refrigeration systems, components and associated equipment

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.

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 legislative, 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
- conducting refrigeration system operation and maintenance
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- discharging/charging refrigerant/lubricants and pressure testing the system without damage to components
- documenting operating conditions correctly
- identifying the conditions of the ammonia (R717) refrigerant at various locations in the vapour compression and liquid recirculation system
- installing, connecting, securing and aligning components and equipment and ensuring that equipment and pipe work is compliant with relevant industry standards, codes of practice and regulations
- locating and rectifying leaks
- optimising system performance and efficiency
- pressure testing entire system at the appropriate design test pressures
- pressure testing, charging/discharging refrigerant/lubricants and determining the operating conditions of ammonia vapour compression and liquid recirculation refrigeration system
- recording measurements
- removing system contaminants and evacuating
- selecting and using appropriate measuring devices correctly
- using calculation methods accurately
- using methodical and efficient commissioning techniques in accordance with workplace procedures.

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:

- cool room and freezer construction, including:
  - commissioning procedures
  - construction materials
  - construction methods
  - defrost methods
  - underfloor heating
- installation and commissioning techniques for ammonia refrigeration systems
- insulation and vapour barrier, including insulation materials and vapour barriers
- refrigeration control system testing and adjustment, including:
  - central programmable logic controller (PLC) system
  - defrost methods and controls
  - flow controls
  - refrigerant level controls
  - refrigerant pressure controls
  - temperature controls
- refrigerant piping, including:
  - hydraulic shock
  - installation principles
  - material compatibility
  - pipe sizing principles
  - pressure testing/evacuation
  - relief valves
  - welding
- relevant job safety assessments or risk mitigation processes
- relevant legislative, industry standards and practices
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, including reports on installation and commissioning of ammonia refrigeration systems
- relevant workplace policies and procedures, including workplace emergency response plan
- testing and commissioning ammonia refrigeration systems, including:
  - air cooled condensers
  - compressors
  - direct contact freezing
  - evaporative condensers
  - evaporators (air/fluid cooling)

- high pressure receivers
- secondary refrigerants
- start-up and shutdown procedures
- water cooled condensers.

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
- resources that reflect current industry practices in relation to installing and commissioning, as well as determining the operating conditions of ammonia vapour compression and liquid recirculation systems
- applicable documentation, including workplace procedures, emergency response plan, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6