



Australian Government

**Assessment Requirements for UEERA0034
Establish heat loads for commercial
refrigeration and/or air conditioning
applications**

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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 one occasion and include:

- establishing system parameters for heat load
- selecting appropriate head load calculation tools
- identifying heat loads accurately
- using calculation methods accurately
- documenting heat loads correctly
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices requirements, including using risk control measures
- applying sustainable energy principles and practices
- determining heat loads for commercial refrigeration and air conditioning applications
- planning to determine heat loads for commercial refrigeration/air conditioning applications.

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:

- commercial refrigeration heat load estimating commercial refrigeration applications, safe working practices and relevant standards, codes and regulations, including:
 - heat transfer:
 - factors affecting heat transfer
 - insulation material characteristics
 - vapour barriers (seals)
 - ambient conditions
 - composite walls (heat flows)
 - types of common insulation

- thermal conductivity
- film factors
- cabinet construction and design:
 - deep freeze case
 - meat case
 - dairy case
 - fruit and vegetable case
 - drink cabinets
- air change load:
 - room volumes
 - room usage (average, medium and heavy)
 - heat removed from cooling air to refrigerated conditions
 - air curtains
 - temperature differences
 - door opening sizes
 - Tamm's equation
- product load:
 - sensible heat
 - latent heat
 - heat of respiration
 - storage temperatures
 - unit running times
 - humidity
 - air flows
 - stacking of products
 - freeze, chill and thaw times
- total freezer/cool room loads:
 - wall load
 - air change load
 - product load
 - miscellaneous
 - total load, safety factor and unit running times
 - floor loads in cool rooms
 - door opening loads (ASHRAE and RADS methods)
 - door opening loads (for trucks)
- process cooling loads
 - cooling chemical reactions
 - energy balance methods
 - sensible and latent cooling of gases

- sensible and latent cooling of water vapour in gas streams
- computer programs
- commercial air conditioning heat load estimating
- heat load estimating for commercial air conditioning applications, safe working practices and relevant standards, codes and regulations, including:
 - heat flow in buildings:
 - conduction
 - convection
 - radiation
 - heat paths
 - thermal storage
 - different methods of calculations:
 - ASHRAE
 - carrier
 - finite difference
 - U values
 - film coefficients
 - solar heat:
 - direct
 - diffuse
 - sol air temperature
 - sun position calculations
 - design conditions:
 - outdoor
 - monthly/daily corrections
 - comfort/critical
 - indoor
 - effective temperature
 - thermal comfort
 - space characteristics
 - equipment location
 - zoning
 - internal loads:
 - lighting
 - equipment
 - people
 - load profiles
 - internal partitions
 - fresh air/AS 1668 The use of ventilation and air conditioning in buildings
 - calculation of fabric loads:

- walls
- roofs
- floors
- windows:
 - glass types and factors
 - shade factors
 - internal and external shading
 - shading from adjacent structures
- air quantity calculation:
 - psychrometrics
 - by-pass factor
 - coil load
 - variable air volume (VAV) air quantities
- piping and other losses
- refrigeration plant load
- computer software:
 - responsible use
- relevant commercial refrigeration and air conditioning manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- 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

Companion Volume implementation guides are found in VETNet - -

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