



Australian Government

Assessment Requirements for MARL015 Apply intermediate principles of marine engineering thermodynamics

Release: 1

Assessment Requirements for MARL015 Apply intermediate principles of marine engineering thermodynamics

Modification History

Release 1. New unit of competency.

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:

- applying relevant work health and safety/occupational health and safety (WHS/OHS) requirements and work practices
- assessing own work outcomes and maintaining knowledge of current codes, standards, regulations and industry practices
- effectively communicating knowledge and ideas through verbal, written and visual means
- identifying and applying appropriate laws and principles and relevant mathematical formulas and techniques to solve basic problems related to marine engineering thermodynamics
- identifying and interpreting numerical and graphical information, and performing basic mathematical calculations related to marine engineering thermodynamics, such as gas expansion and contraction, heat transfer, and thermal efficiency
- identifying, collating and processing information required to perform basic calculations related to marine engineering thermodynamics
- reading and interpreting written information needed to perform basic calculations related to marine engineering thermodynamics.

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:

- air compressor:
 - components
 - faults and hazards
 - first law of thermodynamics
 - operating cycle of reciprocating air compressors
 - performance characteristics
 - property diagrams
 - types

- uses
- working principles of reciprocating compressors
- basic principles of marine engineering thermodynamics
- enthalpy
- expansion and compression of gases
- gas laws
- internal combustion engines:
 - second law of thermodynamics
 - heat engine cycles
 - operating principles of two stroke and four stroke internal combustion engines
 - performance characteristics
 - improvements
- principles of heat transfer and refrigeration
- refrigeration and air conditioning cycles
- steam plants
- System International (SI) units
- thermal efficiency calculations
- thermodynamic principles
- WHS/OHS requirements and work practices

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must satisfy the National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) standards.

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.

Assessment must occur in workplace operational situations or where these are not available, in simulated workplace operational situations or an industry-approved marine operations site that replicates workplace conditions where intermediate principles of marine engineering thermodynamics can be applied.

Resources for assessment include access to:

- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- diagrams, specifications and other information required for performing intermediate calculations related to marine engineering thermodynamics
- relevant and appropriate materials and equipment
- relevant regulatory and equipment documentation that impacts on work activities

- technical reference library with current publications on intermediate marine thermodynamics.

Performance should be demonstrated consistently over time and in a suitable range of contexts.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>