



Australian Government

UEPMNT406 Install and maintain a steam turbine

Release: 1

UEPMNT406 Install and maintain a steam turbine

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to install High Pressure (HP), Intermediate Pressure (IP), Low Pressure (LP) and Steam Driven Feed Pump Turbine (SFPT) cylinders, rotors and steam units.

Installation is the process of making cylinders, rotors and steam units ready for use in a power generation facility. Maintenance includes the use of strategies and procedures to preserve and extend the service life of the steam turbine.

Competency in this unit requires the ability to plan work, disassemble steam turbine, inspect steam turbine components, repair steam turbine and components, reassemble steam turbine and complete all work tasks. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEPMNT402 Conduct complex levelling and alignment

MEM18009B Perform levelling and alignment of machines and engineering components

MEM09002B Interpret technical drawing

MEM12023A Perform engineering measurements

MEM18001C Use hand tools

MEM18002B Use power tools/hand held operations

MEM18003C Use tools for precision work

MEM18055B Dismantle, replace and assemble engineering components

MEM18006C Repair and fit engineering components

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

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

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specifications
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct materials and components for work are obtained and inspected for compliance with job specifications
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures
- 1.7** Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
- 1.8** Work area is prepared, in accordance with workplace procedures

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|---|------------|---|
| 2 Disassemble steam turbine | 2.1 | Isolations for work are confirmed, in accordance with workplace procedures |
| | 2.2 | Steam turbine is disassembled, in accordance with manufacturers' specifications and workplace procedures |
| | 2.3 | Steam turbine components are removed, in priority, in accordance with manufacturers' specifications and workplace procedures |
| | 2.4 | Disassembly is carried out to facilitate reassembly, in accordance with workplace procedures |
| | 2.5 | Components are measured and clearances are taken to determine conformity to manufacturer's limits and to ensure assembly is in accordance with manufacturers' specifications and workplace procedures |
| | 2.6 | Measurements and clearances are recorded, in accordance with workplace procedures and manufacturers' specifications |
| 3 Inspect steam turbine components | 3.1 | Components are cleaned and inspected, in accordance with workplace procedures |
| | 3.2 | Faults are identified and recorded, in accordance with workplace procedures |
| | 3.3 | New components are inspected for compliance to manufacturers' specifications, in accordance with workplace procedures |
| | 3.4 | New components are prepared for assembly, in accordance with workplace procedures plan |
| 4 Repair steam turbine components | 4.1 | Repairs are carried out in accordance with workplace procedures |
| | 4.2 | Repairs are tested and results are analysed to ensure conformance to manufacturers' specifications, in accordance with workplace procedures |
| | 4.3 | Data from testing is recorded, in accordance with workplace procedures |
| 5 Reassemble steam turbine | 5.1 | Equipment and plant is prepared for reassembly of steam turbine, in accordance with workplace procedures |
| | 5.2 | Components are refitted, in accordance with workplace |

procedures and manufacturers' specifications

5.3 Steam turbine is assembled, in accordance with workplace procedures and manufacturers' specifications

5.4 Steam turbine is test run and operating characteristics are monitored to ensure compliance with manufacturers specifications and workplace procedures and requirements

6 Complete work

6.1 Work is completed and appropriate personnel are notified, in accordance with workplace procedures

6.2 Work area is cleared of waste, cleaned, restored and secured in accordance with workplace procedures

6.3 Tools and equipment are maintained and stored, in accordance with workplace procedures

6.4 Work completion details are finalised, in accordance with workplace procedures

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 Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMT406B Install and maintain a steam turbine.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPMNT406 Install and maintain a steam turbine

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- completing work as per scheduled requirements
- determining permit to work requirements
- disassembling steam turbine using disassembly techniques
- identifying components
- identifying hazardous materials implementing legislation, industry standards, codes of practice and regulations
- inspecting steam turbine components using inspection and fault diagnosis techniques
- interpreting manufacturers' specifications and manuals
- planning for installation and maintenance of steam turbine work
- reassembling turbine using reassembly techniques
- recognising worn, damaged or faulty components
- repairing steam turbine or components using repair and maintenance techniques
- utilising diagnosing and testing equipment including precise measuring equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- data recording techniques
- diagnostic and testing techniques
- disassembly and reassembly methods and techniques

- inspection techniques
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- power generation plant and equipment, its location and operation
- precision measuring equipment
- repair and maintenance methods and techniques
- steam turbine thermal and mechanical operations inclusive of steam turbine auxiliary systems
- typical arrangements of power production plant
- WHS/OHS legislated requirements including:
 - emergency procedures
 - identifying hazardous materials
 - risk control measures
 - safe working practices
- workplace documentation
- workplace policies and procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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 currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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