Australian Government

MEM27021 Maintain, fault find and repair stationary plant gas turbine engines

Release: 1

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Modification History

Release 1: New unit

Application

This unit of competency defines the skills and knowledge required to maintain gas turbine engines used in stationary plant applications.

It covers scheduled servicing, preventative maintenance, fault finding and repair or rectification of faulty operation and components undertaken on gas turbine engines up to 5 GJ/hr (1300 kw) capacity, including ancillary equipment that may be associated with the engine operation.

The application of the skills and knowledge described in this unit in some states/territories may require an authority to practice in the workplace. Other conditions may apply under state and territory legislative and regulatory requirements.

Band: **A**

Unit Weight: **6**

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Fixed and Mobile Plant

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications, drawings, job sheets and work instructions
2	**Inspect gas turbine engine system and components**	2.1 Determine normal gas turbine engine performance parameters from manufacturer specifications and workplace records 2.2 Prepare engine for engine safe system inspection and operation in accordance with manufacturer specification 2.3 Check gas turbine engine components visually for external and internal signs of defects 2.4 Check pipes, cables and connections for wear and damage 2.5 Perform appropriate diagnostic tests for engine and equipment type 2.6 Identify faults from diagnostic test results 2.7 Determine appropriate action to rectify faults
3	**Test gas turbine engine system**	3.1 Identify test ports and connectors and connect test equipment 3.2 Follow specified test procedure or run diagnostic program to access data on engine performance 3.3 Test safety systems and emergency shut offs 3.4 Identify faults and determine if related to engine, associated systems or control fault 3.5 Trace fault to root cause

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
		3.6 Obtain specialist advice, where required, to assist with the troubleshooting process
4	**Service gas turbine engine**	4.1 Check and replace air and oil filters if required or to manufacturer schedule
		4.2 Test and adjust regulator, operation and safety controls
		4.3 Pressure test gas, oil, and air pipes and hoses and purge, as required
		4.4 Lubricate engine and components according to maintenance schedule
		4.5 Document engine service to workplace requirements
5	**Rectify faults according to manufacturer specifications**	5.1 Assess components for abnormal wear or defects
		5.2 Replace faulty or worn components
		5.3 Remove corrosion where required
		5.4 Finish or re-finish metal surfaces through polishing, lapping and blending of damage area or other specified process
		5.5 Apply required surface treatments
		5.6 Test engine and make any required post-repair adjustments
6	**Install new, repaired or replacement engine**	6.1 Locate and fix engine according to manufacturer specifications
		6.2 Refit ancillary components and equipment systems
		6.3 Check and adjust lubricants, coolant, fuel and other required fluids
		6.4 Test run engine and make any required post-installation adjustments

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
7	**Complete repair or installation**	7.1 Clean work area and dispose of non-recyclable material according to workplace and environmental requirements
		7.2 Collect and store recyclable material in appropriate containers
		7.3 Check and store tools and equipment
		7.4 Document and report engine repair or replacement according to workplace procedure

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Ancillary equipment includes one (1) or more of the following:	• pumps • compressors • fluid power equipment • metering equipment • electrical controls • electronic controls

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Gas turbine engine and components include one (1) or more of the following:

- engine change unit, main components and accessories/drives
- control components, including valves, meters and regulators
- ignition and starter system components
- fuel system components, including:
  - manifold and nozzles
  - combustion chambers
  - filters
- oil system components
- air system components, including:
  - air inlet structures
  - fans
  - guide vanes
  - centrifugal or axial flow compressor assemblies (low and high pressure)
  - compressor bleed valves if fitted
- exhaust system components, including:
  - high and low pressure turbine assemblies
  - free turbine (where fitted)
  - exhaust outlet flues and shafts

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Actions to rectify faults include one (1) or more of the following:	• on-site repair, including in an on-site workshop • removal of engine to a specialist engine repair facility • installation of a new or reconditioned engine

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2