



Australian Government

MEA342 Apply basic aircraft power plant design characteristics

Release: 2

MEA342 Apply basic aircraft power plant design characteristics

Modification History

Release 2. Equivalent to MEA342 Apply basic aircraft power plant design characteristics with amended prerequisite codes.

Application

This unit of competency requires application of basic knowledge of propulsion and power plant selection for aeroplanes and rotary wing aircraft, piston engines and propellers/rotors, turbo prop, gas turbines and gas turbine/rotor.

The unit is part of Diploma and Advanced Diploma training pathways. It is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

Pre-requisite Unit

MEA107	Interpret and use aviation maintenance industry manuals and specifications
MEA154	Apply work health and safety practices in aviation maintenance
MEA158	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

Competency Field

Aeronautical engineering

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1.	Research and evaluate the types of aeroplane and rotary wing aircraft power plant and their relative advantages and	1.1	The types of aeroplane and rotary wing aircraft power plant are identified and compared in terms of relative advantages and disadvantages
		1.2	Types of propeller are identified and compared in terms of relative advantages and disadvantages

disadvantages

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| | | 1.3 | Turbojet and turbofan performance is compared in terms of relative advantages and disadvantages |
| | | 1.4 | Maintenance requirements for aircraft power plants are identified |
| 2. | Apply basic power plant and propulsion system selection processes | 2.1 | Given required aeroplane use and performance characteristics an appropriate type of power plant is determined |
| | | 2.2 | An appropriate type of propulsion system is selected |
| | | 2.3 | Given required rotary wing aircraft use and performance characteristics an appropriate type of power plant is determined |

Foundation Skills

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.

Types of aeroplane and rotary wing aircraft power plant include:

- Piston engine (petrol or diesel)
- Rotary
- Turboprop or gas turbine and rotor
- Turbofan
- Turbojet

Types of propellers include:

- Fixed pitch
- Adjustable pitch
- Constant speed
- Contra-rotating
- Tractor
- Pusher

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEA342 Apply basic aircraft power plant design characteristics

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Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- identifying the different types of aircraft power plant and their relative advantages and applications
- identifying power plant maintenance and monitoring requirements
- identifying different types of propellers and their applications
- selecting power plants for aeroplanes and rotary wing aircraft given the applicable performance characteristics.

Knowledge Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- basic power plant characteristics
- basic propeller theory and characteristics
- use of non-destructive testing (NDT) in power plant maintenance
- power plant maintenance requirements including the use of engine condition monitoring.

Assessment Conditions

- This unit may be assessed off the job in a training environment equipped to provide exposure to the relevant aircraft design characteristics and to theory of flight.
- The candidate must have access to all tools, equipment, materials and documentation required and must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials. The assessment environment should not disadvantage the candidate.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
- Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, teacher's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).

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