



Australian Government

MEM23133 Evaluate rapid tooling applications

Release: 1

MEM23133 Evaluate rapid tooling applications

Modification History

Release 1. Supersedes and is equivalent to MEM23133A Evaluate rapid tooling applications.

Application

This unit of competency defines the skills and knowledge required to evaluate rapid tooling applications for their suitability for purpose and includes additive processes, spray deposition, casting processes, rapid machining, cutting and welding. It requires consideration of product manufacturability, materials, resources and skills, plant and tooling requirements systems and processes, strength, form, fit, function, lead time and sustainability.

It is suitable for people working as manufacturing or maintenance technicians, designers and draftspersons, and those pursuing engineering or related technical qualifications and careers.

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

Pre-requisite Unit

MEM23004 Apply technical mathematics

Competency Field

Engineering science

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine scope of rapid tooling application	1.1 Identify technologies, including software, used or proposed, in rapid tooling application 1.2 Confirm stakeholders to be consulted on evaluation 1.3 Confirm that appropriate support, including technical and professional assistance, is available 1.4 Identify market context for rapid manufacturing product 1.5 Identify relevant work health and safety (WHS) and regulatory requirements, standards, codes of practice, risk management and organisational procedures
2. Identify principles	2.1 Determine principles and techniques required to evaluate and

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
and techniques required for evaluation of rapid tooling application	optimise rapid tooling process and application 2.2 Select appropriate analysis and development software and software validation techniques
3. Evaluate rapid tooling application	3.1 Evaluate WHS and regulatory compliance requirements and risk management practices of rapid tooling processes 3.2 Assess tooling and rapid tooling processes for sustainability 3.3 Assess effectiveness of software used for tool design, rapid tooling process control and process optimisation 3.4 Review suitability of facilities, services and plant for rapid tooling processes 3.5 Evaluate suitability of materials used in rapid tooling process 3.6 Evaluate tooling and process effectiveness, costs, break-even, and comparative costing relative to alternative 3.7 Review labour and skill requirements of rapid tooling process 3.8 Apply systems thinking, continuous improvement, problem-solving and decision-making, and constraint and contingency management
4. Report results	4.1 Record results of evaluation 4.2 Provide documentation including tool, product and process analysis, and computer-aided design (CAD) files

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.

Rapid tooling applications include:	• small to medium volumes of product using sintered tools • large volumes of product using sprayed metal tools • situations where one-off tooling requirements are common and speed of tooling manufacturing is important.
Context of rapid tooling processes includes consideration of:	• global competitive markets • product and process sustainability • lean systems • product manufacturability • facilities, services, plant and tooling requirements • supply chains • material, transfer operations • process control • labour requirements and skills distribution • information flow • systems thinking, continuous improvement, and constraint and contingency management • WHS, regulatory requirements and risk management.
WHS, regulatory requirements and organisational procedures include:	• WHS acts, regulations and relevant standards • codes of practice from Australian and overseas engineering and technical associations and societies • risk assessments • registration requirements • safe work practices • state and territory regulatory requirements applying to electrical work.
Appropriate technical and professional assistance includes:	• technical support and advice relating to elements which have intrinsic dangers • professional support for technologies.
Sustainability includes:	• meeting all regulatory requirements • conforming to all industry covenants, protocols and best practice guides • minimising ecological and environmental footprint of process, plant and product • maximising economic benefit of process plant and product to the organisation and the community • minimising the negative WHS impact on employees, community and customer.
Continuous improvement implementation includes one or more of the following techniques:	• balanced scorecard • current and future state mapping • measuring performance against benchmarks • process improvement, problem solving and decision making • data management, generation, recording, analysing, storing and

	• use of software • training for improvement systems participation • technical training.
Constraints and contingencies include one or more of the following:	• financial • organisational • procedural • cultural • physical (resource, access and logistical limitations).

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23133A Evaluate rapid tooling applications.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>