



Australian Government

Assessment Requirements for MEM23137

Evaluate rolling tools and processes

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM23137A Evaluate rolling tools and processes.

Performance Evidence

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

- determining parameters and context of rolling tools in manufacturing processes
- reviewing design and construction features, functions, applications and limitations of rolling tools on at least two occasions
- investigating sustainability implications of rolling tools and associated manufacturing process
- identifying principles, design, analysis techniques and software including supervisory control and data acquisition (SCADA) required to evaluate and optimise rolling tools and related manufacturing processes
- establishing cross-sectional dimensions
- developing a flower pattern for progressive forming on at least two occasions
- establishing product and roll orientation
- designing rolls to suit the flower pattern
- adding support operations including fixtures, guides, side rolls, straightening devices, cutting and punching on at least two occasions
- evaluating work health and safety (WHS), regulatory and risk management compliance
- reporting and documenting results of evaluation.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

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

- properties of hot and cold working of metals and alloys, including:
 - recrystallisation temperature
 - grain size and microstructure
- features and functions of rolling tools in a manufacturing operation
- sources of technical and professional assistance
- WHS and regulatory compliance requirements and risk management practices for rolling tools and related manufacturing and maintenance processes
- sustainability and lean systems implications for rolling tools and related manufacturing processes

- hot rolling including:
 - critical design considerations for tooling
 - multi-pass, multi-roll including three high, four high mills and reversing mills
 - hot rolled products
 - effect of hot rolling and variations in rolling process on properties of rolled materials
 - ring rolling
- cold rolling including:
 - critical design considerations for tooling
 - related processes including pickling, cleaning, annealing and slitting
 - cold rolled products
 - properties of cold rolled materials including strength and hardness increase and ductility decrease
- hot and cold rolling effects
- roll forming including:
 - thread rolling for screws and bolts
 - combined rolling techniques
- roll pass design features including:
 - product mechanical properties including:
 - yield strength in tension and shear
 - work hardening strain rate effect
 - driven and non-driven rolls, and applied tension
 - friction in rolling process
 - roll bite geometry
 - deflection compensation
 - roll materials, manufacture and heat treatment
 - roll force, torque and power
 - product guide systems
 - roll and product temperature and cooling rate control
- roll forming pass design features
- labour and skills distribution requirements
- systems thinking, continuous improvement, constraint and contingency management, and comparative supply chain performance
- WHS and regulatory requirements, codes of practice, standards, risk management and registration requirements
- reporting and documentation requirements.
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Assessment Conditions

- Assessors must:
 - have vocational competency in evaluating rolling tools and processes at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- 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.
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Links

Companion Volume Implementation Guides are available on VETNet -

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