



Australian Government

MEM23113 Evaluate hydrodynamic systems and system components

Release: 1

MEM23113 Evaluate hydrodynamic systems and system components

Modification History

Release 1. Supersedes and is equivalent to MEM23113A Evaluate hydrodynamic systems and system components.

Application

This unit of competency defines the skills and knowledge required to evaluate fluid systems and system components and includes hydrodynamic fundamentals, including properties of fluids and system component materials. It also includes evaluation of system component performance related to flow rates, pressures, forces and power of containment, transport and use of fluids, work health and safety (WHS) compliance requirements and risk management procedures.

The unit applies to evaluation of fluid systems and components used in hydrodynamic systems and is suitable for people working as technicians or system designers, draftspersons and maintainers, and for those pursuing careers and qualifications in engineering or related disciplines.

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

Pre-requisite Unit

MEM23004 Apply technical mathematics

MEM23006 Apply fluid and thermodynamics principles in engineering

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. Establish scope of hydrodynamic system	1.1 Determine fluid systems and system components to be evaluated 1.2 Identify stakeholders to be consulted on evaluation task 1.3 Confirm that appropriate support, including technical and professional assistance, is available 1.4 Determine WHS and regulatory requirements, risk management

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 organisational procedures 1.5 Investigate sustainability implications of hydrodynamic applications
2. Apply principles and techniques required for evaluation of hydrodynamic system and components	2.1 Review features and functions of hydrodynamic system and components 2.2 Determine hydrodynamic principles and techniques required to evaluate system and select and optimise components 2.3 Determine appropriate analysis techniques, software and software validation techniques
3. Evaluate hydrodynamic system and components	3.1 Assess components and system compatibility with fluid properties 3.2 Assess suitability of pumps and pump performance in hydrodynamic system 3.3 Assess forces on bends and section changes in piping systems and confirm they are within specification 3.4 Assess hydrodynamic performance of components including fittings, valves and hoses 3.5 Assess open channel systems and optimise for required flow rates 3.6 Evaluate collar and cylindrical bearings subject to boundary, transitional and hydrodynamic lubrication
4. Report results	4.1 Record outcomes of evaluation 4.2 Provide documentation including calculations, component and system layouts, and functional diagrams

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.	
Hydrodynamic systems include:	• fluid vessels • pumping systems including industrial wash, fire prevention and irrigation • turbines for hydro-electric power generation • components including fluid containers, ducts, pipes, valves, pumps, turbines and fluid measuring devices • open channels for liquid transfer.
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.
Appropriate licensed technical and professional assistance includes:	• technical support and advice relating to elements which have intrinsic dangers • professional support for technologies.
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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23113A Evaluate hydrodynamic systems and system components.

Links

Companion Volume implementation guides are found in VETNet -

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