Australian Government

MEM23119A Evaluate continuous improvement processes

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MEM23119A Evaluate continuous improvement processes

Modification History

Release 1 - New unit. Replaces MEM23083A, but not equivalent.

Unit Descriptor

This unit of competency covers the evaluation of continuous improvement processes for production, engineering and associated services. It requires the evaluation of improvement processes, and the efficiency and effectiveness of their response to continuous feedback from customers and other sources. It requires consideration of the effect of improvements or change on entire systems.

Application of the Unit

This unit applies to production and engineering activities where continuous improvements, such as those to product, process or service, efficiency or competitiveness, is required. It is suitable for people working as service providers, supervisors or technicians and those pursuing manufacturing, engineering or related technical qualifications and careers.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEM23118A	Apply production and service control techniques
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element.

Elements and Performance Criteria

1	Establish scope of continuous improvement evaluation	1.1	Identify industrial and market context for continuous improvement
		1.2	Identify features, functions and measurable parameters of products, processes, systems or services, assets and operations subject to continuous improvement
		1.3	Assess software techniques required for continuous improvement
		1.4	Review sustainability implications of evaluation task
		1.5	Identify stakeholders in continuous improvement processes and appropriate licensed technical and professional assistance to be consulted on the tasks
		1.6	Determine compliance requirements of relevant work health and safety (WHS) and regulatory requirements, codes of practice, standards and risk assessment procedures
2	Prepare for evaluation	2.1	Identify appropriate measurement, data gathering, software and other analysis methods to be used for evaluation
		2.2	Identify performance criteria or indices
		2.3	Identify existing process capability, evaluation, control and run charts and sampling procedures
		2.4	Identify existing qualitative continuous improvement processes

3	Evaluate organisation continuous improvement processes	3.1	Evaluate manual and automatic methods for measurement of parameters of products or services
		3.2	Evaluate data gathering, analysis and performance indices
		3.3	Evaluate software techniques for performance analysis and visual display generation
		3.4	Evaluate quantitative and qualitative continuous improvement processes
		3.5	Apply systems thinking, constraint and contingency management, problem solving and decision making to evaluation tasks
		3.6	Evaluate sustainability implications of improvements
4	Report results	4.1	Record results of scoping, identification of principles and techniques and evaluation of continuous improvement techniques
		4.2	Provide documentation, such as reports, data, graphics, flow charts and performance indices

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- determining suitability of measurable parameters of products, processes, systems and services for continuous improvement activities
- undertaking measurement, data gathering and analysis, including identifying trends and improvements
- reviewing performance indices, software for data analysis and visual representations and continuous improvement techniques
- evaluating continuous improvement, systems thinking, constraint and contingency management, and lean systems requirements
- producing and interpreting charts used in production and service control, including:
  - histograms
  - Pareto diagrams
  - flowcharts
  - tallycharts
  - scatter plots
  - run chart
- evaluating sustainability implications of improvements
- reporting and documenting results of scoping, identification of principles and techniques and evaluation of continuous improvement techniques, data, graphics, flow charts and performance indices

Required knowledge

Required knowledge includes:

- features of products, processes, systems and services subject to improvement processes
- economic, social and sustainability implications of products, processes, systems, services and implications of improvement processes
- continuous improvement drivers and mechanisms, such as:
  - market competitiveness
  - maintenance of a technological edge
  - customer expectations
- WHS requirements, codes of practice, regulatory requirements, and standards problem solving and decision making techniques:
  - brainstorming

- current and future state mapping
- seven tools of quality:
  - Ishikawa 'Fishbone' diagrams
  - histograms
  - Pareto analysis
  - flowcharts
  - scatter plots
  - run charts
  - control charts
- data, performance metrics, graphics and visual indicators
- software options, such as:
  - budgeting, financial and business planning performance metrics analysers and graphics generators
  - maintenance downtime and cost data generators
  - system control and data acquisition (SCADA), distributed control systems (DCS), enterprise resource planning (ERP) and materials resource planning (MRP) system data generators
  - performance data analysis and graphics generators
- statistical process control (SPC) techniques
- qualitiative improvement techniques

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	A person who demonstrates competency in this unit must be able to evaluate continuous improvement processes for production, engineering and related services. This includes working individually and as part of a team in accordance with organisation procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • determine measurable and controllable parameters of product or service and their suitability in continuous improvement processes • identify WHS, regulatory requirements, risk management and related organisational procedures • evaluate manual and automatic methods for measurement

	and data gathering, including analysis and performance indices, software analysis and visual display • evaluate qualitative continuous improvement processes • evaluate sustainability implications of improvements • measure and gather data, record and analyse for trends and improvements • evaluate continuous improvement, systems thinking, constraint and contingency management and lean systems requirements • report and document results.
Context of and specific resources for assessment	• This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, then a simulated working environment must be used where the range of conditions reflects realistic workplace situations. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for	Assessment processes and techniques must be culturally

assessment	appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Features, functions and measurable parameters of products, processes, systems or services, assets and operations subject to continuous improvement	Features, functions and measurable parameters of products, processes, systems, services and assets subject to continuous improvement may include: • sustainability • software • product manufacturability • process design • process control • equipment and tooling • material and product flow • plant layout and transfer operations • standard operating procedures • maintenance • lean systems • labour and skills distribution • information flow • value chain • sales, marketing and planning • management
Sustainability	Sustainability is used to mean the entire sustainable performance of the organisation/plant, including: • 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

WHS, regulatory requirements and enterprise procedures	WHS, regulatory requirements and enterprise procedures may include: • WHS Acts and regulations • 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
Standards and codes	Standards and codes refer to all relevant Australian and international standards and codes applicable to a particular thermodynamic system task
Systems thinking	Systems thinking refers to the conduct of engineering work in a manner that demonstrates knowledge of how the interaction of different technical systems on equipment, machinery or structures, as well as the skills and techniques of personnel, combine to perform or support engineering-related operations, processes or projects. It embraces determining or establishing how the function of each technical system or component, as well as the skills and techniques of personnel, effects or potentially may effect, outcomes. Systems should be interpreted broadly within the context of the organisation and depending on the project or operation can include equipment, related facilities, material, software, internal services and personnel, and other organisations in the value chain
Continuous improvement processes	Continuous improvement processes may relate to plant, products, production processes, systems and services, including design, development, implementation or manufacture, commissioning, operation or delivery and maintenance. Improvement processes may include techniques, such as: • 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

	• qualitative improvement processes, such as:
	  • toolbox meetings
	  • suggestion schemes
	  • mentoring
	  • changes in work organisation, responsibilities and recruitment

Constraints and contingencies	Constraints and contingencies may be: • financial • organisational, procedural or cultural • physical constraints, such as limits to resources, limits to site access or logistical limitations
Lean principles	Lean manufacturing uses cost, capacity and responsiveness, quality, reliability and waste minimisation as drivers of the process and measures for process improvement. Lean manufacturing is the response of many organisations to local, regional, national and global market competitiveness

Unit Sector(s)

Competency field

Unit sector Engineering science

Custom Content Section

Not applicable.