Australian Government

Department of Education, Employment and Workplace Relations

MSS015002A Develop strategies for more sustainable use of resources

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers identifying strategies for more sustainable uses of resources. The unit includes the identification of waste as defined in lean manufacturing (muda) as part of a strategy for achieving better sustainability outcomes in a process as well as quantifying theoretical and actual resource (including energy) consumption.

Application of the Unit

This unit applies inside organisations and their value chains and specifically applies to the use of resources as part of an overall response to improving sustainability. The unit has been developed with manufacturing operations as a focus. However, because of the range of organisations in a typical manufacturing value chain it may also be applied to other types of organisations.

The unit assumes that a decision to attempt to achieve more sustainable use of resources has already been made. The unit covers the skills needed for developing a strategic approach to resource use at the organisation or value chain level.

The unit does not cover the technical skills required to implement specific initiatives that may be identified as part of the strategic plan. However, there is a requirement to present and organise data. The complexity of this requirement will vary according to the type and scale of the organisation's processes. Where required, appropriate mathematics and statistics units should be selected from the MEM05 Metal and Engineering Training Package or other appropriate Training Package.

Where the carbon footprint (or water footprint or similar) of an enterprise or value chain is known, the unit can be applied to developing strategies for the reduction of that footprint.

It would typically be undertaken by a manager or technical specialist who had a major responsibility for sustainability as part of a broader work role, or sustainability may be their primary work responsibility.

For specific techniques covering the auditing of water, energy, emissions and transport, refer to relevant sustainability audit units.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

1 Quantify resource consumption	1.1 Identify all significant resources used by process
	1.2 Identify consumption measurements available for each resource
	1.3 Determine consumption for each resource
2 Quantify resource loss	2.1 Determine theoretical consumption of each resource
	2.2 Compare theoretical consumption with actual consumption
	2.3 Determine loss (emission) for each resource
3 Recommend strategies for reducing waste	3.1 Short-list high emission process steps
	3.2 Analyse process to identify emission steps or locations
	3.3 Determine root cause of emission
	3.4 Investigate methods for reducing emission
	3.5 Develop strategies and recommendations for improvement
4 Prepare resources use audit report	4.1 Identify purpose of report and key stakeholders
	4.2 Compile data, implications and recommendations
	4.3 Consult with stakeholders as appropriate
	4.4 Draft and present report

Required Skills and Knowledge

Required knowledge includes:

- the concept of muda. Muda is usually summarised under the headings of the 'seven wastes' which include:
  - overproduction
  - delay/waiting
  - transportation
  - over processing
  - excess inventory
  - unnecessary motion
  - defects and rework
- methods of material balancing
- methods of energy balancing
- methods of comparing theoretical with actual resource consumption
- methods for mapping manufacturing processes and resources consumed
- methods of measuring actual resource usage
- concept of muda and muda categories
- muda reduction methods and strategies
- AS/NZS ISO 14000 Environmental Management Standards

Required skills include:

- calculating, manipulating and interpreting numerical data, including establishing series, means and averages, absolute and proportional material and energy usage per product or process, correlations and rates of change
- analysing and conducting root cause analysis
- calculating theoretical consumption of resources as the minimum amount of resources per product or process step as defined by the customer multiplied by the rate of production or process
- calculating actual consumption of resources per unit (e.g. per product, operation, site or value chain)
- writing technical reports
- consulting with technical experts and internal and external stakeholders

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to identify and quantify resources and waste in a process, recommend strategies to reduce waste and prepare a report with recommendations.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include: • quantifying significant resource consumption and emission using materials balancing • identifying and consulting with stakeholders • developing strategies for reducing emissions • preparing and presenting a resources use report.
Context of and specific resources for assessment	• This unit of competency is to be assessed in the workplace or a simulated workplace environment. • Assessment should emphasise a workplace context and procedures found in the candidate's workplace. • This unit of competency may be assessed with other relevant units addressing sustainability at the enterprise level or other units requiring the exercise of the skills and knowledge covered by this unit. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.
Method of assessment	• In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work-like environment.
Guidance information for assessment	

Range Statement

Waste	Waste in this unit is used in the broader sense of 'muda' as used in lean manufacturing and the competitive manufacturing units of competency developed by Manufacturing Skills Australia (MSA)

Emissions	Emissions means all materials which enter the process/site but which do not leave as part of the product and so includes:
	• known or able to be physically measured emissions of:
	  • gases, vapours and fumes
	  • liquids
	  • solids
	• assumed emissions through material balancing
	• assumed emissions through energy loss, including heat, friction and other energy conversion yield losses

Theoretical consumption	Theoretical consumption of resources is the minimum amount of resources per product as defined by the customer multiplied by the rate of production
Actual consumption	Actual consumption is the amount of a resource entering the value chain
Significant resources	Significant resources includes resources which are deemed to be significant because they are: • high volume • high value • high environmental significance • important to the product or process • covered by legislation or regulation • important to the enterprise It need not include resources which are incidental to the activity and which are not otherwise significant

Unit Sector(s)

Sustainability

Custom Content Section

Not applicable.