



Australian Government

Department of Education, Employment and Workplace Relations

MEM234027A Plan and manage materials supply for an engineering project or manufacturing operation

Release: 1

MEM234027A Plan and manage materials supply for an engineering project or manufacturing operation

Modification History

New unit

Unit Descriptor

This unit of competency covers the engineering skills and knowledge required to plan and manage all aspects of the supply of materials to an engineering project or operation. It includes managing supplier identification and negotiations, purchasing and scheduling, including the interpretation of client, design, marketing, sales and production requirements to enable matching to available resources, budgets, workforce and contractors. It also includes the control of processes, physical resources, workforce skills and resources to enable the use of assets within budget requirements.

Application of the Unit

This unit applies to people who require significant engineering skills and knowledge to plan and manage supply, scheduling and purchasing of materials across all forms of manufacturing and engineering. Typical applications would be where there are:

- many material inputs, major assembly lines or manufacturing cells, such as whitegoods and vehicle manufacturing
- heavy and light fabrication involving significant use of material
- requirements to either determine, select or interpret technical specifications and standards for purchasing, scheduling and production planning.

The unit can provide technical support training where the planning, scheduling and purchasing is done in an engineering or manufacturing organisation following lean principles. In this situation it is recommended that the unit be co-delivered with appropriate Manufacturing Skills Australia (MSA) Competitive Manufacturing units of competency.

Prior or concurrently developed capability in personal and electronic communication, self-directed and group activities, planning and scheduling, performance analysis, process control and improvement, and an understanding of technology, skills and techniques, and quality aspects required by operations is required.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Identify and verify production or fabrication requirements	1.1	Identify parameters, context and objectives of manufacturing or project operations
		1.2	Verify key internal and external stakeholders, labour and skills distribution, functional team relationships, information flow requirements, communications and reporting lines, and procedures are appropriate to manufacturing or project operational objectives
		1.3	Review operations planning and management and confirm compatible scheduling, purchasing and production control measures
		1.4	Confirm reporting and technical support arrangements
		1.5	Verify facilities, services, plant, tooling and software, process layout and use of automation are appropriate to product manufacturability
		1.6	Identify and confirm that compliance requirements of occupational health and safety (OHS) and regulations, codes of practice, standards, risk assessment and registration requirements for manufacturing plant are observed

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| 2 | Develop the production plan | 2.1 | Participate in development of demand forecast |
| | | 2.2 | Prepare production or project plan in consultation with relevant stakeholders to meet quality, demand and delivery timelines within capacity and budget constraints |
| | | 2.3 | Manage preparation of purchasing schedules |
| | | 2.4 | Manage or assist in preparation of production schedules |
| | | 2.5 | Develop contingency arrangements |
| | | 2.6 | Review final proposals with relevant stakeholders |
| | | 2.7 | Develop key performance indicators for materials supply |
| 3 | Implement the production plan | 3.1 | Delegate responsibilities for purchasing and detailed scheduling, including communication of priorities and key performance indicators |
| | | 3.2 | Manage materials and product flow and transfer operations, buffer and emergency stocks, warehousing, stores and logistics |
| | | 3.3 | Coordinate quality and process control procedures |
| | | 3.4 | Coordinate and monitor physical, human and financial resources and budget to achieve production plan |
| | | 3.5 | Communicate and maintain information and reporting procedures, and participate, cooperate and negotiate with relevant stakeholders |
| | | 3.6 | Coordinate continuous improvement, problem solving and decision making, address systems constraints and contingencies, adjust short-term planning and reschedule, as necessary |
| 4 | Monitor operational performance | 4.1 | Review actual materials supply against key performance indicators |
| | | 4.2 | Contribute to review of manufacturing operations against production plan and other key performance indicators |

- 4.3 Participate in continuous improvement procedures, including lean operation principles and procedures, where implemented
- 4.4 Review options and implementation of software options, such as enterprise resource planning (ERP), system control and data acquisition (SCADA) and spreadsheets
- 4.5 Contribute to risk management procedures and system maintenance in accordance with organisational procedures
- 4.6 Report progress against production plan in accordance with procedures
- 4.7 Provide documentation, data entry and analysis, as required

Required Skills and Knowledge

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

Required skills

Required skills include:

- accurately taking large numbers of complex factors into account when planning materials supply
- managing and integrating information from a wide variety of sources
- managing supplier contracts and arrangements to meet the needs of the engineering and manufacturing operations
- developing continuous improvement, problem solving and decision making, constraint and contingency strategies, including short-term planning and rescheduling arrangements
- communicating and maintaining information consistent with reporting procedures
- participating, cooperating and negotiating with relevant stakeholders
- monitoring operations for compliance with organisational policies and procedures, OHS and regulatory requirements, product and process sustainability
- contributing to risk management procedures and system maintenance in accordance with organisational procedures
- reporting and documenting in accordance with procedures
- maintaining records of professional, trades and industry contacts, sources of information and resources

Required knowledge

Required knowledge includes:

- sources of information and resources relating to materials supply
- personal and team skills and professional development requirements and options for addressing them
- operations management structures, labour and skills distribution, functional team relationships, and communications and reporting lines
- manufacturing management systems and philosophies relevant to planning and managing materials supply
- facilities, plant and services requirements
- OHS requirements, codes of practice, regulations, standards, regulatory requirements, risk management, current safe work methods statements, material safety data sheets (MSDS) and work permits
- financial requirements relevant to materials supply
- engineering approaches and processes underpinning project or manufacture

- labour and skills distribution
- formal procedures and informal communications and information flow
- automation and control technologies relevant to materials supply
- software options for tracking and managing of materials supply chain
- principles of value chain management, current and future state mapping
- requirements for, and functions of, technical and business documentation that may impact on the sustainability of operations

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.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • coordinate delegated responsibilities for manufacturing operations to the supplying, scheduling and purchasing of priority materials consistent with priorities and product flow • coordinate transfer operations, buffer and emergency stocks • implement constraint and contingency strategies • monitor operations for compliance with organisational policies and procedures, product and process sustainability • communicate, cooperate and negotiate with relevant stakeholders • manage reporting against key performance indicators and organisation requirements.
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, that is, the candidate is not in productive work, 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 its 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 able not only 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.
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Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.
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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.

Production	Production in this unit refers to operations requiring major engineering input and significant coordination of suppliers, purchasing and scheduling including: • volume production of components or full items (e.g. whitegoods, vehicles, transformers and transport equipment) • jobbing production • on-site fabrication of engineering-related items
Identify parameters, context and objectives of operations	Parameters, context and objectives to be taken into account may include: • customer requirements • stock levels • production capacity and availability • labour requirements and availability • supplier capacity • warehousing, stores and logistics
Relevant stakeholders	Relevant stakeholders may include: • team • organisation functional groups • supervisors with approval delegation • customers and suppliers
OHS, regulatory requirements and enterprise procedures	OHS, regulatory requirements and enterprise procedures may include: • OHS Acts and regulations • relevant standards • industry codes of practice • risk assessments • registration requirements • safe work practices

	• state and territory regulatory requirements
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Legal obligations of businesses	Businesses have legal obligations under: • contract law • commercial law • company law • fair trading act has customer protection and restrictive trade provisions • environmental planning and assessment act • Commonwealth and state/territory tax laws • industrial law which deals with employee and employer relationships, awards and agreements, trade unions, and their powers and rights • OHS Act and regulations
Records of operations	Records of operations may include: • tenders, contracts and schedules • personnel, resource allocations and financial management procedures • standard operating procedures, including maintenance procedures • OHS committee minutes and actions, risk management and mitigation • documentation and records of current safe work methods statements, MSDS and work permits • standards, codes of practice, audits and meetings • communications, graphics and specifications
Continuous improvement implementation	Continuous improvement implementation may relate to plant, products, processes, systems or 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
Constraints and contingencies	Contingencies arising during operations or improvement projects will have constraints on possible solutions. These may be: • financial • organisation procedural or culture • physical constraints such as limits to resources, limits to site

	access or logistical limitations
Systems thinking	Systems thinking: • is the process of developing solutions within the context of an entire system • recognises that an improvement in one subsystem can adversely affect another subsystem
Lean manufacturing	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
Software options and the need for validation	Software may be employed for planning, scheduling, and performance analysis/modelling and may include: • enterprise resources planning (ERP), system control and data acquisition (SCADA) and spreadsheets. Underpinning program techniques and algorithms should be understood Validation techniques include: • comparison of traditional solutions for simple design problems with software solutions to the same design problems • review of previously implemented design challenges which were completed using the software

Unit Sector(s)

Engineering practice

Custom Content Section

Not applicable.