



Australian Government

MSS405022 Design a process layout

Release: 1

MSS405022 Design a process layout

Modification History

Release 1. Supersedes and is equivalent to MSS405022A Design a process layout

Application

This unit of competency covers the skills and knowledge required to design a process layout, typically a cellular flow, for either a jobbing shop or a continuous process manufacturer. This unit provides the skill for a technical expert to apply the principles of competitive systems and practices to process design layout as distinct from volume production layout. While the application of the unit may be for an initial layout, in many cases it is likely to be for the redesign of an existing layout.

The unit is written on the assumption that there is an existing process. Where this is not the case, then additional competency in equipment/process design and selection will also be required through units from an appropriate technical qualification or Training Package.

This unit requires the application of skills associated with problem solving, initiative, enterprise, planning and organising in order to design a process for the manufacture of enterprise products that incorporates team operations, product flow, infrastructure and the layout of the physical environment and related technology. This unit has a strong emphasis on gathering, analysing and applying information.

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

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

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

- | | | | |
|---|--|-----|--|
| 1 | Identify the products and processes used in | 1.1 | Obtain or develop a process map of the existing process. |
| | | 1.2 | Identify all/main products/classes of products. |

	the organisation	1.3	Obtain forecast sales and sales pattern of products/classes.
		1.4	Obtain profiles of products/classes.
		1.5	Group the products/classes into compatible families.
2	Engineer the process	2.1	Make a preliminary selection of required equipment/technology/ process for each process or product family.
		2.2	Estimate required resource times for each family.
		2.3	Calculate total resourcing required for each family.
		2.4	Estimate appropriate lot size.
		2.5	Determine viability of proposed families.
		2.6	Examine draft proposal for possible improvements in process consistent with the competitive systems and practices strategy of the organisation.
3	Design the infrastructure	3.1	Consult on layout needs with all stakeholders.
		3.2	Identify physical infrastructure required by system.
		3.3	Identify information and control infrastructure required.
		3.4	Identify work organisation required.
		3.5	Identify work health and safety (WHS) and other regulatory requirements to be taken into account.
		3.6	Identify workforce development and training requirements.
		3.7	Check the availability of required infrastructure and compatibility with requirements.
4	Lay out the process	4.1	Draft proposed process flow map.
		4.2	Draft proposed configuration diagram.

- 4.3 Draft proposed space plan/layout.
- 4.4 Check availability of services/structural suitability, as appropriate.
- 4.5 Validate proposed layout with all relevant stakeholders.
- 4.6 Layout the process/work cell.
- 4.7 Develop implementation plan in liaison with relevant stakeholders.
- 4.8 Review layout after implementation.

Foundation Skills

This section describes those required skills (language, literacy and numeracy) 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.

Competitive systems and practices include one or more of:

- lean operations
- agile operations
- preventative and predictive maintenance approaches
- statistical process control systems, including six sigma and three sigma
- Just in Time (JIT), kanban and other pull-related operations control systems
- supply, value, and demand chain monitoring and analysis
- 5S
- continuous improvement (kaizen)
- breakthrough improvement (kaizen blitz)
- cause/effect diagrams
- overall equipment effectiveness (OEE)
- takt time
- process mapping
- problem solving

	• run charts • standard procedures • current reality tree.
Profiles of products include consideration of all of:	• components/materials needed to manufacture • equipment/technology/processes required to manufacture • volume of activity to manufacture forecast amount • required operations equipment/technology/processes.
Required resource times include consideration of all of:	• set-up time • equipment time • person time • process time.
Lot size includes one or more of:	• external lot size • internal lot size • transfer batch size • kanban size.
Viability includes consideration of all of:	• appropriate calculated processing times • adequacy of equipment utilisation • acceptable maintenance implications • ability to meet WHS requirements • ability to meet environmental requirements • compliance with any legislative and regulatory requirements • acceptable to stakeholders.
Stakeholders include one or more of:	• customers • employees • equipment suppliers and contractors (especially if new equipment required) • regulatory authorities • local community representatives • utilities (e.g. water and power).
Physical infrastructure includes one or	• containers/packaging • material handling equipment (e.g. pipes, tanks, conveyors and hoppers)

more of:

- utilities supply (e.g. steam, air, gas, electricity and water).

Information and control infrastructure includes one or more of:

- quality assurance
- statistical process control (SPC)/six sigma
- planning systems/software
- data collection and control systems/software.

Work organisation includes all of:

- number of personnel
- skills/capability mix of workforce.

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS405022 Design a process layout

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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 the ability to design a layout for one (1) or more processes and to:

- identify products and processes
- engineer the process
- design the infrastructure
- lay out the process.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to design a process layout, including knowledge of:

- customer requirements in terms of order size and order pattern
- processing requirements for products
- equipment capabilities and reliability
- workforce capabilities and reliability
- business requirements from layout
- work health and safety (WHS) and other regulatory requirements
- principles of process layout.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
 - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
 - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real process layout project for an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process such as workbooks, written assessments or interviews (provided a record is kept).

- 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.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

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