

Overview

This standard identifies the competences you need to schedule engineering activities, time and resources, in accordance with approved procedures. You will be required to ensure that the scheduled activities are capable of meeting the engineering requirements and those of the customer, and that the new schedules effectively integrate with existing processes. You will be expected to produce schedules for significant engineering activities with complex requirements, having multiple operations and resources, and which will cover such items as component/product manufacturing, installation and commissioning, testing and trialling, planned maintenance, lifting, moving and transporting of goods or materials and schedules for capability studies or equipment replacement programs.

Your responsibilities will require you to comply with organisational policy and procedures for the scheduling of engineering activities, and to report any problems with the activities that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You will be expected to work with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will include knowledge of organisational procedures and discipline-specific engineering principles and processes, within your area of responsibility. In addition, you will be expected to have underpinning knowledge of resource management, project management and planning. Your underpinning knowledge will provide a good understanding of your work, and will provide an informed approach to applying scheduling procedures. You will understand the scheduling process and its application, and will know about the engineering activities within your organisation, in adequate depth to provide a sound basis for carrying out the scheduling activities to the required standard. You will understand your organisation's methods of operation in sufficient detail to enable you to make informed decisions.

You will be aware of any company, legislative or regulatory health, safety and environmental requirements applicable to the engineering activities being scheduled. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety legislation and other relevant regulations, directives and guidelines
2. confirm the operational activities that are required to achieve the operational methods and procedures
3. identify the most suitable sequence of engineering activities
4. schedule the time and resources available for undertaking the engineering activities
5. ensure that operational schedules are capable of meeting all relevant requirements
6. incorporate new operational schedules into the operational process with minimum disruption
7. identify potential difficulties and produce appropriate contingency plans
8. ensure that operational schedules comply with all relevant regulations, directives and guidelines
9. record and present the operational schedules in the appropriate information systems

Knowledge and understanding

You need to know and understand:

1. how to access information on health and safety regulations and guidelines relating to the engineering activities to be scheduled
2. the implications of not taking account of legislation, regulations, standards and guidelines when producing the engineering schedules
3. how to obtain information on the activity to be scheduled, and the type of information that is available (such as customer order requirements and instructions, quality control requirements, product specification, manufacturing methods)
4. how to access and use the appropriate information and documentation systems
5. how to interpret engineering schedules, and the techniques used for scheduling engineering activities
6. the information that should be included in the engineering schedules (such as timescales, resource requirements, health and safety issues)
7. the document formats, codes and conventions that are used in preparing the schedules
8. the factors to be taken into account when preparing the schedules, especially those factors relating to working conditions and safety
9. how to assess resource requirements; the main types of resources involved with different types of engineering activity, and the typical timescales for providing them
10. how to schedule resources using the relevant procedures
11. the obvious (and hidden) costs during the scheduling activities
12. the normal timescales for carrying out specific scheduling activities, and how and why they vary
13. the methods and techniques used for capacity planning
14. the purpose of the products (or assets) involved in the activity being scheduled, and their availability
15. the development stages when producing engineering schedules (to include both master documents and working instructions, along with their purpose, content and status)
16. how to prepare the schedules in the correct format (to include the structure, style, clarity and compliance with relevant standards and guidelines)
17. the process used in the organisation to validate the engineering schedules
18. the control procedure for ensuring that the schedules are maintained up to date

19. the procedure to be followed if alternative or additional suppliers are required to meet the schedule outputs
20. methods of monitoring and assessing the progress against the defined schedule
21. the procedures for changing the schedules, and why control procedures are used
22. the importance of maintaining records; what needs to be recorded, and where records are stored
23. why contingency plans need to be drawn up, and how to develop them
24. methods of measuring the consequences of schedule changes
25. methods used to assess the impact on the business arising out of departures from the agreed schedule
26. who to inform about any problems identified with the proposed schedules
27. the different methods used to present information to different people
28. the importance of providing the right information at the right time
29. the roles and responsibilities of key personnel in your organisation
30. problems that can occur during the implementation of the schedules, and how these problems can be rectified
31. the extent of your own responsibility, and whom you should report to in the event of problems that you cannot resolve
32. the sources of technical expertise if you have problems that you cannot resolve
33. the organisational procedures for providing information to different people

Scope/range

1.

Carry out all of the following when producing the engineering schedules:

- 1.1 determine the engineering requirements to be scheduled
- 1.2 check that all essential information and data needed to produce the schedules is available
- 1.3 ensure that health and safety regulations, safe working practices and the influence of working conditions are recognised and included in the schedules
- 1.4 collect relevant information on the engineering requirements, operations, methods and resources
- 1.5 identify applicable engineering methods, processes and procedures, including specific sequencing
- 1.6 update existing engineering schedules (where applicable)
- 1.7 breakdown schedules into manageable and coherent programmes
- 1.8 obtain suppliers declarations and compliance records (where applicable)
- 1.9 determine the availability of required resources
- 1.10 ensure that the schedule complies with all relevant regulations, standards and guidelines

2.

Produce engineering schedules for one of the following:

- 2.1 drawing/design activities (such as mechanical, electrical/electronic, motor vehicle, aerospace, marine)
- 2.2 manufacturing activities (such as machining, detail fitting, fabrication of components, pressing)
- 2.3 material processing activities (such as heat treatment, casting, injection moulding, purification)
- 2.4 composite manufacture (such as wet lay-up, pre-preg laminating, resin infusion, blow moulding)
- 2.5 finishing activities (such as stripping finishes, painting, plating, anodising, veneering, lacquering)
- 2.6 assembly activities (such as mechanical, structural, fluid power, electrical/electronic, woodworking)
- 2.7 installation activities (such as mechanical, electrical/electronic, avionic, structural, environmental equipment)
- 2.8 plant and equipment (such as site preparation, plant layout, equipment changeover, equipment replacement)
- 2.9 equipment capability studies/performance measurement
- 2.10 movement of materials, components or finished goods
- 2.11 business improvement activities
- 2.12 engineering safety audits or risk assessments
- 2.13 quality control/quality assurance
- 2.14 maintenance activities
- 2.15 research and development

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- 2.16 testing and trialling
- 2.17 procurement of new products/components
- 2.18 commissioning/decommissioning
- 2.19 modification and repair activities
- 2.20 engineering support services

3.

Obtain accurate details of activities and resources from two of the following people or departments:

- 3.1 design office
- 3.2 contractor
- 3.3 management/directors
- 3.4 quality engineering
- 3.5 client/customer
- 3.6 sales department
- 3.7 plant engineering
- 3.8 process engineering
- 3.9 production engineering
- 3.10 planning department
- 3.11 health and safety/environmental engineering
- 3.12 logistics department
- 3.13 other specific source

4.

Prepare and review schedules of resources, to include six of the following:

- 4.1 the documentation to be used (such as drawings, specifications, quality assurance, surveys)
- 4.2 people required who have the required skills and knowledge
- 4.3 the space/work area in which to carry out the engineering activities
- 4.4 the raw materials required (such as type and specification of material, form of material, amount of material)
- 4.5 consumable materials required (such as welding accessories, masking mediums, lubricants, cutting compounds)
- 4.6 bought-in standard components (such as bearings, electrical or electronic components, fluid power components, mechanical fasteners)
- 4.7 equipment required (such as hand tools, power tools, machinery, lifting and handling equipment)
- 4.8 measuring or test equipment (such as mechanical measuring, electrical measuring)
- 4.9 any outside support services required (such as material treatments, specialist lifting and moving equipment)
- 4.10 utilities/services required (such as electricity, water, gas, compressed air)
- 4.11 timescales in which the activities are to take place
- 4.12 special/specific safety equipment required (such as fume extraction, fire equipment, environmental protection)
- 4.13 bill of materials to identify all component parts
- 4.14 product/component supply conditions (such as type and size of racks, boxes and transportation protection)

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- 4.15 advice on product/component options or variants including compatibility issues
- 4.16 batch sizes and order quantities
- 4.17 appropriate packaging requirements to protect the product/component and minimise environmental impact
- 4.18 location of product/components (such as stores, good in/out material handling areas)
- 4.19 level control
- 4.20 phase in/phase out dates

5.

Deal with departures from the schedule arising from one of the following:

- 5.1 actual or predicted departures
- 5.2 variations in quality
- 5.3 slipping timescales
- 5.4 unexpected and unscheduled events
- 5.5 increased cost
- 5.6 non-conforming products/components
- 5.7 areas of potential or actual conflict

6.

Identify the consequences of departure from the agreed schedules, to include three of the following:

- 6.1 delay in delivery
- 6.2 contract variation
- 6.3 penalties or additional costs
- 6.4 breach of contract
- 6.5 consequential impact on impinging schedules
- 6.6 impact on existing users, consumers or customers
- 6.7 other specific consequence

7.

Identify any difficulties and produce a contingency plan to limit consequences of departures from the schedule, to include detailing three of the following actions:

- 7.1 tighter monitoring and control of the project
- 7.2 obtain additional/alternative resources
- 7.3 agree revised requirements with management/client
- 7.4 recommend a change to the process
- 7.5 change timescales in agreement with management/clients
- 7.6 reschedule
- 7.7 use of alternative supplier
- 7.8 other specific actions

8.

Ensure that the schedule complies with all of the following:

- 8.1 organisational policy and procedures
- 8.2 work plans and delivery targets
- 8.3 customer requirements

8.4 health, safety and environmental requirements

9.

Carry out all of the following on completion of the scheduling activities:

9.1 validation of the scheduling systems and procedures used

9.2 suggested improvements to your process of scheduling the engineering activity

9.3 recommendations for improvements or changes to the scheduling systems and procedures

10.

Record and present the schedule to the appropriate people, using one of the following:

10.1 specific organisation documentation

Plus one more of the following:

2. verbal report

3. written or typed report

4. electronic mail

5. computer-based presentation

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Scheduling engineering activities

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