

Implementing engineering activities

Overview

This standard identifies the competences you need to implement engineering activities, in accordance with approved procedures. You will be required to apply appropriate methods and procedures to ensure that the resources and systems available to you are used effectively and efficiently. You will also be required to identify any opportunities to improve the engineering activity during the implementation, and to convey this information to the appropriate people and department (such as with a new or changed assembly or manufacturing activity which may involve planning, design or other departments).

Your responsibilities will require you to comply with organisational policy and procedures for the implementation of the engineering activities, and to report any problems 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 provide a good understanding of your work, and will provide an informed approach to implementing engineering activities. You will be expected to have underpinning knowledge that will include resource management principles. You will understand your organisation's methods of operation and quality assurance systems, in sufficient detail to enable you to make informed decisions, and to carry out the implementation activities to the required standard.

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

Implementing engineering activities

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 that conditions are suitable to implement operational methods and procedures
3. provide clear and accurate information/instructions to all the relevant people
4. obtain accurate information on the operational activities being undertaken
5. implement quality assurance systems correctly
6. ensure that engineering support systems are operating correctly
7. control the use of resources to achieve the most effective results
8. identify opportunities to improve the operational methods and procedures
9. ensure that the implementation of operational methods and procedures complies with all relevant regulations, directives and guidelines

Implementing engineering activities

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 implemented
2. the implications of not taking account of legislation, regulations, standards and guidelines when implementing the engineering processes
3. the personal protective equipment (PPE) that is required for the work area and process being implemented
4. how to obtain information on the engineering requirements, and the type of information that is available (such as customer requirements and instructions, quality control requirements, product specification, manufacturing methods)
5. how to access and use the appropriate information and documentation systems
6. the engineering methods and procedures that could be used for different types of engineering activity
7. how to identify conditions that are suitable, and those not suitable, for different types of engineering activities
8. how and where to obtain details of the engineering activities being undertaken
9. the types of data that you will require to implement the engineering activity (such as the activities to be carried out, the sequence in which they must be carried out, timescales, resource requirements, health and safety issues)
10. how to extract information from drawings, documents and related specifications (to include symbols and conventions to appropriate BS or ISO standards and, where appropriate regulations), in relation to work being planned
11. the materials, formats, codes and conventions that are used in the drawings and plans
12. the factors to be taken into account when implementing the engineering activity, especially those covering working conditions and safety
13. the main types of resource involved with different types of engineering activity, and the typical timescales for providing them
14. how to verify that resources are suitable, and are available within or to the organisation
15. the timescales for carrying out specific engineering activities, and why they must be adhered to
16. the use of the engineering plans and instruction (to include working instructions, along with their purpose and content)
17. the procedures for changing the plans, to take account of changed circumstances or improvements in the process
18. how to present observations and recommendations, in the appropriate formats

Implementing engineering activities

19. the importance of maintaining records; what needs to be recorded and where records are kept
20. the quality assurance systems that are being used
21. the engineering support systems that are available
22. why contingency plans need to be drawn up
23. who to inform about changes to the plans
24. the different ways of presenting information to different people
25. the importance of providing right information at the right time
26. the roles and responsibilities of key personnel associated with the engineering activity
27. problems that can occur during the implementation of the engineering activity, and how these problems can be rectified
28. the extent of your own authority, and whom you should report to in the event of problems that you cannot resolve
29. the sources of technical expertise if you have problems you cannot resolve

Implementing engineering activities

Scope/range

1. Carry out all of the following when implementing the engineering activities:
 1. use the correct issue of company information
 2. check that all essential information and data needed to implement the engineering activity is available
 3. collect relevant information on the engineering and customer requirements, operations and methods
 4. use the information collected to determine an implementation plan
 5. identify potential problems which may influence the implementation of the engineering activity
 6. check that the appropriate resources will be available at the time they are required
 7. ensure that health and safety regulations and safe working practices are taken into account
 8. ensure that the influence of working conditions is recognised and included in the implementation plans
2. Carry out the implementation of one of the following engineering activities:
 1. drawing/design activities (such as mechanical, electrical/electronic, motor vehicle, aerospace, marine)
 2. manufacturing activities (such as machining, detail fitting, fabrication of components, pressing, implant, photolithography)
 3. material processing activities (such as heat treatment, casting, injection moulding, purification)
 4. composite manufacture (such as wet lay-up, pre-preg laminating, resin infusion, blow moulding)
 5. finishing activities (such as stripping finishes, painting, plating, anodising, veneering, lacquering, etching, deposition, polishing)
 6. assembly activities (such as mechanical, structural, fluid power, electrical/electronic, woodworking)
 7. installation activities (such as mechanical, electrical/electronic, avionic, structural, environmental equipment)
 8. plant and equipment (such as site preparation, plant layout, equipment changeover, equipment replacement)
 9. equipment capability studies/performance measurement
 10. movement of materials, components or finished goods
 11. engineering safety audits or risk assessments
 12. business improvement activities
 13. quality control/quality assurance
 14. maintenance activities

Implementing engineering activities

15. modification and repair activities
 16. commissioning/decommissioning
 17. testing and trialling
 18. research and development
 19. engineering support services
3. Obtain information on the activities and resources required for the engineering activity to be implemented, to include three of the following sources:
 1. design office
 2. production engineering
 3. process engineering
 4. sales department
 5. quality engineering
 6. contractor
 7. planning department
 8. plant engineering
 9. customer
 10. management/directors
 11. health and safety/environmental engineering
 12. other specific source
 4. Confirm all of the following during the implementation:
 1. appropriate plant and equipment is available
 2. health and safety requirements can be met
 3. materials and components are ready for use
 4. environmental conditions are suitable
 5. required resources are available
 6. work area/site is suitably prepared
 7. timescales for undertaking the activities are as planned
 8. relevant people are informed
 9. quality control systems and procedures are in place
 5. Provide clear and accurate information/instructions to all relevant people, using the following method:
 1. specific organisation documentationPlus one more method from the following:
 2. written or typed report
 3. verbal report
 4. electronic mail
 6. Ensure that quality assurance systems are implemented correctly, and confirm that support systems are operating effectively, including one of the following:

Implementing engineering activities

1. resource supply (such as materials, equipment and people)
 2. transport
 3. logistics
 4. procurement
 5. utilities
7. Carry out all of the following on completion of the implementation activities:
1. validation and evaluation of the implementation systems and procedures used
 2. suggested improvements to your process of implementation
 3. recommendations for improvements or changes to the engineering activities that were implemented
8. Ensure that implementation methods and procedures used comply with relevant regulations and guidelines, from one of the following:
1. organisational guidelines and codes of practice
 2. equipment manufacturer's operation specification/range
 3. health, safety and environmental requirements
 4. recognised compliance agency/body's standards
 5. customer standards and requirements
 6. BS and/or ISO standards

Implementing engineering activities

Developed by	Enginuity
Version Number	3
Date Approved	30 Mar 2021
Indicative Review Date	01 Mar 2024
Validity	Current
Status	Original
Originating Organisation	Enginuity
Original URN	SEMETS345
Relevant Occupations	Engineering, Engineering and Manufacturing Technologies, Engineering Technicians
Suite	Engineering Technical Support Suite 3
Keywords	engineering; technical; support; design office; quality engineering; plant engineering; production engineering; contractor; customer; process engineering; planning department; management/directors; sales department; health and safety/environmental engineer