

## Overview

This standard covers a broad range of basic competencies you need to conduct a business improvement activity using a systematic plan, do, check, act approach for an engineering operation or process. It will prepare you for entry into the engineering industry or engineering manufacturing sector, creating a progression between education and employment and acting as a basis for the development of additional skills and occupational competencies in the working environment. You will be expected to adopt a systematic approach to conducting business improvement activities on an engineering/manufacturing operation or process to identify opportunities for the elimination of waste.

You will be required to conduct a 5S/5C audit and identify wasteful or non-added value activities in the operation or process. You will need to produce a new standard operating procedure (SOP) or contribute to improving an existing SOP. These activities will include creating the appropriate visual management systems required, calculating key performance indicators required and the quality control requirements and presenting records of the business improvement activities and how they will meet their aims.

Your responsibilities will require you to comply with health and safety requirements and organisational policy and procedures for the business improvement activities undertaken. You will need to take account of any potential difficulties or problems that may arise with the business improvement activities and to seek appropriate help and advice in determining and implementing a suitable solution. You will work under a high level of supervision whilst taking responsibility for your own actions and the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide an understanding of your work, in order to safely apply appropriate engineering principles to business improvement activities. You will understand the tools and techniques used in business improvement activities and procedures used, and their application, and will know about the process, materials and consumables, to the required depth to provide a sound basis for carrying out the improvement activities and producing project plans that will lead to a successful project outcome.

You will understand the safety precautions required when carrying out the business improvement activities for the agreed operations and processes. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

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## Conducting business improvement activities

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### Performance criteria

- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
  - P2 apply and document a systematic plan, do, check, act (PDCA) approach to problems/improvement activities
  - P3 apply the principles of workplace organisation to an operation or process using a 5S/5C audit and a 'red tag' exercise
  - P4 identify where information, and/or resources are missing and where improvement can be made to increase the 5S/5C score
  - P5 apply the principle and processes of visual management to a operation or process using a variety of visual management techniques
  - P6 identify appropriate parts of the operation or process that will have visual controls
  - P7 identify key performance indicators that will be displayed in the work area
  - P8 produce or update a Standard Operating Procedure (SOP) and visual controls for the operation or process
  - P9 deal promptly and effectively with problems within your control and seek help and guidance from the relevant people when you have problems you cannot resolve

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### Knowledge and understanding

*You need to know and understand:*

- K1 the health and safety requirements of the area in which you are carrying out the business improvement activities
- K2 how to conduct a systematic plan, do, check, act (PDCA) approach to problem-solving and business improvement
- K3 the implications of not taking account of legislation, regulations, standards and guidelines when conducting business improvement activities
- K4 what is meant by business improvement, and how continuous improvement activities can benefit a company
- K5 the application of the seven key measures of competitiveness (delivered right first time, delivery schedule achievement, people productivity, stock turns, overall equipment effectiveness, value added per person, floor space utilisation)
- K6 how to obtain and interpret information on the engineering/manufacturing operation or process requirements (such as customer specifications and instructions, quality control requirements, product drawings/specification, methods and techniques to be used)
- K7 the eight wastes (over-production, inventory, transport, over-processing, waiting time, operator motion, bad quality, failure to exploit human potential) and how to eliminate these forms of waste in a process or operation
- K8 the steps in a 5S/5C audit and a 'red tag' exercise and how to carry them out
- K9 how to score and audit the 5S/5C exercise
- K10 How to arrange and label the necessary equipment for rapid identification and access
- K11 how to use "root cause" problem solving analysis using the 5 whys/how technique
- K12 how to evaluate improvement ideas in order to select those that are to be pursued
- K13 how improvements to the process are achieved by engaging the knowledge and experience of the people working on the process
- K14 how to create Standard Operating Procedures (SOP's) and correlate work activities into them.
- K15 the techniques required to communicate information using visual control systems (such as, Kanban systems, card systems, colour coding, floor footprints, graphs, team boards, tool/equipment shadow boards)
- K16 how information and equipment can be displayed for various work applications (IT systems)
- K17 the extent of your own authority and whom you should report to, in the event of problems that you cannot resolve

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### Additional Information

#### Scope/range related to performance criteria

- You must be able to:*
1. Identify improvements within the operation or process for **three** of the following:
    - 1.1 reduced product cost
    - 1.2 improved quality
    - 1.3 improved safety
    - 1.4 improvements to working practices
    - 1.5 improvement in delivery performance
    - 1.6 reduction in waste and/or energy usage
    - 1.7 reduction in lead times
    - 1.8 resource utilisation
    - 1.9 improvement in customer satisfaction
  
  2. Produce/contribute to improvements in existing standard operating procedures for **three** of the following:
    - 2.1 customer service
    - 2.2 health and safety practices
    - 2.3 product quality
    - 2.4 cleaning of equipment/work area
    - 2.5 process procedures
    - 2.6 maintenance of equipment
    - 2.7 manufacturing operations
    - 2.8 staff development
  
  3. Create and/or update visual controls that promote **six** of the following:
    - 3.1 producing shadow boards to standardise the storage and location of area equipment
    - 3.2 colour coding of equipment
    - 3.3 safety
    - 3.4 performance measures
    - 3.5 parts control system
    - 3.6 zero defects
    - 3.7 process control boards
    - 3.8 skills matrices
    - 3.9 process concerns or corrective actions
    - 3.10 workplace organisation
    - 3.11 work in progress locations and quantities (WIP)
    - 3.12 problem resolution (such as Kaizen boards)

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- 3.13 standard operating procedures
- 3.14 autonomous maintenance worksheets
  
- 4. Determine and calculate **both** of the following:
  - 4.1 not right first time
  - 4.2 delivery schedule achievementPlus **one** more of the following:
  - 4.3 parts per operator hour (PPOH)
  - 4.4 overall equipment effectiveness (OEE)
  - 4.5 value added per person (VAPP)
  - 4.6 stock turns
  - 4.7 cost breakdown in term of labour, material and overhead
  - 4.8 floor space utilization (FSU)
  
- 5. Record and present the records from business improvement activities to the appropriate people using:
  - 5.1 verbal report using visual aids such as. flipcharts and white boardsPlus **one** more method from the following:
  - 5.2 written or typed report
  - 5.3 computer based presentation
  - 5.4 specific company documentation

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## Conducting business improvement activities

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