

Overview

This standard covers the competences required for leading statistical process control (SPC) activities. It involves leading the application of the principles and processes of SPC to an approved process, and the gathering of all the necessary data for analysis, in consultation with relevant people. You will be expected to lead the application of statistical process control, utilising statistical and graphical methods to represent the process conditions. Typically, these would focus on simple run charts, tally charts, bar charts, histograms, run charts, box plots time series charts, Pareto diagrams and stem and leaf plots.

You will need to lead the basic statistical process control, identifying special cause versus common cause. You will also be expected to agree activities which will improve the process performance, and to approve an action plan to implement the improvements. Calculation of the capability of the process will focus on identifying and approving the process capability C_p and its index C_{pk} .

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken, and to report any problems that you cannot solve, or that are outside your responsibility, to the relevant authority. You will be expected to take full responsibility for your own actions within the activity, 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 the techniques and procedures used. You will need to understand the principles and procedures of statistical process control, and its application, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying and advising on safe working practices will be a key issue throughout.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. work to, and ensure compliance with all the required process monitoring documentation and work instruction sheets
3. approve the process on which the process analysis is to be carried out
4. consult with relevant people and lead the gathering of the necessary data for analysis
5. lead the statistical process control to the chosen process
6. perform statistical process control, using appropriate tools and techniques
7. lead the use of statistical and graphical methods to represent the process conditions
8. agree activities which will improve the process performance
9. implement and monitor the progress of the statistical process control activities
10. approve the production of an action plan to implement the improvements

Knowledge and understanding

You need to know and understand:

1. how to work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. how to plan the resources and time needed to carry out the agreed activity
3. where process control fits within a continuous improvement environment
4. how process performance affects customer satisfaction and process costs
5. where and why statistical process control is used, the benefits, and how it is applied
6. the importance of standardisation within a process operation, and why process performance can only be determined when it is controlled
7. how process control can improve process performance
8. the benefits of prevention and detection
9. the two types of variation within a process (common cause, special cause), and the impact they have within the process
10. how to gather data and effectively analyse it; how the data can be used to communicate abnormalities within a process
11. the main types of control charts used for SPC, their features and benefits, and how to construct and implement them
12. the meaning of a 'population' and a 'sample'
13. the measurements of central tendency and variability, and how they are calculated
14. the properties of a normal curve of distribution
15. how to create charts or diagrams
16. how to explain the terms and calculate mean, median, mode, standard deviation, range and variance
17. how to explain and calculate process capability and its index (Cp and Cpk)
18. the extent of your own authority, and to whom you should report in the event of problems that you cannot resolve

SEMBIT414

Leading statistical process control (SPC) activities



Scope/range related to performance criteria