ROOT CAUSE ANALYSIS TECHNIQUES

Failure Modes Effects Analysis

Failure Modes and Effects Analysis (FMEA) is a tool that can identify product and process failures before they occur, identify appropriate risk mitigation measures to prevent or otherwise control the failure, and improve product and process design.

All product and process failures (and the actions required to control these failures) are predictable and preventable; however, organisations frequently experience predictable and preventable failures with costly consequences. These failures can lead to product recalls, death or injury, poor quality, and unanticipated financial and other costs.

The aerospace and defence industries have used FMEA for decades. FMEA has made significant inroads into automotive, biomedical device and many other industries. Your organisation can benefit greatly from this analysis tool.

FMEA can be performed on a design or a process, and is used to prompt actions to improve design or process robustness. The FMEA highlights weaknesses in the current design or process in terms of the customer and is an excellent vehicle to prioritise and organise continuous improvement efforts on areas that offer the greatest return.

The process is very straightforward, and begins by identifying all of the probable failure modes. This analysis is based on experience, review, brainstorming and should use actual data where possible. New designs or processes may not have actual historical data to draw from, but 'proxy' data may be available from similar designs or processes. The next step is to assign a value on a 1-10 scale for the:

- Severity.
- Probability of occurrence.

  and
- Probability of detection.

for each of the potential failure modes. After assigning a value, the three numbers for each failure mode are multiplied together to yield a Risk Priority Number (RPN).
The RPN becomes a priority value to rank the failure modes, with the highest number demanding the most urgent improvement activity. Error proofing, or poka-yoke actions are often an effective response to high RPN's.

In Summary

The failure mode and effects analysis model can help teams decrease project scope and complexity by focusing in on the primary failure modes of a process. Creating an FMEA is best done by coordinating a cross-functional team and using objective and subjective knowledge to identify accurate properties about the identified failure modes.

Course duration:

Workshop (Classroom element) - 4 Hours.

Maximum number of delegates: Eight (8) per session.