

Introduction

Failure Modes Effects Analysis or FMEA tool is a powerful method for understanding potential issues and problems to processes, before they happen. Think of it as being a forecasting tool, to allow the team using it, to design quality and safety into a product and process, by eliminating the possible problems that could happen, before they happen!

Identify Failure Points

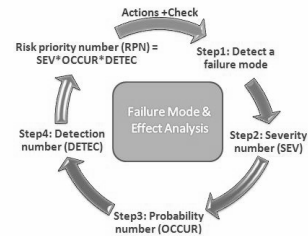
The FMEA tool is a means of identifying failures before they happen by providing a 'check list' procedure that is built around three key questions.

1. What is the likelihood that failure will occur?
2. What would the consequence of that failure be?
3. How likely is such a failure to be detected before it affects the customer?

How to Create an FMEA

- Review the Process – Map the process in question, step-by-step, capturing every value added activity.
- Identify Failure Modes - For each process step, brainstorm all potential failure modes (things that could go wrong with that particular activity).
- List the effects and causes - For each failure mode, list its effect on the output of that process step, and also the real root cause.
- Give each item a severity score - Rank each failure mode as to how severe the failure mode could be (scoring 1 to 10).
- Give each item an occurrence score - Rank each failure mode as to how often it will / does occur (scoring 1 to 10).
- Give each item a detection score - Rank each failure mode as to how easy the failure mode can be detected by the next customer or next internal customer in the process. (Again, scoring 1 to 10).
- Calculate RPN numbers - For each failure mode, give it a Risk priority number (RPN) by multiplying the severity score x occurrence score x detection score. This now allows you to focus on the highest scoring, higher risk problems first.
- Develop an action plan – For each high scoring RPN, note who is doing what by when to close eliminate the failure modes.
- Take action!
- Recalculate new RPNs – Once action has been taken, recalculate the new RPN numbers. Repeat the steps if further action is needed (if the RPN number is still too high)

FMEA Process



FMEA Benefits

The benefits of an effective and systematic use of the FMEA tool are vast. Notwithstanding the obvious benefits above, FMEAs can create smooth production processes first time, reduced development costs, increased profit margins in production and the ability to successfully win more business, supplying competitive and long lasting product.

Additional benefits

- Minimize product failures
- Early risk identification
- Track process improvements
- Documented evaluation
- Develop efficient test plans