Developing an Efficient Design FMEA

Planning For FMEA

1. Planning - Team Selection

Gather:
- Data/Warranty Information (TGW)
- Team:
  - Design Owner
  - Process Representative
  - PVT-Problem Data Person
  - Supplier as appropriate
  - Design Contrarion
  - Process Representative

Create Boundary Diagram

Create Interface Matrix

Create P Diagram

FMEa Development

2. Review Specification For Applicable Item

Enter Functions Into Columns

Enter all Failure Modes one after Another - Error Status

Enter Effects of Failure and Select Severity Effect and Error States

B

Note:
- If on paper leave plenty of space for further analysis

Types of Failures:
- Error Status
- Full Failure
- Partial
- Intermittent
- Unintended

- List up to 5 in the same box (grouped) per each failure mode
- Place severity # beside each effect in parenthesis ex: (4)
- Place largest severity of the group into severity column

Refer to Severity Chart for Scale
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**Types of Causes:**
- Man
- Material
- Machine
- Method
- Environment
- Noises (Robustness)

**Note:** Typically there are numerous Causes, be sure to allow for space if Completing FMEA on paper.

**Fault Tree Analysis**

**Cause & FM**

**Enter the Causes Into FMEA Form**

**Review Severity, start at highest and go to lowest**

**Determine:**
- What are the causes for the Failure Mode?
- Root Causes
  - For 9/10 SEV

**Add to Action Column**
- Responsible Person
- Date of Completion

**Take Action to Reduce Severity / Occurrence**

**Consider Design Controls**
- D – Test Item
- P – Mistake Proofing Feature
- D – Evaluation Design Review

**List Design Controls:**
- Multiple Controls are likely
- Determine Detection value for each item record it in parenthesis ex: (5)
- Move the smallest item into Detec. column

**Calculate RPN**
- Risk Priority Number
  - SEV x OCC x DET

**Top 20% of Failure Modes by RPN**

**Warning!**
- Do not select arbitrary RPN to be below
  - Based on 80/20 Rule

**Detection/Prevention (example)**
- D – Test Item
- P – Mistake Proofing Feature
- D – Evaluation Design Review

**Determine Action to Reduce Occur. or Improve Controls**

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8D : ☐  Six Sigma Green Belt: ☐

ISO 9001:2000: ☐  FMEA: ☐

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