

Failure Modes Effect Analysis (FMEA)

How to anticipate and prevent failures due to errors in design and manufacture

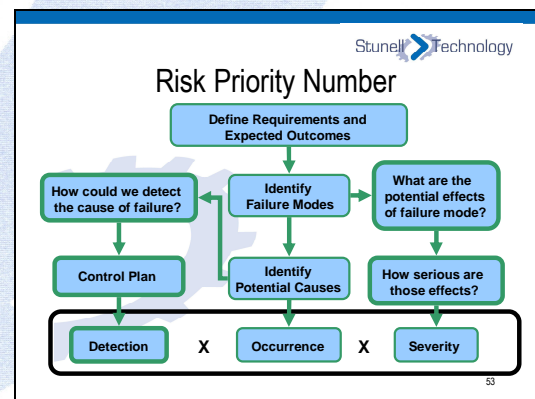
Mistakes, errors and omissions that occur during the design and manufacturing process, often result in product rejects, customer complaints and warranty claims – or in extreme cases product liability claims against the producers.

The costs of failure may be hard to quantify because many of them are hidden, or accepted as 'normal' when the processes used to design and manufacture the product are incapable of achieving the required quality standards. However evidence from the United States suggests that many large manufacturing companies are spending over 2.5% of their sales revenue on warranty claims – perhaps the most visible evidence of failure.

Failure investigations often identify causes of failure – which with the benefit of hindsight could have been identified and avoided – but were not thought significant when critical management decisions were made. Sometimes the obvious 'clues' have been missed – or critical information lost in the system – whilst decisions are based on intuition rather than objective evidence.

Disturbingly, when presented with the evidence of failure you may find employees who rightly say – "Well if you'd asked – we could have told you that would be a problem!"

Failure Modes Effects Analysis (FMEA) provides a way of capturing the 'unconscious knowledge' of your organisation - alerting you to potential problems before they occur – and gives you the opportunity to prevent failure. When used as a knowledge management tool FMEA's will enable you to document the 'corporate wisdom' and learn from previous mistakes.



The application FMEA techniques will quickly expose many potential problems and identify the potential causes of failure. The potential failure modes and

their effects can then be prevented using a three stage strategy that includes:-

- Controlling the causes of failure
- Detecting the potential non-conformance within the process
- Mitigating the effects of failure

The FMEA process allows companies to:-

- Define a design validation processes that will identify the risk of failures caused by 'design errors', and test the design assumptions.
- Identify an effective production control plan, eliminating failures caused by 'process errors'

Although these benefits are significant, for many organisations, even greater benefits are obtained from the cross-functional understanding of the business that emerges from an effective FMEA team. This may highlight the hidden consequences of apparently 'minor problems' in one part of the business which have a significant impact

elsewhere, and driving justification for continuous improvement in those areas.

Stunell Technology will help you make effective use of the FMEA techniques, by –

- Providing training and support for employees participating in FMEA activities.
- Training managers, who need to support the process and use the information created to improve the way they work
- Facilitating FMEA teams and providing impartial advice, helping you create a 'learning environment' in which team members can share their knowledge and grow the corporate wisdom needed to move forward.

For more information please contact Phil Stunell on +44 (0)7720 840134 or e-mail Phil@stunell.com

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Phil Stunell has spent most of his career working in the automotive industry, responsible for the validation and development of new vehicles and component systems. As a technical specialist he has been responsible for investigating product failures and developing methods of 'predicting the customer's experience', whilst helping manufacturers resolve product liability issues.

Stunell Technology was formed in 2000, and works with it's clients to improve the product development process, resolve problems in the management systems and create a lean environment'