Streamlined Failure Modes and Effects Analysis (FMEA)

The spares you stock can be a crucial issue.

When a system or a process fails, engineers use FMEA to find out what caused it, quantify the effect of the failure and aim to stop it happening again.

FMEA has a long-established history. Initially applied in the 1950s in the United States, it was used as a reliability evaluation technique to determine the effects of system issues and failures. With increased use, knowledge and understanding, this concept has been updated and developed to deliver a modern and effective risk-analysis technique. It is used:

- To develop maintenance policies targeted to prevent failure of the equipment concerned
- To eliminate costs caused by unnecessary maintenance
- To identify reasons why an item of equipment has failed,
- To develop a predictive maintenance approach which enables spares requirements to be pre-determined
- To familiarise staff with the function and potential reliability issues of new equipment

It should be used in the following situations:

- On existing equipment and processes
- To analyse proposed modifications
- For new plants

However, it should be noted that, regardless of scope, it takes a lot of effort to deliver benefits.

What we offer
Our streamlined ABB FMEA process delivers all the benefits of the standard approach but takes less than 25% of the time. A standard FMEA study on an item such as a pump or fan can take a day or more to complete for even an experienced study team. Most organisations cannot afford to release their staff for extended numbers of days to complete FMEA studies on a whole plant.

We have developed a library of completed FMEA studies for a large number of equipment items, including pumps, fans, blowers, compressors, conveyors, sieves, fluid bed dryers etc. These are used across the chemical, pharmaceutical and oil & gas industries.

We identify the critical items of equipment for detailed analysis using our established criticality and vulnerability assessor. Following this, using dedicated software, we assemble the appropriate ‘generic’ FMEAs into a customer-specific library.
Each of these is tailor-made by us and validated by our on-site team to take account of the specific duties and conditions found on their respective plants. This greatly reduces the time taken to complete the study but still delivers the same benefits.

Our process and dedicated software are well-established. They lead customer teams through the process of tailoring the pre-populated FMEA steps to their plants. This not only delivers the benefits of identifying actions to eliminate failures of key equipment, but also delivers significant cost savings over the standard FMEA approach.

Benefits
- Ability to prevent equipment failure in the future
- Eliminate costs caused by unnecessary maintenance
- Save time spent making studies
- Knowing exactly what caused the equipment failure
- Knowing which spares need to be stocked
- Staff familiarised with the function and issues of equipment

Why ABB?
ABB have a long track record of extensive technical knowledge of the theory of FMEA and the realities of a manufacturing environment.

We have all the specialist skills required to find the safe, streamlined and cost-effective solutions. These include technical issues involving rotating equipment and pressure systems.

Our engineers and consultants have operational backgrounds and make pragmatic technical judgements based on their experience. It’s an approach that ensures cost-effective, practical-to-implement solutions which work.

Accessing this expertise is cost-effective and enables the team to construct engineering justifications for the proposed action.

We’re also able to call on a broad range technical knowledge from across our services.