Starting out in Failure Modes and Effects Analysis

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You need to start FMEA in your organisation How do you go about it?

First forget FMEA and think "People." I once went on a short course on adult learning. Adults at work are time poor. If you want them to be effective learners then understanding two characteristic behaviours will give you an increased chance of success. First, they must be working on a real, useful problem. They do not want to wait for years for the results. Secondly keep the concepts as simple as possible, if the ideas are too complicated then it is unlikely that people will internalise them.

Start off with an FMEA that really needs to be developed for example because of scrap or a customer issue. Keep the process as simple as possible.

So, this is what I kept in mind when over twenty years ago I was the champion for FMEA at Motorola's South Queensferry site. We had two risky projects to complete. One was changing the ion exchange resins in the de-ionised water system. A second was installing the latest Canon stepper. A stepper is a fancy printing system for manufacturing silicon chips. Do not worry about the technicalities just think if the de ionised water system goes wrong then it is effectively career death. Should the Canon stepper installation slip and the project stalls the consequences could be millions of pounds in lost revenue. In both cases developing a FMEA was a real and useful task.

We put together a straightforward process to create the FMEA. We did not worry about how the entire FMEA system would look in the future. We did not benchmark it against the NASA process that ensured men travelled to the moon and returned alive. We were using the process to discover the obvious but easily overlooked.

Not forgetting people, we made sure representatives from all the groups were involved, manufacturing, process and maintenance engineering and facilities. We needed them to be actively involved because they had the knowledge, we needed to incorporate in the FMEA.

Map the process in detail, what are the steps we will take to perform the task? The key here is going into the detail, map out exactly how we will remove the resins in the DI water system.

At each step consider what could go wrong , we could contaminate the ultra-pure DI system, what happens if the Canon stepper loses its facilities.

We used a 1-5 grading at each step for severity, occurrence and detection and calculated the Risk Priority Number in the normal way SxOxD. This was used to identify the obvious big risks.

What did we discover?

Well apparently, to remove the spent resins from the large vessel we were gong to suck them out with a council drain cleaner. Yes, into our ultra-pure water system we were going to insert a dirty hose that had been cleaning the local drains, we found a better way.

The Canon stepper had a very fancy "air bearing" that used compressed air…nobody knew what would happen if the compressed air failed….probably a nasty crunch. So, we asked Canon for clarification.

So, to start your FMEA think of how adults learn. Make it useful, relevant and the engagement will happen . Keep the process quite simple. Do not buy the latest benchmark book on FMEA and try and implement every feature. Build from your simple start.

There is a wealth of practical experience in Datalyzer's White Papers

Whitepapers - DataLyzer

Carl S. Carlson's "Effective FMEAs" is a complete and practical reference work.

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