Intolerable failures

I NEVER WILL FORGET WHEN THE idea for this article popped into my head. I was teaching an equipment reliability class to a group of power generation plant engineers and asked one of my standard questions: What is a tolerable failure? The reply – "Aren't all failures tolerable? I mean, we have to learn to live with them" – was a perspective shifter.

The prevailing culture of breakdown maintenance – wait for failure and become expert at fixing it quickly – had dug its roots deeply into this team of mechanics. Instead of seeing most equipment failures as preventable and extending the average time between failures, they, like many others, accepted certain process failures as normal.

At the macro level, one might call this a defeatist attitude. At the process level, one might more accurately state that such attitudes are common in many field engineers and most people in general. We learn to live with problems and almost expect them to occur. Most people struggle to imagine a day without problems.

Here is another test. Ask someone what the main role of a firefighter is. Most likely, the response will be fight fires. But if you asked firefighters, they would say that their main role is to prevent fires from starting. Putting out fires is a reactive role that they play when preventive techniques fail to work. The local firehouse does not expect an average number of fires a year and celebrate when the number is below average. Instead, they shoot for zero fires and expect to see evidence of progress over time in terms of fewer fires, less intense fires and increased public awareness of fire prevention practices.

Firefighting and fixing equipment outages can cost a lot and involve significant injury, if not loss of life. Just as we have made inroads using the pit crew as the benchmark for quick changeover practices, firefighting is a good analogy for helping us make measurable and sustainable inroads into equipment reliability.

We have to do more than shift our mindsets to make most failures truly tolerable. We must make better use of the downtime data we are capturing. The growth of programmable logic controllers (PLCs) and distributed control systems (DCSs) has provided us with a wealth of data that we often don't know how to use or use in a less-than-effective manner. This is what spawned analytics, informatics, big data and data cube.

In many cases, we don't need to spend the big bucks. The seven basic quality tools, coupled with pivot tables, will do just fine for targeting high leverage areas for reliability gains. The urgency may not exist because the downtime percentages returned by the DCS are below the budgeted percentage for downtime. Unfortunately, even small amounts of consistent downtime can compromise an organization's agility and flexibility, killing the slim margins that accompany the increasingly common smaller, specialized jobs.

If you're glad that you don't have to deal with such equipment problems, you might want to think a little bigger. Cash register jams, broken cruise controls, and out of service surgical tool sterilizers often get tagged as tolerable failures, even though they are far from tolerable from the customer's perspective. The costs of failure are tougher to measure, as lost future business is not easily evident, but they do apply.

Give true equipment reliability a try.

People trapped in the breakdown maintenance mindset might find it difficult to imagine living in a world without daily fires to fight. Wouldn't work be boring? Wouldn't my job lose its meaning? What would I do all day if I did not have problems to solve? All I can say is give true equipment reliability a try. Your customers will thank you.

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