

What do I need to do to improve reliability?

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“What do I need to do to improve reliability?” This is a seemingly simple question that elicits many different responses from reliability practitioners. One practitioner will say that you

should benchmark your facility’s performance. Another will state that you need to perform a root cause failure analysis (RCFA) on equipment failures. In both cases, the advice could be beneficial. But, two key points are essential:

1. Always be sure that the real issues are the most significant contributors to the facility’s unreliable performance (not somebody else’s issues).

2. Always be sure to deal with the underlying reasons of the problems (not just the symptoms of the problems).

To make and sustain real reliability improvement, a holistic approach is required. This holistic approach needs to include the following three basic activities:

- Eliminate the causes of equipment failures that affect system performance.
- Create a culture and management system to sustain improvement.
- Monitor performance of the manufacturing system.

The following four steps are the quickest and most effective approach for improving manufacturing reliability.

Step 1 — Develop a measurement system to monitor manufacturing and management systems performance

Fundamentally, reliability improvement is all about measuring and improving performance. Historically, “measure and improve” strategies have been based almost exclusively on reacting to results from analysis/trending of data about actual losses. While this is often a good place to start a reliability improvement initiative, this strategy eventually becomes problematic once the “low hanging fruit” is exposed/harvested.

Step 2 — Conduct RCFA of the most significant chronic and sporadic events

Early in their reliability improvement initiatives, most facilities find from their performance measurement efforts that much of their loss exposure stems from a finite number of chronic issues plaguing their operations. These chronic issues are generally excellent opportunities to apply systematic RCFA. RCFA not only try to prevent recurrence of the same events but also look beyond the symptoms of the problems to the underlying root causes where management system improvements are likely to prevent many other possible future performance problems as well.

Step 3 — Perform more narrowly focused,

detailed analyses of other significant potential losses

In addition to the items addressed through RCFA, performance measures will probably indicate some substantial loss exposures from certain types of events (such as problems with specific human activities or specific equipment items) that have not happened yet. This is an opportunity to try to prevent future problems from ever occurring by focusing in detail on very specific threats to system performance. Narrowly focused, detailed analyses of specific human activities (through error-proofing analyses) or equipment items (such as reliability-centered maintenance analyses) posing significant risks can be very valuable at this point.

Step 4 — Develop key management systems needed to sustain reliability improvement

RCFA (and other reliability analysis tools) makes recommendations for improvements to the underlying management systems necessary to eliminate particular equipment failures or human errors of concern. This certainly does lead to improved reliability management systems. However, most organizations with maturing reliability improvement initiatives find that they need to upgrade their reliability management systems in a more systematic manner.

This realization drives those organizations to: 1) Audit the status of their reliability management systems, 2) Benchmark the features of their systems against best practices used by others and 3) Upgrade their systems appropriately. The result is a set of integrated, holistic management system elements intended to introduce controls over the sources of vulnerabilities in equipment and error-likely situations for people.

No one analysis tool, technology or training can address all of the issues needed to achieve reliability excellence. If the focus is on the fundamental reasons that unreliable performance occurs, then the path forward should be reasonably straightforward. The approach should be modified to best suit individual needs.

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