



### [Equipment Criticality: Life In The Fast Lane](#)

Improving maintenance efficiency and effectiveness must proceed at a much faster pace than in the past to head off the opposites of growing technologies and skills shortages. In my October 2012 “Uptime” column, I responded to the question “How to Improve Maintenance” by describing the benefits of focusing on maintenance-related RESULTS versus maintenance activities. I also pointed out a few “failure modes” of selected activities and programs.

This month, we’ll drill a layer or two deeper and explore the use of equipment criticality to determine appropriate maintenance preparation and responses: urgency, training, documentation, preventive maintenance, spare parts, root cause analysis, risk assessments and downtime tracking. Then, we’ll explore how to make BIG sustainable improvements of the most critical assets as fast as possible (or “big hairy audacious goals,” as James Collins would call them in his book *Built to Last*).

#### **Thinking about ‘criticality’**

“Physical assets” are the plants, facilities and equipment we are called upon to maintain and repair. Asset management, as defined by PAS-55 Specifications from the British Standards Institution (BSI), addresses the importance of focusing on the “physical assets that add value to the business.” Later in the Specifications, the term “criticality” is referred to as an element of Risk Management (as in “the likely consequences if the asset should fail to perform as intended or any other condition that would impact the organization’s goals and values”).

It should be fairly easy to grasp the basic idea that some of our plant equipment systems and facilities have a greater or lesser impact on the business than others. And it should be easy to understand that some of these physical assets truly bring MORE value to the business than others because they directly produce a product or create an environment that generates revenue or profit for the business. For example, a machine that processes 70% of all the products shipped and the chiller that keeps the product tanks supplying the same machine at the proper temperature for quality purposes are examples of critical assets.

Conversely, some non-production-related equipment should also be considered “critical”—*because of the possibility of severe consequences associated with toxic substances, personal injury or physical destruction of an asset.*

Examples of such equipment include:

- Chlorine-gas systems
- Breathing-air systems
- Fire-protection systems

You get the idea: These types of equipment systems aren't necessarily involved in making product or generating revenue for the business, but they preserve the required (and often regulated) health, safety and environmental conditions for the people and assets involved in the business. Because of the consequences of failure and the resulting impact on an organization's goals and values, they certainly qualify as “critical assets.”

Since all assets are not created equal or require the same attention, we ought to be able to single out one or two of our most critical pieces of equipment and make fast-tracked improvements while we treat the rest (i.e., our less-than-most-critical equipment) in the traditional manner. This is called a “breakthrough strategy,” which can lead to best practices that can be applied to other critical equipment and, along the way, also free up maintenance resources.

### **Focusing on the ‘critical few’**

Most of us have long heard the concept of “Continuous Improvement” (CI) bantered about: Not being satisfied with status quo and looking for incremental changes for the better is the ongoing quest of successful businesses. Many maintenance organizations have been on the CI journey for years, so the concept is not all that new. But making a BIG step-change in the performance and reliability of critical equipment often requires a dedication of resources (i.e., time, money and people) in an already resource-constrained organization or business. Unfortunately for maintenance, lasting improvements are much more than a CI event, a “blitz” or a “kaizen event,” as many plants have discovered. It seems as if there are conflicting priorities and not enough time, money and people to go around for those wishing to make sustainable improvements.

I've heard it many times: “We've got a facility running that depends on maintenance (and

## Uptime: Equipment Criticality: Life In The Fast Lane

Written by Bob Williamson, Contributing Editor  
Friday, 18 January 2013 15:40

---

repairs) being completed in a timely manner. We just can't stop doing what we're doing to start an improvement program. So, we typically tap any discretionary time we have to plan, develop, deploy and nurture the latest improvements." This is a mighty SLOW road to maintenance improvement.

The very first step to continuous improvement should be to determine where the biggest, most penalizing problems are. These include the asset that causes most of the maintenance trouble calls; the bottlenecks to production; the equipment that's on the edge of failing, but thanks to regular applications of duct tape and tie wraps it keeps on ticking. The most logical starting point should be the MOST CRITICAL equipment right now and into the foreseeable business future.

### **Moving into the fast lane**

Sometimes, we have to think of the equipment and facilities we are responsible for operating and maintaining in much the same way as vehicles driving in heavy traffic on, let's say, I-85 South in Atlanta.

For various reasons, not all vehicles belong in the fast lane: Some can't go fast enough; have inadequate time before their exits; don't have permits or qualify for the HOV lanes; or just aren't in a hurry to reach their destinations. Moreover, it's not even possible (nor is it CRITICAL) for all traffic to travel in the fastest lane.

Similarly, when a plant is resource-constrained, (i.e., skills, knowledge and finances), not ALL equipment in the facility can possibly receive the same degree of attention. Not all equipment is an actual "emergency" when it breaks down. Not all equipment needs the latest reliability-improvement bells and whistles. In other words: Not ALL equipment is equal.

Back to Atlanta's I-85 South: Imagine what would happen if all cars and trucks on it tried to get into the express lanes! They ALL would come to a screeching halt. Although the drivers might have thought they could move faster, in reality, it would be impossible to get all vehicles moving fast in the same constrained lanes. Besides, there's no need for all the traffic to be in a fast lane. It's much the same story with regard to our equipment and facilities.

What if we focused our limited resources ONLY on fast-tracking the MOST CRITICAL equipment that was truly in NEED of improved reliability and performance—*the equipment*

## Uptime: Equipment Criticality: Life In The Fast Lane

Written by Bob Williamson, Contributing Editor  
Friday, 18 January 2013 15:40

---

*where the risks were the highest and the consequences of failures were the most penalizing?*  
The paybacks would be beneficial to the business, and the improvements would also probably free up the limited maintenance resources.

It will help to openly discuss RISKS and CONSEQUENCES and CRITICALITY of certain assets with various stakeholders. This is a starting point in many a resource-constrained organization with moving and often conflicting priorities. (Getting the point across that all equipment and facilities aren't created equal can sometimes be a tough sell). For starters, work with production, engineering and senior leadership to help make criticality determinations based on business objectives. Identify the most critical assets and rank them on a scale based on risk (probability and consequences) or other impact on business goals and values.

The bottom line here is to come to an agreement: Which assets are the "most critical" and why? You'll also need to identify the assets that are lowest in criticality and those that are somewhere in the middle. In doing so, the stakeholder group should also be able to determine the appropriate preparation and responses. Then, plan your work and work your plan:

- Target one of the top, most critical, at-risk assets you have and put it in the "fast lane."
- Set specific improvement goals and objectives to achieve in a two- to three-month period.
  
- Deploy a multi-disciplined resource group to quickly and sustainably make significant improvements.
- Develop a structured and specific fast-track tactical plan and schedule.
- Remember to make your plans do-able in the scheduled time.

### **Sustainability rules**

Take care to address the preparations and appropriate responses needed to assure continuously improved performance of the targeted asset: urgency, training, documentation, preventive maintenance, spare parts, root cause analysis, risk assessments and downtime tracking. The results will likely be impressive—a *veritable breakthrough*.□

- People at all levels should notice the gains that have been made.
- Leadership will be able to leverage this experience and results for incremental culture changes.

## Uptime: Equipment Criticality: Life In The Fast Lane

Written by Bob Williamson, Contributing Editor  
Friday, 18 January 2013 15:40

---

Keep in mind that focused improvement on the critical few assets in your “fast lane” will lead to improved performance and, quite possibly, free up “reactive maintenance” resources that can be used in more planned/preventive maintenance work.

Now is the time to seriously consider equipment criticality and life in the fast lane. There aren't many alternatives to improving performance and reliability in this era of shrinking skilled-workforce pools and technologies that are outpacing our abilities to keep up. In case you wondered, the principles of risk-based focus, asset criticality and a multi-disciplined organizational focus on business goals is central to PAS-55 Asset Management (and forthcoming ISO-55000 Asset Management Standards). Big, hairy audacious goals (B-HAGs) can really work to achieve breakthroughs in sustainable performance. Are you working on some? **MT**

[RobertMW2@cs.com](mailto:RobertMW2@cs.com)