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Maintenance Is Really NOT the Problem

by R. Keith Mobley
In late May, *Uptime* Publisher Terrence O’Hanlon posted on LinkedIn that attendance at maintenance conferences has dropped significantly. Responses to his post offered plausible reasons, including budget constraints, lack of or recurring content, and total saturation. While these are no doubt contributors, there may be one more growing reason for this decline: more and more organizations are finally recognizing that maintenance is not the source of their competitive or financial problems. This article provides proof for why this reason may be on point.

Fifty years ago, many were convinced that maintenance was at the center, if not the entirety, of the problems that plagued industry. Because of this belief, the focus was on building world-class maintenance organizations. Success followed success and the number of companies able to achieve and sustain world-class maintenance grew significantly. The problem was, and still is, that having a world-class maintenance program is not enough. Perhaps it’s time everyone acknowledged the truth about maintenance and its role in both plant performance and reliability.

First, effective maintenance is essential and no one should suggest otherwise. It is also true that most maintenance organizations are far from world-class. But, you need to look deeper to glean the reasons for their failure. You must recognize and acknowledge that all asset failures and downtime—regardless of the forcing function—result in higher maintenance costs and a flurry of maintenance activities to repair them. Always remember the old adage that one operator can wreck a machine faster than 10 maintenance technicians can repair it. It’s true!

There are many reasons why maintenance fails to sustain world-class performance. The most common are insufficient budget, insufficient time, lack of management support and poor maintenance management. Only the last one is controllable by the maintenance organization.

Asset failures are not the only external force that drives maintenance efficiency down and cost up. Maintenance is frequently called upon to provide labor and budget to support operations and underfunded capital projects. This drains maintenance’s resources and budget, hampering the ability to perform sustaining maintenance. On average, maintenance organizations give up 30 to 40 percent of their budgets and labor hours to these non-maintenance activities. Unfortunately in traditional plant cultures these external drains are not controllable by maintenance management. Expectations for cross-functional support are created by executive management and enabled by a broken organizational structure, neither of which can be corrected without a broader, non-asset definition of reliability.

Finally, maintenance does not control its own destiny. It is dependent on other plant functions that must effectively cooperate and coordinate their activities with those of maintenance. The more critical relationships include production, which controls the downtime for sustaining maintenance; procurement and materials management, which ensure the proper parts and materials; engineering, which ensures configuration control; and human resources, which provides the skilled technicians. All of these depend on executive management, their strategic business plan, and the sales and marketing functions that provide the manufacturing backlog that drives everything. In truth, the sales function is the tail that wags the dog. If it provides a consistent backlog of standard products, normal lot sizes, reasonable lead time and a profitable price, a reliable plant is achievable. If any of these variables change, the entire plant, starting with the production schedule, must react to the variance—forcing the entire organization to become reactive. For all of these reasons, the majority of plants evaluated over the past decade are undermaintained because of the first two reasons and enabled by the latter.

What too few organizations understand is that even world-class maintenance will not resolve the performance and financial issues that most plants endure. Take an honest look at what the transition from highly reactive to world-class maintenance would do to improve overall plant performance. If one looks at maintenance cost, the results would be eye-opening. First, it should be based on the maintenance required to sustain asset reliability over the assets’ useful life. Depending on the industry, sustaining maintenance requires 400 to 1,100 hours per year of planned downtime, plus the time required to perform in situ preventive maintenance tasks. This level of maintenance is an investment that is absolutely essential to business. Yet few plants meet this criterion. As a result, any attempt to improve maintenance effectiveness will require a significant immediate investment, typically 12 to 18 percent of current maintenance expenditures, to return undermaintained assets to maintainable condition and an increase in annual expenditures to provide minimal sustaining maintenance for the remaining life of the assets and plant. Rather than reducing labor and materials costs, most plants will need to increase them to have any assurance of asset reliability.

Even though maintenance expenditures may seem high, in a typical organization total maintenance costs, including contract services, are less than five percent of the total cost of goods sold (COGS) and in a world-
class organization, less than two percent. Therefore, from a pure cost standpoint, maintenance is a minor contributor. In addition, the difference between the costs in a reactive versus world-class maintenance organization is, at best, two to three percent of COGS. The change is so small that it has minimal impact on competitive costs. One could zero maintenance costs—not a good idea—and it would still not be enough.

Maintenance has a reliability role, but it is not what many assume. First, one needs to define reliability. When presented with reliability, most think of physical assets and too often in engineering terms, such as mean time between failures (MTBF), mean time to repair (MTTR), etc. But much more is required before a business, plant, or organization can be considered reliable.

By definition, a business, plant, or organization must be consistent—able to maintain established (world-class) standards or repeat all requisite tasks to support those standards with minimal variation. Yes, this definition applies to maintenance, but it must also apply to all other functions in the organization before the organization can be considered reliable. Reliability starts with a viable strategic business plan, effectively executed by marketing and sales, and then cascades down throughout the organization. Only when all functions and all employees are able to consistently maintain world-class standards in all business and work processes, procedures and practices can an organization be called reliable.

The absence of enforced standardization in all processes, procedures and practices throughout the organization is the real root cause of reliability issues

So, if maintenance is not the problem, who or what is? One trait shared by all non-world-class plants is instability. Instability is caused by inconsistencies in decision-making, planning, scheduling, execution and measurement of all business and work activities—not just maintenance—from the boardroom to the factory floor. The absence of enforced standardization in all processes, procedures and practices throughout the organization is the real root cause of reliability issues, including those exhibited as asset failures and high maintenance costs. To be reliable, all organizations must eliminate variability and its resultant instability across the entire organization, not just maintenance.

Data compiled between 1985 and 2015 confirms the asset reliability outcome and functional distribution of this instability. The data shows that only 17 percent of asset reliability issues result from maintenance deficiencies.

The dominant reason for asset reliability losses is the inherent weaknesses in the asset’s design, compounded by years of undocumented, uncontrolled changes and modifications. All assets have inherent weaknesses that are either not understood or ignored by the design engineers or vendors. These weaknesses predetermine the asset’s reliability and 95 percent of the asset’s total cost

of ownership. The absence of a viable management of change process has, for decades, permitted unlimited, uncontrolled changes and modifications. At 22 percent, this is the largest contributor to chronic asset reliability problems. It should be obvious that, at best, maintenance can only become better at reacting to these problems because it lacks the means to correct them.

The 15 percent contribution of the marketing and sales function is misleading because at least one half of the 23 percent attributed to production is driven by the composition of the incoming backlog generated by sales. When combined, at least 27 percent of the asset reliability problems are attributable to them.

The remaining 12 percent attributed to production stems from instability in the mode of operation, ranging from scheduling to execution of recurring operator tasks (e.g., start-up, changeovers, shutdowns, etc.). In most plants, a quick look at the output shift-to-shift and day-to-day clearly shows just how radically operations vary. Operating inconsistency is the most significant contributor to lost capacity, revenue and operating profits.

As proven, reliability is not a maintenance problem. Yes, maintenance should be included, but a world-class maintenance function does not make a world-class plant. A world-class maintenance function will not improve reliability in its holistic definition. A world-class maintenance organization cannot improve asset reliability. Asset reliability is a design function and the best that maintenance can do is maintain inherent reliability.
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