PLANT FLOOR OPTIMIZATION:
ASSET MANAGEMENT IN THE NEW ECONOMY

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ABSTRACT

Not since the 1970s has the industry faced an economic challenge as we did during the past two years — and for many who joined the work force in the 1980s, this is the first significant economic setback we've experienced. The sudden shift from a boom economy to a recession has caused a dramatic change in direction of how business leaders are driving their individual manufacturing facilities. During this time, manufacturers — maintenance departments, in particular — have learned some valuable lessons about operational efficiency.

The economy is slowly beginning to improve, but many companies are still faced with the challenge of improving growth and achieving greater profitability with fewer human and capital assets. The past several years have not gone by, however, without many vital lessons on achieving better operational efficiencies. It is now time to look at what we have learned, implement new procedures and carry forward these new asset management philosophies into this new economy.

- Those who learn and adapt will survive – lean manufacturing
- Become proactive through asset optimization – integrated condition monitoring
- Operational efficiency starts in the storeroom – outsourcing
- Departments can no longer work autonomously – enterprise-wide integration

INTRODUCTION

From all indicators, it looks like the end of the current economic downturn may be within sight. This is good news for the manufacturing industry, which began to feel the first effects of the economic downturn more than 18 months ago. The sudden shift from a boom economy to a recession has caused a dramatic change in direction of how business leaders are driving their individual manufacturing facilities.

Not since the 1970s has the economy faced this type of challenge — and for many of us who joined the work force in the 1980s, this is the first significant economic setback we've experienced. Over the past two years, manufacturers — maintenance departments in particular — have learned some valuable lessons about operational efficiency.

The economy is slowly beginning to improve, but many companies are still faced with the challenge of improving growth and achieving greater profitability with fewer human and capital assets. The past several years have not gone by, however, without many vital lessons on achieving better operational efficiencies. It is now time to look at what we have learned, implement new procedures and carry forward these new asset management philosophies into this new economy.

LESSON #1 — THOSE WHO LEARN AND ADAPT WILL SURVIVE

Many of the companies that flourished in the booming economy of the 1980s and 90s no longer exist. The survivors are the ones who have adapted to the new economic reality of the 21st century: profitability is no longer just about growing sales; it's also about organizational efficiency. Businesses are driving out inefficiencies, reducing and consolidating management layers and seeking to outsource non-core competencies whenever possible — being 'lean' is the new goal. Many are undertaking full-scale process reviews aimed at finding ways to cut costs and improve processes. Areas once thought 'untouchable' within an organization are now being scrutinized at the micro level for any reductions in fixed and variable costs – activity-by-activity and line-by-line — starting at the plant floor.

For some, this represents a major change in philosophy. In the area of maintenance, for example, there has been an increased emphasis on maximizing uptime by maintaining asset availability, while at the same time reducing repair parts and outsourcing repair and/or re-manufacturing capabilities whenever possible.

Since MRO physical assets typically represent a company's single largest capital investment, it's no surprise that maintenance activities have never been more directly tied to manufacturing and business

performance. For some, millions of dollars in savings are left on the table. Case in point: a large copper production facility has an $80 million annual operating budget that is equally allocated between maintenance, energy, labor and material costs. In this situation, even a 10 percent decrease in MRO expenses could mean $2 million to the company's bottom line.

It isn't just the operations segment that can benefit from an efficiency review. Any manufacturing process can be improved to some degree using a variety of operational efficiency techniques — ranging from predictive maintenance programs to the outsourcing of non-core competencies.

LESSON #2 — BECOME PROACTIVE THROUGH ASSET OPTIMIZATION

Asset management is primarily about the capital assets — the productive assets in which an organization has invested. The line is blurring, however, and asset management is expanding to human assets within organizations as well. It is the job of maintenance and operations professionals to continually look for methods to get more out of production, and understand how equipment on the factory floor is performing.

Leading edge maintenance departments are expanding programs like asset management, reliability-centered maintenance and condition-based monitoring tools (such as vibration, oil and lubricant analysis and thermography) to monitor equipment health to reduce unexpected downtime. Twenty percent reductions in plant downtime and 30 percent reductions in maintenance budgets have been reported in organizations that employ asset management strategies.

In recent years, maintenance has evolved beyond preventative activities into a system of predictive maintenance measures — asset optimization. Fully optimized assets means knowing and achieving the full potential of your plant floor and performing maintenance only when it is warranted. For example, instead of routinely changing oil on a piece of equipment at the same time every month, advanced monitoring technology is capable of predicting when the oil is breaking down. It may be breaking down later than initially thought, which can save time and money on maintenance. When these predictive techniques are incorporated on a plant-wide basis, maintenance expenses can be slashed considerably.

This strategy represents a significant shift in philosophy and resource allocation. That is, an investment and commitment needs to be made to not simply fix a problem but also ferret out the root cause — going beyond knowing that the bearings in the motor need to be replaced to determining why it is happening. Is it simply a lack (or excess) of lubrication, or is the motor working beyond capacity? If it is the latter cause, then breakdowns could inevitably begin to permeate the line.

LESSON #3 — OPERATIONAL EFFICIENCY STARTS IN THE STOREROOM

Depending on a company's current "state of maintenance" — their maintenance strategy and philosophy — achieving a 10 percent decrease in maintenance expenses can be relatively simple or an increasingly difficult task. Manufacturers, who are already implementing an aggressive preventative maintenance strategy, are searching for other methods to reduce MRO costs.

Businesses across industry sectors are realigning and prioritizing internal resources by outsourcing non-core competencies. In many cases, companies are finding that parts of the MRO-side of the business include those non-core competencies, and as such, it really doesn't make sense to keep them in house. Inventory management, for many, is one item being outsourced.

Case in point: a large automobile parts manufacturer with an aggressive maintenance strategy has 85 percent uptime, making it increasingly difficult to achieve significant savings through additional preventative maintenance efforts. By rethinking its parts management processes, this organization was able to save over $1.5 million in the first year by outsourcing this management function. Outsourcing allows the company to focus maintenance department resources more strategically on predictive maintenance measures.

The director of engineering and maintenance at this plant said that at first, his maintenance department thought that they could handle it all: parts, inventory management and asset maintenance. But as they began to focus their energies into a more proactive maintenance strategy, they found that the parts management process was too much to handle. When it began to impact production and asset availability, it was an easy decision to outsource.

LESSON #4 — DEPARTMENTS CAN NO LONGER WORK AUTONOMOUSLY

In the past, many maintenance departments have worked in a "vacuum" — isolated from the overall plant-wide picture. The only way an organization can successfully capture return on investment from its predictive maintenance efforts is by examining the overall business strategy and plant operations. By combining production asset data and strategically deploying maintenance resources, maintenance organizations can take the lead in enhancing operational efficiencies.

As condition-monitoring equipment gathers information at the machine level, the information is routed through the computerized maintenance management systems (CMMS) and then shared at the enterprise asset management (EAM) and ERP levels to improve company-wide decision-making. Individually these tools provide benefits, but together they build on each other to produce a comprehensive plant asset management solution. Successful integration and interoperability of asset management tools allows organizations to effectively manage capital investments and knowledge, including inventory

management, preventive and predictive maintenance, repairable parts planning, warranty tracking, scheduling and procurement.

This is where a company can realize significant gains in operational efficiency. Linking condition-based monitoring data and predictive maintenance as part of a total plant asset management program enhances information flow, improves decision making, lowers overall operational costs and increases return on assets.

CONCLUSION — WE ARE ALL IN THIS TOGETHER

Achieving operational efficiency is a goal that cannot be accomplished by an individual or a single department. Everyone on, or interacting with, the maintenance team — both internal and external — has an important role to play. Each individual can significantly improve the company's financial position through better operational efficiency practices.

It all starts with reassessing your maintenance schedules and knowing how to effectively perform maintenance. It continues with a clear understanding of operational processes and collaboration with other business processes. In the end, it is about being more strategic with your resources through better scheduling, better use of time and more effectively using the capacity and resources you have.

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