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Success factors for a business-based approach

While most maintenance professionals understand the untapped value hidden in plant assets, making the case to corporate leadership for maximizing these assets is an ongoing battle. Perhaps the biggest problem with maintenance is its historically negative image that prevents it from getting the respect it deserves. As a result, maintenance is often excluded from the corporate business planning process.

Nevertheless, maintenance remains one of the few business areas where even a modest improvement can provide significant increases to company profits. Therefore, it might be assumed that gaining management support for maintenance initiatives would be easy. Instead, when maintenance presents its case, it is often met with indifference and detachment.

How does an organization move from an emergency-mode, fail-and-fix environment to a culture of predict and prevent? Management has to be convinced that maintenance is a critical business center that deserves prominent strategic consideration. A well-conceived plan is necessary to do this.

Developing a strategic plan

No company would attempt to operate without a viable business plan—the same applies to a maintenance department. As a strategic roadmap, the maintenance plan should accurately assess the current situation, outline what will be achieved, and explain how results will be shown. The plan should include documentation that supports the business case and demonstrates clear, measurable benefits. It should effectively articulate what will be accomplished and how the activities will relate to the underlying business goals. Finally, the plan should be logical, results-oriented, and have a strong sense of urgency.

Managing assets strategically requires that every organizational function work toward the same goals. Achieving organizational alignment requires building a case that motivates every level of the organization to become involved. This means constantly communicating and demonstrating the benefits of the strategy.

Equally important is the goal itself: the simpler, more focused, and more inspirational the goal, the greater the chance it will be achieved. Once a shared vision is established, this cohesiveness should lead to positive financial results, continuous improvement, and

breakthroughs in creating value.

Which direction should the plan take? More specifically, what kind and how much maintenance should be done? The tactical direction of the plan should be based on critical departmental data, which often resides in isolated information banks. Understanding what data is available and where it resides provides a good grasp of whether current systems are delivering the needed capabilities.

One of the basic principles of effective maintenance planning is determining the right tools for the job based upon the goals and tasks to be achieved. A computerized maintenance management system (CMMS), for example, offers an effective platform for sharing data across departments, streamlining reporting and event tracking, and helping maintenance focus on the right objectives.

Assessing needs

Before proposing any investments, first conduct a broad-based assessment of the maintenance and engineering processes, as well as any activities that support manufacturing. The assessment should identify performance issues, establish baseline metrics, and outline recommended corrective actions, such as increased machine availability, reliability, and safety, which can be implemented through maintenance initiatives. This methodology also provides the metrics needed to present the value of maintenance to management.

The assessment should highlight the most critical assets and identify any factors that inhibit equipment or operator performance. When evaluating equipment criticality, managers also must consider both the probability of failure and the consequences associated with it. This allows managers to align resources to provide more attention to high-risk assets and fewer resources to low-risk assets.

Considerations are given to the environmental conditions and maintenance history of equipment to produce a mean time between failure (MTBF) report that predicts how long each component should last, given its performance history and current working conditions. An asset evaluation provides recommendations for inventory levels to ensure that all critical parts are available when needed and excess items are minimized. Companies then can make informed decisions based on calculated maintenance needs and determine opportunities for improvement in spare parts inventory.

Benchmarking is another tool managers may use to assess maintenance levels compared to organizations of similar size and function. Keep in mind that benchmarking provides baseline comparisons with companies whose practices may or may not be more effective than yours. Moreover, with benchmarking, the practices under comparison are largely tactical and seldom reveal any measurable progress or change in a company's financial performance.

Integrating the maintenance function

The ability to integrate maintenance with the rest of the enterprise is a key ingredient of a proactive strategy and is critical for long-term success. Only recently has the technology been available to reliably provide the integration necessary to leverage information across the enterprise. Open communication networks and advanced software platforms allow companies to improve flow of information throughout the plant in a cost effective manner, making the connection from CMMS to production, scheduling, and procurement.

For example, planning long-term shutdowns for capital repairs requires an understanding of long-term sales and operations planning. Likewise, the plant supply chain needs to consider and integrate the maintenance function in order to be responsive and proactive. This requires rethinking how maintenance functions are executed in an organization as well as providing support through integrated systems that unite the data requirements across plant-wide systems and processes.

Case study: Continental Tire

Continental Tire is a good example. As the fourth-largest tire manufacturer in the world, Continental Tire North America makes nearly 10 million tires annually. At the company's Mount Vernon, IL plant, a steady flow of materials and strong inventory management are required to ensure maximum production efficiency.

Realizing the importance of streamlining its inventory and parts repair management process, the company implemented a comprehensive asset management program to improve equipment reliability and reduce escalating repair costs. Integrated inventory tracking helps consolidate repairs and track overall repair rates to identify areas where efficiencies can be built into the process. For instance, if a pattern of repairs occurs on a particular machine over a period of time, storeroom managers work with maintenance engineers to find the root cause of equipment failure.

“ We’ve learned to take an active role and develop creative solutions to address key issues,” said Ed Stoller, plant manager and head of engineering at the facility. “For instance, after evaluating a large volume of repairs and finding a correlation between repairs and increased inventory of spare parts, we knew we needed to reduce machine failures. We identified one of our repair vendors as the source and began to test part repairs before sending them to the plant floor. The solution enabled us to maximize our warranties and dramatically cut our maintenance expenses.”

Maximizing external resources

Maintenance departments often struggle with finding enough internal capacity to handle all their responsibilities. According to the “2002 Maintenance and Reliability Survey” conducted by Rockwell Automation and MAINTENANCE TECHNOLOGY, limited manpower (53 percent) and budgetary constraints (47 percent) are the two most common barriers that keep companies from implementing more comprehensive asset management programs.

By leveraging external resources to support noncore functions, companies can more effectively maximize their production assets and quickly adapt to changing business conditions. Whether applied across an enterprise or focused solely on maintenance, a collaborative strategy is preferable to reactive quick fixes, which are more expensive and less effective over the long term.

In practice, a collaborative maintenance strategy can include on-line condition-based or real-time process control monitoring; direct access to technical assistance, organization, or procedural changes; customized employee training; storeroom management; and onsite support or enterprise asset management integration tools. However it is implemented, the strategy is designed to isolate performance inhibitors and identify the main factors vital to productivity performance.

Case study: Air Liquide America

Air Liquide America, a leading supplier of gasses to a wide variety of industries, is expanding the scope of its predictive maintenance using condition-based monitoring to help reduce maintenance costs and improve uptime at its U.S. gas production facilities. The condition-based monitoring equipment enables the gas supplier to remotely monitor critical machinery and equipment.

Since the majority of its facilities operate automatically or with a single technician, the

company lacked sufficient resources at each site to effectively use the information gathered from the equipment. The collected data now goes to a single location where the company uses outside experts to analyze the information, identify developing faults in equipment, and correct them before they impact production or safety. The centralization of the data allows the company to monitor for machinery trends or recurring equipment failure across all of its sites.

Measuring the value of maintenance

Developing a set of methodologies for measuring and communicating the return on investment is the final step in any well-built maintenance plan and will further support the case for new initiatives. To ensure success, agree with management up front on how performance will be measured. For example, while management and maintenance may both measure equipment availability, inventory turns, uptime, and meeting production goals, management may focus on production per unit of maintenance or uptime.

The number of parameters that can be measured in a plant is broad. However, when it comes to developing a strategic plan, less is more because the more indicators, the greater the risk that two or more will be contradictory. Then a significant amount of time and effort is spent trying to reconcile the differences, which distracts from the main task of improving performance. For maximum effectiveness, use a small number of easily understood measures that are relevant, timely, and tie closely with business goals.

Perhaps most importantly, the metrics have to be controllable by those who are being held accountable for performance. The strongest performance measures are owned by those who can influence performance and use them effectively to drive performance improvements.

The quality of effectiveness, such as the cost of downtime as a result of unreliable equipment, needs to be measured to get a true picture of success. The performance measures should reflect how the maintenance department is providing value.

Where to place maintenance efforts can be quickly determined by measuring the production value of downtime. This enables a more accurate focus on the planning process by identifying what costs the most. What are the patterns? Where should efforts be focused?

Return on assets (ROA) is another key indicator used to measure the impact of maintenance

activities. ROA is a calculation of how well a company converts assets to sales and, therefore, profits. By definition, an asset is anything that has value. However, large numbers of assets tie up cash, increase the expense of carrying inventory, and reduce profitability. Improving maintenance can positively impact all sides of the ROA equation. This, in turn, can drive a company's stock price and ultimately determine shareholder value—a metric that corporate leaders are sure to understand.

In considering a measurement strategy, keep in mind that a key factor in the success of the plan is its ability to deliver early, tangible results. It is not advisable to design a plan that requires a major up-front investment, but offers no evidence of improved performance until full-scale implementation is in place. It is important to come up with a series of short-term, easy-to-demonstrate wins. Promoting these wins as they happen can build momentum and support for the plan.

While a well-crafted maintenance plan will not solve all problems, it does provide a credible platform and the supporting documentation needed to be a full partner in the business process. More importantly, it widens accountability for financial performance from the top floor to the plant floor—a trend that is certain to pay dividends. **MT**

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