Most large plants invest hundreds of millions of dollars in capital assets. Effective management of these assets has a significant impact on both the balance sheet and income statement. While many organizations today are beginning to realize the massive amount of untapped value hidden in plant assets, until recently, maintenance was often overlooked during the corporate business planning process.

"From a financial perspective, it is difficult to reconcile management's hesitancy to acknowledge maintenance as a viable business function," said Mike Laszkiewicz, vice president, Rockwell Automation Services & Support. "After all, proper maintenance underscores a basic business principle: increased equipment reliability will lead to increased production and ultimately more product revenue potential."

For more than 20 years, Laszkiewicz has been working with manufacturers of all sizes to help them identify solutions to improve production values like output, quality, time to market and cost. Although manufacturers are becoming more aware of the pivotal role plant asset management plays in improving business performance, many still fail to take the action needed to fully capture the benefits.

"As I talk to manufacturing executives, plant managers and maintenance managers around the world, I'm often asked what can companies do to stay competitive in today's global economy," said Laszkiewicz. "After they describe their business drivers and manufacturing processes, the first question I ask them is, 'How is your maintenance strategy linked to your company's overall business goals?' Their answers reveal a lot about how they view maintenance within their organization and whether or nor they are focusing their efforts in the appropriate areas."

Laszkiewicz says that in the last 18 months there has been a significant increase in the number of companies that have begun to shift their perception of maintenance — from one that sees it as a necessary expense, to one that views it as an opportunity to increase profits. The key, he believes, is getting management to think beyond the reactive, tactical approach to maintenance of ten years ago and look at it from a strategic, long-term, business-level perspective.

Houghton LeRoy, director of consulting enterprise applications for ARC Advisory Group, agrees.

According to LeRoy, poor understanding of the issues at stake and a lack of the right metrics are two fundamental reasons management has often discounted their maintenance operations as overhead. "Historically, maintenance has been viewed as a liability and a cost center, and manufacturers were largely apprehensive in terms of making the initial investment of time and money to implement proactive programs," LeRoy said. "However, when companies begin to view their maintenance activities in the context of a continuous improvement strategy, (instead of simply a repair strategy) they'll be able to more easily connect these activities to improvements in productivity, competitiveness and the overall bottom line."

Both Laszkiewcz and LeRoy believe that with the vast amount of a capital companies have tied up in fixed plant assets, they must evaluate and consider ways to maximize the return on these assets while optimizing production availability. In recent years, advancements in technology and new tools and specialized services are helping to dramatically improve maintenance functions, optimize performance and enhance profitability.

So how does an organization transition from a reactive, cost-focused maintenance approach to a more profit-oriented, strategic approach? Leading industry experts, like Laszkiewicz and LeRoy, agree that companies must first identify their performance and profitability goals and then develop a strategy that's a ligned with these goals. By measuring the impact of maintenance initiatives against defined production and business goals, companies can better justify the value of their efforts and are able to realize just how central maintenance activities are to an organization's profitability.

Developing a Maintenance Business Strategy

While it's nonsensical to think that any company would attempt to operate without a viable business plan, the same goes for a maintenance department. In order to build an effective maintenance strategy, it's important to first have a clear picture of what your maintenance needs are, as well as what and where your current maintenance costs are. This requires a broad-based assessment of your maintenance and engineering processes, as well as any activities that support the manufacturing process. The goal is to identify any factors that inhibit equipment or operator performance.

"Because the individual needs and maintenance dynamics are different for each customer, our philosophy is that you have to first understand and identify any threats to productivity," said Laszkiewicz. "Once identified, we work with the customer to develop strategies that

reflect the appropriate mix of predictive, preventive and reactive techniques necessary to protect and improve productivity while reducing overall costs. In some instances, this may mean implementing programs to reduce employee turnover, improve technology training, or engaging an outside service provider for assistance with routine maintenance activities."

The assessment process identifies performance issues, establishes baseline metrics and outlines recommended corrective actions that can be implemented through maintenance initiatives (such as increased machine availability, reliability and safety). Moreover, this methodology provides the critical documentation needed to demonstrate the value of specific maintenance activities.

"The objective is to fully understand your priorities and expectations so that you can define a support program that will provide the best return," said LeRoy. "Solid metrics enable you to justify your investment, and can be used as evidence to convince management and employees of the need for change. Metrics also enable you to set clear goals for change."

LeRoy suggests that companies use their initial site assessment to formulate a clear strategy. "Once you've established your baseline, you can compare it against a benchmark," he says, adding that companies should set their goals higher to achieve more. "One of the biggest mistakes many companies make is they measure against their own personal goals as opposed to world class benchmarks from other companies."

What companies need to do, LeRoy explains, is strive for the ideal situation and keep measuring themselves against best practices and continuously improve. Even if companies lack the resources to implement maintenance changes, other options exist. For example, by engaging the services of outside partners to support non-core functions, manufacturers can maximize their production assets, cut expenses and adapt quickly to changing business conditions.

The Human Element

When maintenance is viewed from a business perspective, its scope isn't confined to physical assets — it also encompasses the human assets of an organization. According to Laszkiewicz, a key component of the maintenance assessment that is often overlooked is

analyzing and identifying how well employees are performing their responsibilities and job assignments.

The goal of the personnel assessment is to identify key maintenance team strengths and determine what areas might require additional support. At the engineering and maintenance level, this may mean looking at competencies, readiness levels, recruiting and/or hiring methods, and policies for retaining staff. Such information is also useful in recruiting and selecting the best people for each skill profile.

"In today's high-tech world of industrial automation, it has become increasingly important for companies to closely match employee skill levels with the specific needs of the equipment and processes for which they are responsible," says Laszkiewicz. "By continuously improving your most valuable resource — the skills and knowledge of your employees — you reap the maximum value out of your people, equipment and processes."

Laszkiewicz suggests assessing employee performance levels to both identify maintenance team strengths and weaknesses, and determine the best possible methods of training. He advises companies to establish performance metrics that employees themselves can control. "The short-term benefit of investing in people is identification of opportunities throughout the organization," Laszkiewicz said. "The long-term benefit is putting processes in place that improve productivity."

Moving Towards Prevent and Predict

Laszkiewicz stresses that a maintenance strategy should be customized to the requirements of the application and contain an appropriate mix of predictive, preventive and reactive activities. Even though companies are moving towards more proactive maintenance activities that deliver increasingly more significant ROI, "things will always happen." As a result, maintenance will always have a component that is reactive in nature.

In applications where the criticality of the equipment and the impact and cost of unplanned downtime and quality are high, a maintenance strategy that incorporates a number of preventive or predictive components offers numerous advantages.

Case in point: A leading paperboard packaging producer has achieved impressive results after reassessing, and subsequently restructuring, its maintenance approach several years ago. The company's Louisiana paper mill, which is the largest of four, produces high quality carrier and paper board for beverage packaging. To help reduce maintenance costs and improve uptime, the mill implemented a condition-based monitoring program that provides the plant with ongoing monitoring of critical machinery.

One of the core technologies the company uses is thermal imaging. Since nearly everything gets hot before it fails, using infrared imaging enables personnel to make well-informed judgments about the operating condition of electrical and mechanical components. To better maximize its production assets, the company contracted with Rockwell Automation to provide preventive maintenance planning, on-site support and information analysis. Information gathered from the machinery is channeled into a single location where Rockwell Automation experts analyze the information, identify developing faults in equipment and identify corrective activities that address the problem before production or safety is negatively impacted. The mill currently runs at 98.7 percent uptime, which management believes is about two percent better than industry standards. More importantly, however, this two percent equates to nearly a million dollars a year in production revenue for the company.

According to Laszkiewicz, Rockwell Automation has found that typical savings from a preventive maintenance program include a minimum total reduction in unplanned downtime, scrap and maintenance costs of 25 percent in the first year, with payback periods of less than four months. Many companies experience even better results, reducing unplanned downtime 50 to 95 percent in the first year. In fact, some companies that have had preventive maintenance programs in place since the equipment was installed have experienced only minimal downtime.

Justifying Your Efforts

To gain company support for your maintenance efforts, they should be presented in terms of long-term benefits (such as reduced downtime) and the overall impact they will have on company goals (such as maximizing uptime to boost profits).

In considering your measurement strategy, keep in mind that a key factor in the success of

your plan is its ability to deliver early, tangible results. One thing you should try *not* to do is design a plan that requires a major up-front investment, but offers no evidence of improved performance until full-scale implementation is in place. Therefore, it's important to come up with a series of short-term, easy-to-demonstrate wins. By promoting these wins as they happen, you can build momentum and support for the plan. Unless tangible benefits can be achieved early, previously enthusiastic supporters can become skeptical about whether the changes can, or ever will, be achieved.

In general, a maintenance strategy takes about six months to gain momentum, and ROI results will surface between one and two years, LeRoy said. Otherwise, something is wrong. "If you've focused on your critical issues and conduct the right performance measurements, there's no reason why a ROI isn't possible," he said.

A well-crafted strategic maintenance plan allows the maintenance organization to become a full partner in business process improvement and key contributor to increased profitability. More importantly, it widens accountability for financial performance from the top floor to the plant floor - a trend that is certain to pay long-term dividends, while helping to change the view of maintenance from a cost-draining liability to a bottom line-boosting opportunity. **MT**