



Strategic Asset Management: Getting More Out of Less

*Lower risk, reduce costs,
improve performance and
gain agility*



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Strategic Asset Management: Getting More Out of Less:

Lower risk, reduce costs, improve performance and gain agility



Regardless of where a manufacturer competes in today's global economy, two factors underlie its strategy: A relentless push to reduce costs and an equally relentless focus on customers' current and future needs. Savvy manufacturing leaders are increasingly turning to optimized machine performance to manage both pressures – and to boost profits. The bottom line? Strategic management of machinery assets is now a *must* for manufacturers in a highly competitive, often-unpredictable global economy.

Leading manufacturers have always focused on optimizing machine performance. For example, U.S. and Canadian manufacturers closest to world-class manufacturing status generally exhibit better equipment performance, as well as greater equipment-performance improvement over the past three years (see *table*).¹

World Class Seek Better Equipment Performance (performance by progress toward world-class status)

Machine availability

	No Progress	Some Progress	Significant/Full
Median	87.5 %	85.0 %	90.0 %
Mean	79.3 %	79.4 %	80.2 %

Operating equipment efficiency

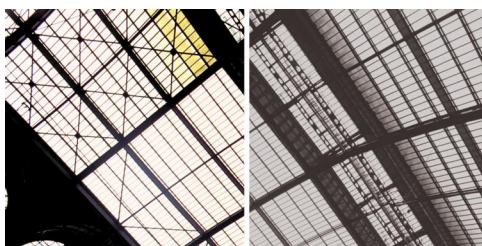
	No Progress	Some Progress	Significant/Full
Median	80.0 %	80.0 %	85.0 %
Mean	71.8 %	75.3%	81.8 %

Machine availability three-year improvement

	No Progress	Some Progress	Significant/Full
Median	0.0 percentage points	3.0 percentage points	4.0 percentage points
Mean	1.4 percentage points	5.5 percentage points	5.3 percentage points

Operating equipment efficiency three-year improvement

	No Progress	Some Progress	Significant/Full
Median	0.0 percentage points	5.0 percentage points	5.0 percentage points
Mean	2.8 percentage points	7.6 percentage points	8.9 percentage points



1. *IndustryWeek/Manufacturing Performance Institute 2006 Census of Manufacturers and 2006 Canada Manufacturing Study*, sponsored by MPI and *Advanced Manufacturing* magazine.

What is Strategic Asset Management?

Strategic asset management seeks the potential for market advantage within a firm's hard assets — transforming them from production machinery and equipment into competitive weapons. A manufacturer's strategic assets can include information technology (IT) systems, transportation fleets, energy-producing equipment and other capital investments; strategic asset management encompasses activities that touch them all, ranging from business intelligence data-gathering to MRO efforts, and from continuous-improvement goals to IT solutions.

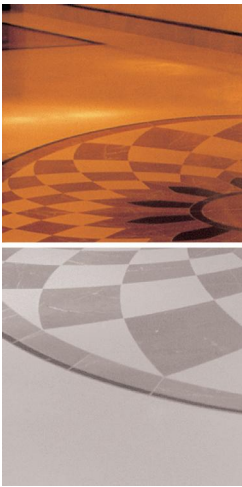
Strategic asset management also often involves outsourcing some or all maintenance or management activities to an equipment or IT systems provider. Many of these vendors have recognized the need for their customers to focus on core competencies while getting more from their plant equipment; these suppliers are creating new service divisions and programs to support plant equipment for their customers from installation to decommission.

It's important to note that any or all goals associated with production equipment can fall under strategic asset management: purchasing (both individual machines as well as parts), maintenance and parts management, performance measurements, energy consumption, safety, monitoring, continuous improvement and flexibility (i.e., changeovers, availability, customization). (See *Strategic Asset Management table*.)



Strategic Asset Management		
Goals	Benefits	Drivers
Lower capital investment	Reduced costs, increased profitability	Longer machine and parts life; more informed purchasing decisions, better utilization of warranties
Improved uptime	Higher throughput; safer environment; protection of profit margins	Preventative maintenance; less reactive "firefighting" maintenance
Enhanced customer experiences	Speed and flexibility; sales and profitability	More reliable machine performance; easier customization of equipment and production scheduling; better quality and on-time delivery rates
Lower operating costs	Reductions in staff, training costs, machine breakdowns, scrap and inventory	More predictable labor planning or outsourcing of machine maintenance; better accounting of parts; outsourced inventory of parts; better process control
Support continuous improvement	More level production and easier root-cause analysis	Standard processes, level material flow, a wealth of data to review root cause of failures





Key Performance Indicators for Strategic Asset Management

Equipment and machinery is a significant investment in every manufacturing company, and as the pace of automation increases, so, too, does the size of that investment. U.S. manufacturing technology consumption was \$3.89 billion in 2006, up 26.8% compared with 2005, according to data from the Association For Manufacturing Technology (AMT) and the American Machine Tool Distributors' Association (AMTDA). And investments were up in every region of the country, some by nearly 50% (see *U.S. Manufacturing Technology Consumption chart*).

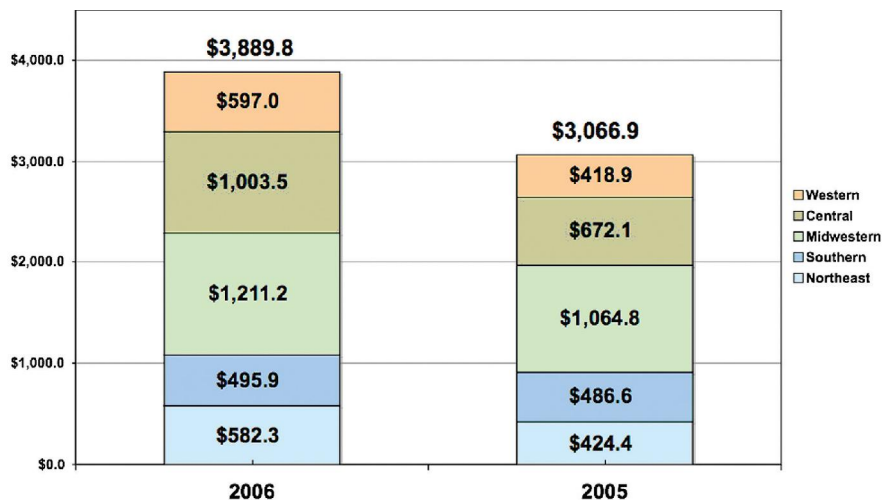
With that size of expenditure and because machinery performance affects virtually every aspect of production, it's little wonder that manufacturing leaders are using strategic asset management to achieve their most demanding objectives, aligning key performance indicators (KPIs) to those objectives. Four common objectives for manufacturers illustrate how strategic asset management supports critical goals and KPIs:

- **Customer service:** Core to any successful strategic asset management program is the ability to gather and analyze in-depth data about capabilities, costs and capacity — knowledge that can make a company a better supplier when customers need new and different products and services. Having adequate information about machinery resources means quicker and more confident responses to customers' changing needs. Strategic asset management also allows for easier customization of equipment to meet customers' needs.

Typical customer service KPIs impacted by strategic asset management include:

- o Customer-retention rate;
- o On-time delivery;
- o Order-to-delivery cycle time;
- o Customer rejects; and
- o Warranty-cost ratios.

U.S. Manufacturing Technology Consumption²

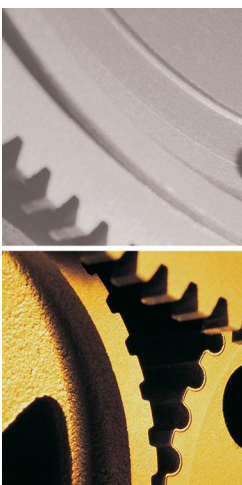


- **Employee safety:** Having a dedicated focus on strategic asset management — whether through the hiring of full-time staff or outsourcing — demonstrates a commitment to safety. Strategic asset management providers help to assess both equipment safety and adherence to regulations. They are also critical in ensuring safe upkeep of equipment; one of the goals of strategic asset management is seamless machine uptime as needed, so that parts are replaced before they fail — which translates into a safer plant. (Monitoring and replacing parts on a regular schedule takes less time and effort than repairing a machine cobbled together intermittently.) Additionally, should an accident occur, the wealth of data that strategic asset management supplies can help to pinpoint a cause, document what happened and suggest a solution.

Typical employee safety KPIs impacted by strategic asset management include:

- o Warranty-cost ratios;
- o Injury rates;
- o OSHA compliance/non-compliance;
- o Lost-time accidents; and
- o Near-miss incidents.

² "Manufacturing technology consumption up 26.8% in 2006," AMT — The Association For Manufacturing Technology and AMTDA, the American Machine Tool Distributors' Association, Feb. 12, 2007.



- **Profitability:** Strategic asset management can protect profit margins by delivering consistent and predictable machine performance. Plant managers can take a proactive approach to budgeting high-cost equipment replacements because they have better lifecycle data; the same is true for parts and services. Also, unstable machinery can drain the profit out of even the most lucrative of contracts, because suppliers can't pass machine-failure costs on to customers. The same is true for machinery with good uptime but bad performance; quality will suffer, and profit margins will be eroded by scrapped parts or lost business.

Typical profitability KPIs impacted by strategic asset management include:

- o Costs per unit;
- o ROA;
- o Quality measures;
- o Projected vs. actual cost ratios; and
- o Machine uptime (as a percentage of scheduled uptime).

- **Growth:** As manufacturers and their outputs grow, they must consume idle capacity, get more from current capacity or invest in new capacity. This raises questions for many manufacturers: Can our plants take on this new work right now? Where does it make sense to invest in new capacity and machinery to cost-effectively grow? Which industrial machinery supplier serves our needs the best through this growth phase? Does it make sense to grow by outsourcing this work? A strategic asset management program can be the source of data to answer these questions with authority, enabling more informed enterprisewide decisions about facility and equipment lifecycle management and helping corporate leaders to manage their portfolios of plants, machinery and capital investments to meet top-level goals. In addition, asset management partners can often help ease the sting of new-equipment investments necessary for growth through custom lease and ownership packages.

Typical growth KPIs impacted by strategic asset management include:

- o Market share;
- o Product development cycle time; and
- o Time-to-market for new products.

Best Practices for Strategic Asset Management

Strategic asset management varies based on industry, company size, capital investment, corporate goals, etc., but there are recognized best practices that apply to all:

Spread solutions to suppliers to leverage purchasing power:

Unless a plant contracts for an all-encompassing strategic asset management solution from one supplier, it will have multiple parts and equipment suppliers. Conversely, having one supplier offers another opportunity for total-cost savings because the purchasing process is streamlined and prices can be predetermined. Ocean Spray, for instance, has reduced the purchasing process with key machine-parts suppliers from 12 steps to four, and in some cases has completely automated the process. For example, when a maintenance technician creates an order for a part, the company's computerized MRO system automatically checks available inventory for the part. If it's not in stock, the system automatically creates a purchase order with a prenegotiated price and sends it directly to the key supplier, which also benefits by having a more seamless process.³

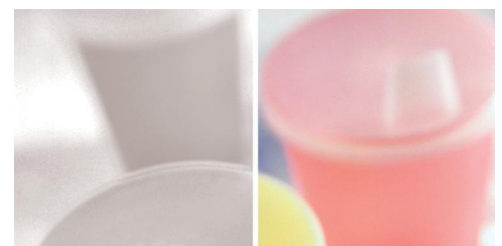
Manufacturers that choose a more all-encompassing outsourced solution also will save on replacement parts and equipment. For instance, a Continental Tire plant in New York was able to reduce electronic repair costs on its machinery by 30% and increase use of warranties on parts to 100% of available coverage after it partnered with a longtime equipment supplier to provide strategic asset management. Supplier Rockwell Automation developed a new inventory-tracking and warranty-tracking system for parts that helped stop escalating costs:

- Storeroom managers started using label tags and barcodes to track parts and equipment.
- When maintenance personnel request a part, they fill out a tag that specifies the use of the part, where it should go and the identity of the individual who checked it out.
- Barcodes are used to track repair rates, vendor warranties, and to indicate if the storeroom needs to order replacement parts.⁴



³ "Ocean Spray Squeezes Efficiency Out of Asset Management Using MRO Software's Solutions," MRO Software (www.mro.com).

⁴ "Continental Tire Reduces Repair Costs 30 Percent; Increases Warranty Utilization Rates 100 Percent," Rockwell Automation (www.rockwellautomation.com).





Utilize preventive maintenance, and progress toward predictive maintenance: At many plants, the first benefit strategic asset management will bring is a reduction in *reactive* (unplanned) maintenance and an increase in *preventive* (planned) maintenance. Ultimately, data gathered during preventive maintenance should allow for *predictive maintenance*, allowing managers to pinpoint when a machine will become obsolete by evaluating total cost of operation vs. the cost of replacement or upgrade.

One company that has benefited from predictive maintenance is Ocean Spray. The U.S.-based producer of juices has been using a software solution from MRO Software (an IBM Corp. company) for strategic asset management of its more than 24,000 pieces of processing equipment and delivery vehicles for nearly 20 years. One of the goals of the company is to better plan its capital expenditures. A key piece of their strategic asset management program involved gathering exhaustive historical maintenance data (e.g., work-order costs); this subsequently enabled the company to justify the purchase of a servomotor-controlled system, which has reduced downtime by 90% and saved \$190,000 over two years.⁵

Use strategic asset management to make smart growth decisions: Strategic asset management data helps to make decisions that foster growth. A manufacturer with a sophisticated asset management strategy can use it to simultaneously *grow* and *contain costs* by maximizing assets and capacity. For instance, at one leading manufacturer of household goods, turning asset management over to a company that specializes in it enabled the manufacturer to increase production from 3,584 to 4,286 units per day. A proactive approach to maintenance reduced costly reactive maintenance from 93.78% to 54%, and downtime dropped from 79.5 to 38.8 hours per month. The result: Backorders fell from 80 units per month to 23 units per month.⁶

Another example is a leading European automaker using strategic asset management practices to increase output by 53% over three years using existing capacity. The plant achieved this by tying its strategic asset management plan to two corporate goals — growth and cost reduction. The automaker's managers defined their value stream (car production) and identified production assets within it — 60% of production equipment was in the body shop; 30%

was in the paint shop; and 10% was on the assembly line. They then correlated demand to the assets, and were able to determine which assets added the most value and were, therefore, most critical in the value stream. This exercise gave them the insight that as they grew, demand would fall unequally upon plant machinery and that a strategic asset-management plan should reflect that. They also used data gathered from their asset-management software to practice preventive maintenance, achieving cost savings by reducing stoppages that were cutting directly into bottom-line profits (uptime increased from 93% to 96.4%).⁷

Align strategic asset management metrics and practices to sector and/or regulatory needs: This prevents wasteful application of strategic asset management, such as excessive data collection or too-frequent maintenance scheduling. For instance, a pharmaceutical manufacturer will have different data-gathering and maintenance needs than a maker of injection-molded parts. Some of the data the two collect may be the same, but not *all* of the data. Another example is monitoring: it makes more sense for a utility plant that has equipment running 24 hours a day to invest in remote monitoring than an auto-parts plant that runs just two shifts, five days a week.

In planning its preventive maintenance schedules, Kraft Foods Inc. determined that sanitation of the equipment didn't need to take place daily — because regulations focus on containment thresholds, not daily practices. In contrast, Kraft constantly monitors its packaging machinery for optimization because packaging is crucial to adding value to its products, which need to arrive in customers' hands looking attractive and intact.⁸

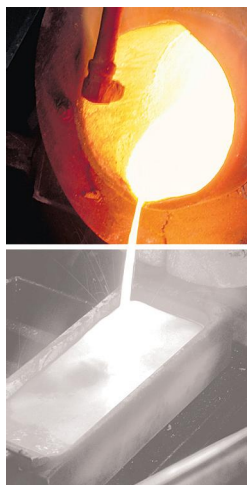
Determine comfort levels in sharing information and relinquishing control: Manufacturers usually engage some level of outside support in strategic asset management. This could be in the form of purchasing a software solution with limited consultation or completely outsourcing all asset-management activities. Savvy executives have a solid understanding of internal capabilities and risk tolerances before determining which route to choose. For example, a plant with standard equipment might be more willing to outsource total control of that equipment than a plant that has invested heavily in customized equipment.

⁵ "Ocean Spray Squeezes Efficiency Out of Asset Management Using MRO Software's Solutions," MRO Software (www.mro.com).

⁶ "Case Study: Manufacturer of Household Durables Doubles Output," Advanced Technology Services Inc. (www.advancedtech.com).

⁷ "Pushing the Production Line Towards Maximum Efficiency," MRO Software (www.mro.com).

⁸ "Rockwell Automation's Partnership with Kraft, Profitability with OEE," ARC Advisory Group (www.arcweb.com), January 2003.



Industrial components manufacturer Eaton Corp. has been aggressive about outsourcing its plant-equipment management. In several plants, it hired Advanced Technology Services Inc., which in turn hired and trained many displaced Eaton machine technicians. Plants in both the fluid power and electrical products divisions credit the move with increasing uptime percentage by 10 to 15 percentage points.⁹ These moves make sense in a sector such as industrial components, where manufacturers' competitive advantage is shifting away from volume production and more toward serving customers' individual needs.

Overseas industrial equipment manufacturers often use distributors to extend their service offerings in foreign markets, creating strategic advantages to their customers. For instance, manufacturer Centauro S.p.A., Limidi, Italy, uses its distributors to respond to requests for machine customization. It recently partnered with a U.S. distributor and service representative to develop a hydraulic lathe with quicker template changeover times. This was in direct response to customer requests for quicker changeovers, according to the Ohio-based distributor.¹⁰

Strategic Asset Management: Where to Start?

For all of the benefits that strategic asset management brings, its application requires significant planning. In assembly or kitting-centric operations, where machinery such as conveyers are easily maintained and replaced, a sophisticated strategic asset management plant doesn't make sense. Similarly, manufacturers that derive most of their competitive advantage from proprietary processes and processing equipment, such as medical biotech manufacturers, should be particularly careful in determining how much they outsource while maintaining equipment engineering and maintenance benchstrength.

Strategic asset management makes the biggest difference in traditional industries dependent on expensive and complex equipment. Its emphasis on cost-cutting and customer service make it essential for competitive advantage. In such operations, the viability of strategic asset management can be determined and put in place as follows:

1. **Understanding the situation:** The first step toward building a strategic asset management program is assessing problem issues associated with equipment; be sure, too, that metrics are in place to fully understand the operation (KPIs) as well as specific equipment performance and maintenance tracking measures (or put these metrics in place if they don't exist).

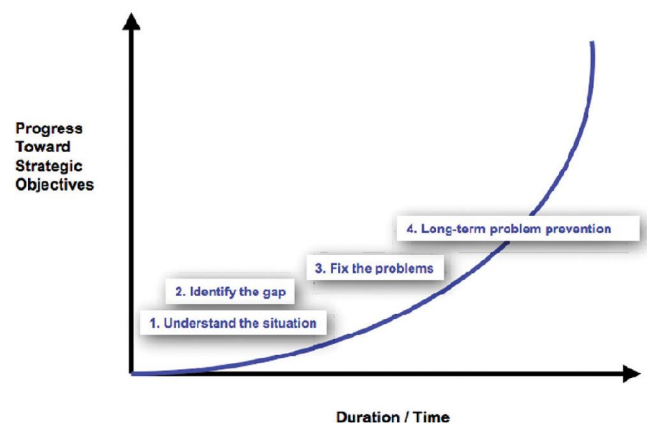
2. **Identify the performance gap:** Few if any operations run like clockwork, but you should know just how far you are from achieving your goals as an organization and the role that equipment plays in making or missing those goals (e.g., growth, profitability).

3. **Fix the problems:** Using a rigorous problem-solving approach (e.g., scientific method, PDCA), this short-term step will focus on closing the gap, often through the elimination of waste in order to reduce costs associated with maintenance, parts inventory and labor, but it can also address safety issues related with equipment if that is an ongoing plant concern. See the gap, close the gap. (The challenge here is having an organization culture focused on root-cause problem-solving.)

4. **Long-term problem prevention:** In this phase, begin preventive maintenance and establish procedures for parts inventory management and scheduled maintenance work. This should gradually improve material flow, overall stability, and, ultimately, quality. Also focus on making machinery work harder to support corporate goals. Manufacturers using strategic asset management eventually build a cache of knowledge about machine performance that helps to determine how to use that equipment for competitive advantage.



Moving Forward with Strategic Asset Management



⁹ Ilan Mochari, "Outsourcing the Handyman," *CFO*, March 6, 2004; and Tonya Vinas, "Big Changes in Benefits," *IndustryWeek*, Dec. 1, 2004.

¹⁰ "Partnering for Success," *Machines Italia*, Italian Trade Commission, Fall 2006.



As with any improvement program, strategic asset management will not solve problems overnight — you need to build up to it. Yet when you reach the stage where you can begin thinking about long-term problem prevention rather than firefighting and problem resolution, its results can be dramatic. In many industries, equipment is the lifeblood of producing goods; consider strategic asset management a wellness program for your plant equipment. Fix what hurts first, and then improve the ongoing health of patient with the goal of a longer, more stable and more productive life.

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