



Lean Manufacturing

How to Balance MRO Purchasing and Inventory Management

Don Sears | Nov 01, 2018

Is MRO inventory management an afterthought for your company? If so, you may be missing out on opportunities to impact the bottom line. What's the right amount of tooling and MRO supply inventory? We explore the balancing act.

Why are many companies so focused on applying lean manufacturing practices? To eliminate waste and positively impact the cost-efficiency of operations across machining and part-making jobs. Making quality parts that will deliver on time implies having the right MRO infrastructure, processes and tooling inventory in place.

Sounds simple? It isn't necessarily—especially if remaining competitive is important to your business. To be competitive, cost control helps.

According to a *study* that looked at the state of MRO practices, MRO purchasing has become more costly.

The Center for Supply Chain Research at Penn State finds MRO accounts for 5 to 9 percent of total indirect spend and "as much as 10 percent to 20 percent for pharmaceutical manufacturers and utilities." It used to be as low as 3 percent, but today's automation has made maintenance and repairs more complex.

But that complexity does not have to be a negative experience. The study contends that companies "are recognizing that they can turn MRO from a headache into an enabler of operational excellence that contributes to overall revenue and profitability."

Want to improve on-time delivery of parts? Read "From Supplier to Tool Crib: Mastering On-Time Delivery of MRO."

By the Numbers: The Center for Supply Chain Research at Penn State

A Penn State *study* separated companies that are leading the way in MRO from those that are evolving and trailing. The trailing group is much more deficient in MRO inventory management than the other groups. The leaders are in a much better state with their use of data and performance metrics. Other key metrics to note:

- 78 percent of leaders are managing MRO in-house
- 83 percent of leaders use master data management
- 70 percent of leaders evaluate the total cost of ownership
- Only 39 percent of trailers evaluate total cost of ownership

The researchers advise trailing companies to prioritize inventory management by first centralizing the management function and taking an integrated approach. They recommend:

- Using data-centric, predictive planning based on inventory analysis
- Aligning inventory planning with maintenance and operation goals
- Creating a detailed deployment and replenishment strategy
- Optimizing inventory networks for ROIC and operations and facility transfer support
- Developing KPI scorecards and continually measuring against them

The Balancing-Act Impact: The Value of Reliable Output From Lower Maintenance Costs

How often do you need to replace cutting tools, coolants and other regularly stocked metalworking, maintenance and component supplies? It will depend on operational demand and the need for having backup "safety" stock in place.

Keeping too much inventory can be costly. Keeping too little can be a risk to reliable production and make a manufacturer less competitive.

"Carrying more MRO inventory translates to higher inventory carrying costs but also likely higher service levels," notes Jill Jusko in the *Industry Week* **article** "The MRO Dilemma: Safety Stock vs. Service Levels."

Jusko interviewed Terry Wireman, a former consultant in maintenance process improvement at Vesta Partners, about the challenges of balancing inventory and maintenance needs. "Less inventory will reduce the carrying costs, but service levels could be in jeopardy," Jusko notes.

Yet, companies often completely miss the boat when it comes to understanding the impact of missing crucial part-making tools or components. These supplies are essential to keeping production levels flowing. In the Vesta **blog post** "Understanding the 'Impact' Cost of Reliability and Maintenance," Wireman asks manufacturers to imagine the very likely scenario where shipment and product demand is high and the shop is cranking at "sold-out condition" levels:

"If a production line or critical piece of equipment fails (unreliability) during the production run, the production is halted until the equipment is repaired and returned to service (reactive maintenance). What did the production disruption cost the company? Was it the total lost sales dollars or was it only

the profit that was lost?"

Think about it: Not only are profits potentially damaged, but there are costs associated with scrambling to get machines back up and running. If you don't have excess labor and machine capacity, there will be overtime labor and additional energy costs. Deliveries may be impacted. Orders may be filled by competitors.

Operational reliability really matters. Wireman goes on to describe how investors look at the return on invested capital, or "ROIC," as a key competitive indicator for comparing companies. Essentially, he contends a company with more reliable output and lower maintenance costs is a more attractive investment.

"This is the TRUE impact cost that companies must focus on to maintain a competitive edge," notes Wireman.

The Right Tooling Can Make an Impact

From super-strong tool holders to carbide cutting inserts to "through-the-tool" coolant distribution, there are countless options for using today's latest tooling innovations in metalworking to increase the life of tools and decrease setup times to help maximize productivity and throughput. Long-term cost-savings can be realized when innovative tools are paired harmoniously with best practices in inventory management.

However, MRO inventory management on the shop floor can be challenging. Some of the issues include tool and production tracking, capturing the history and traceability of calibration data, having accountability for tool use, and visibility into the cycles for regularly used parts, *finds* Rick Raber, a chief technology officer at Northern Apex Corp.

In a *Cutting Tool Engineering* article on ROI and tooling, Raber suggests there are some good options for helping overcome these challenges, including using a tool crib with employee scan cards or a vending machine. Vending machines are used "to dispense tools, keeping tools secure while freeing up labor hours since no one needs to man the tool crib and also ensures an accurate record of which employees have checked out which tools."

Raber concludes: "At any point that an individual is interacting with, counting or scanning a tool, there are opportunities for value to be captured and efficiencies to be improved."

Key to MRO Inventory Management Success: Measurement & Tracking

To be competitive, a manufacturer needs to know its own operation in great detail—which means tracking everything, including MRO supplies, and measuring inventory purchasing and usage. Supply Chain Management Review advises companies to develop key performance indicators focused on savings, cost and obsolescence in MRO.

"Some measures to consider might include days or months of on-hand inventory, the number of stockouts, the ratio of rush orders to replenishment orders, and rates of parts obsolescence," *notes* SCMR.

From there, improvements can be made. SCMR describes an example of a foundry that was able to reduce the number of \$500-plus purchase orders from a dozen a week to zero with better forecasting and more optimized part ordering in smaller quantities with more frequent deliveries.

But be prepared: Once you go this data and measurement direction, it will show many of the flaws in

MRO inventory management and cost control across different departments—whether in holding duplicate parts or paying extra for rush items from poor forecasting.

MRO Centralization: Simplify Purchasing, Introduce Tracking and Gain Cost Control

To introduce a bit more MRO inventory management discipline, supply chain, logistics and purchasing professionals advise going centralized. This also means having the MRO parts in a central location. If tracking and measurement are in play, digital technologies are key tools for capturing data and reporting.

“It is invariably more efficient to store MRO supplies in one central location per facility rather than keeping them in various unidentified locations,” notes SCMR. “It is crucial to have computer systems to track, manage, and control inventory. Armed with usage data and transaction costs, an organization can ‘right-size’ its MRO inventory in accordance with supply chain performance standards.”

Vendor-managed inventory, or “VMI,” is an area that has been successfully used in “mainstream supply chain management,” per SCMR. VMI comes in several flavors, including the use of third parties who are on-site helping to track and manage MRO inventory.

“This allows the customer’s staff to focus on their core functions, with the assurance that the MRO inventory is being managed properly by a trusted partner,” notes SCMR. “And it means that the supplier, given greater visibility of downstream demand, may be able to offer volume discounts that a maintenance representative at the customer would not have access to.”

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