

Proper Inventory Management Requires Sound Analysis and Technology

Bert Turner, Vice President for Intermat Solutions, IHS

All-too-true tales of the USD 15,000 bolt abound in inventory-heavy industries such as petroleum E&P. Normally affordable parts can become astronomically expensive, when they should have been in inventory, but were not, and need to be special-ordered, then rush-shipped halfway around the world to keep operations running, as thousands accrue in both direct costs and downtime.

Such situations are not unusual when maintenance, repair, and operations (MRO) inventory is poorly controlled. But applying sound technology and analysis can end this problem. Especially in high-cost times, and when oil and natural gas prices are volatile, managing excessive—but very controllable—inventory costs is paramount to achieving optimal financial performance.

For asset-intensive organizations, MRO inventory—the spare parts, materials, chemicals, and supplies that keep drilling operations running, such as valves, seals, pipe, pumps, bearings, motors, lubricants, solvents, etc.—makes up a significant portion of total enterprise spending and requisitions. This creates a key cost-savings opportunity, because reducing MRO inventory spend by even a couple percentage points can increase cash flow by millions of dollars. MRO spending-and-inventory analysis, or optimization, addresses these issues. According to a 2007 study by the ARC Advisory Group, MRO inventory control represents one of the top ini-

tiatives a company can take in terms of rapid payback. “Many companies appear to be wasting a significant portion of their MRO material inventory investment on redundant items,” the report noted. “Simply because they cannot recognize identical items that have been given different descriptions in material records. They likewise suffer costly downtime waiting for rush shipments of material that already resides in their storerooms and waste limited maintenance technician time searching ambiguous parts lists and returning (or worse, losing) parts that turn out to be something other than what they expected.”

MRO inventory is characterized by a large percentage of infrequently used items, pockets of items with consistently high demand, items with demand spikes (such as during shutdowns/overhauls), and critical insurance spares. Some interesting statistics on MRO inventory and spending:

- In most MRO inventories only 5% of items are frequently used. The remainder of the inventory is infrequently used, and future demand cannot be accurately forecasted using traditional methods.
- On average, less than 3% of items make up 80% of the annual dollar throughput.
- Capital tied up in excess, duplicate, and obsolete materials can be 20–30% of annual MRO spending.

Viewed another way, approximately USD 1 out of every USD 5 spent on MRO inventory is wasted, as those materials are excess or obsolete and may never be used. The inability to quickly access materials can add to extra labor costs as “wrench time” is replaced with too much “find the missing part” time.

MRO Spending Analysis

To perform an effective, comprehensive, and auditable spending analysis, structured and complete data are essential. A prerequisite to such analysis involves data scrubbing and rationalization to uncover valuable information, such as revealing where the same part might be being purchased from different suppliers at different prices. Without cleansing and standardizing data before conducting the analysis, it is not possible to analyze and compare inventory and spending effectively.

Once the data are scrubbed and rationalized, in-depth analysis can be undertaken to determine:

- The MRO inventory to be carried for each item
- Ways to identify hazardous MRO chemicals and replace them with lower-cost “green” alternatives

Bert Turner is Vice President for Intermat Solutions for IHS. In this role he supports the IHS Intermat Solutions business unit and develops and maintains key global accounts. In addition, he collaborates with the IHS senior management team in determining Intermat Solutions’ strategic direction. Prior to joining Intermat, he was the Senior Business Development Manager for SAT Corporation, a Houston-based field-force automation software company. In addition to managing several Fortune 100 accounts in the oil and gas sector, he initiated and managed key partnerships with IBM, Accenture, CSC, Invensys, and SAIC. Turner also served as Senior Vice President, Sales and Marketing, for iPath Solutions, a Houston-based e-business consulting firm. Before that, Turner was Vice President of Global Shop Solutions, an ERP software firm. Bert earned a BBA degree from Baylor University, with a double major in management information systems and quantitative business analysis.

- The true lead time for each item
- Whether suppliers are providing good value for the money, as measured by on-time delivery, specifications, and fair pricing
 - The inventory items that provide generic or “green” equivalents
 - Ways for the company to best optimize inventory within a plant or across multiple plants

Unfortunately, there is no push-button software that analyzes inventory by itself, although there are technological tools that make the job much easier. One such tool is a standardized inventory catalog, which can reduce inventory from 8% to more than 20% by identifying duplicates and obsolete materials. Reducing extra line items preserves working capital, lowers finance costs, and increases inventory turns.

A standardized inventory catalog also helps purchasing departments create consistent descriptions of functionally equivalent items and avoid original equipment manufacturer and “maverick” buys. Companies save on overnight delivery fees for critical parts that otherwise cannot be found. Avoiding these “false stock-outs” both reduces procurement costs, and also reduces plant and equipment downtime. For example, IHS Intermat developed the Standard Modifier Dictionary to provide the framework for consistent and complete descriptions.

Building a clean, consistent inventory catalog is an excellent way to maximize Enterprise Resource Planning (ERP) and Enterprise Asset Management (EAM) systems. Enabling and unlocking the full benefits of ERP and EAM systems are not straightforward tasks. While these systems embody significant functionality, companies often vastly underutilize their capabilities. This is often attributed to inadequate item-master catalog information for MRO. An item master rife with duplicate parts, poor item descriptions, and unstructured inventory data renders ERP and EAM systems ineffective, because users cannot effectively identify a part or replacement. This leads to duplicate items being created and users buying parts outside of the system. The financial impacts are significant. Inventory values rise, inventory turn rates decrease, expedited part orders increase, and equipment availability decreases.

Ongoing Cost Controls

Once an effective catalog is established, it is important to analyze and report on key performance indicators to help ensure that MRO inventory is being used in the most efficient manner. The primary data and steps involved in a comprehensive analysis include:

- Current inventory value and spend (aggregate and by item)
 - Inventory age and utilization
 - Fill rates and inventory turns
 - Prioritization based on consumption patterns and criticality
 - Isolation of excess inventory and items in critical danger of stock-outs
 - Rationalization and consolidation of materials and suppliers based on scientific support and prioritized analysis of consumption and spending patterns, as well as environmental, safety, and health factors

- Determination on a per-item or supplier basis of how to gain purchasing leverage, and reduce or eliminate unleveraged spending.

Because companies have varying requirements, business processes, internal workflows, and ERP/EAM system configurations (even within the same software package) it is important to have a flexible and customizable catalog-maintenance outsourcing model. Services should include a) review and quality assurance of new item requests; b) item changes; c) research and enhancement of current catalog descriptions, including use of specialized in-house reference data sources; d) review and reporting of potential duplicate items; e) checks for generic equivalents of procured parts; f) documentation and analysis of the current catalog workflow; and g) recommendations for improvements to create an optimal, efficient, and effective process for future catalog-management efforts.

Companies that apply best practices of MRO inventory management—such as greening of MRO chemicals; cosourcing of inventory management; and optimization of lead times, order quantities, and order points—are likely to see dramatic cost-saving results. Once an effective MRO inventory-management system is in place, overpriced bolt headaches will be a thing of the past and major savings should accrue to the company’s bottom line.

JPT



ARE YOU READY TO EXPLORE THE FRONTIERS OF KNOWLEDGE?

NEW! Subscription services available.

OnePetro brings together specialized technical libraries serving the oil and gas industry into one, easy-to-use website—allowing you to search and download documents from multiple professional societies in a single transaction. With more than 80,000 technical papers, one search can help you locate the solutions you need. A range of subscription options make accessing the results easy.

 **OnePetro**
www.onepetro.org

A constellation of libraries. An astronomical number of papers. Stellar search results.