

Manage the Moment When Materials Meet People

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Summary

Managing the moment when materials meet people allows for improving productivity and reduced expenses. Maintenance, Repair and Operations (MRO) materials, maintenance equipment and specialized tooling for production are often ripe opportunities.

MRO is an area that has often been neglected with little cost or business process optimization. Intelligent Materials Management (IMM) is a combination of hardware (for dispensing of materials) and software (for managing inventory and replenishment). This class of application offers opportunities to reduce spend, allocate costs, improve operator productivity, lower inventory levels and reduce stock-outs. Configurable business rules and alerts automate the supply-chain based on actual point-of-use demand. Back-office activities are automated so that purchasing professionals focus on negotiating good agreements with key suppliers. Also, compliance with government regulations can be enforced and tracked. An IMM system should be considered for MRO materials distribution and management.

Analysis

In today's hyper-competitive environment, every opportunity for improved productivity and cost control must be considered. The areas of Maintenance, Repair and Operations (MRO) materials, maintenance equipment and specialized tooling for production are often ripe opportunities. Managing the moment when materials meet people allows for reduced costs, improved productivity and increased efficiencies.

Total Cost of Ownership

The Total Cost of Ownership (TCO) including labor for materials acquisition, inventory management and distribution to the users is often diluted and a clear understanding of the TCO is lost. To gain insight into TCO, think about what happens now when one of your people gets MRO



materials. This ranges from new inserts for a machine tool or just a protective glove. Do they:

- Have a long walk to a central crib?
- Along the way, stop to visit and negatively impact others' productivity?
- Take more than is needed to potentially save a trip later?
- Search and interrupt others looking for shared assets? And when finished, leave the asset in their toolbox rather than returning it?
- Wonder if an instrument is calibrated and check unnecessarily?

MRO Materials
Drill bits, inserts, and production tools
Abrasives
Personal Protective Equipment
Consumables
Welding materials
Shared tools or assets
Calibrated instruments
Regulatory or compliance items
Maintenance spare parts
Electrical and electronic parts
Expensive office supplies
Keys for trucks and equipment

Candidates for IMM

If your company is like most, the actual productivity and material losses due to these kinds of behaviors is unknown. However, though hidden, they are usually substantial. MRO management processes within a tool crib are typically optimized for efficiencies within the crib with less consideration of the consequences on the operator's effectiveness. Inventory may be managed to a budget rather than the needs of manufacturing operations. Procurement can be a complex process involving line workers, supervisors, tool crib personnel, purchasing and accounting. These inefficiencies build over time and, even with small incremental changes, the problems can go unnoticed.

Intelligent Materials Management

Intelligent Materials Management (IMM) solutions represent a set of applications for access control, tracking and management of MRO materials and tools among technicians, engineers and production workers. With IMM, the right person gets access to needed materials when they need them and, for those that are re-used, ensure their return.

- *Intelligent* means the system tracks usage and cost accounting information with alerts when exceptions occur.
- *Materials* include consumables and tools used by maintenance and production.
- *Management* includes automated business rules and replenishment, visibility and reports to better allocate resources and improve operational performance.

IMM should be considered for items with attributes that have an impact on either MRO costs or plant productivity. Data analysis for hundreds of companies proves the Pareto principle holds true and that 15-20% of a client's SKUs account for 80% of the activity. One approach for choosing the items for an IMM system is to start by examining the items that fall into the "critical 20%" for each attribute.

How Does IMM Work?

Essentially, an IMM system automates the MRO acquisition and distribution process while collecting information for the management of these materials. It has a combination of hardware (automated storage cabinets) and software (accessible via the internet).

Operator's view: The concept is simple. The operator swipes their badge through a reader on the cabinet (which could be a drawer, locker or dispensing machine), selects the appropriate part number, and the part is issued or returned. The function of the traditional crib is fully automated.

Manager's view: Software provides reporting and adds intelligence for business process management and automation. The software monitors current inventory, the min/max and can re-order MRO materials automatically according to configured business rules.

With fully automated dispensing of materials, an IMM system allows re-assessment of the business processes associated with a centralized tool crib

Item Attribute	Benefit with IMM
High annual spend	Reduce spend
Expensive unit cost	Manage inventory
High stock-out cost	Production uptime
High "home use"	Reduce theft
Critical repair parts	Equipment uptime
Shared tools	No searching
Calibrated instruments	Insure calibration
Use location distant from crib	Higher operator productivity
High inventory levels	Improved working capital

Criteria for Inclusion in an IMM System

and attendants. IMM brings the capability for smaller, distributed satellite locations without attendants. Now, it is practical to have MRO inventory located near the point-of-use, i.e. distributed inventory. This is consistent with the Lean Manufacturing practice of a "super market."

For shared tools and equipment, the IMM system knows who has it. The system also knows when it should be returned and, if late, an alert is sent to the appropriate supervisor. If someone needs a tool that is currently in use, the person can identify who has it to inquire when it will be available or assess going to another

work order. If the tool requires maintenance or calibration, it can be locked down and notification can be sent to the appropriate people.

Benefits of IMM

For MRO materials, reduced spend is the most common focus of IMM. Other benefits come from automated replenishment processes and improved inventory management. There is a fundamental change in business processes for MRO materials by bringing control to distributed inventory. For specialized tools and assets, the system knows who has them and the usage history.

Operational Benefits: Control MRO expenses by reducing waste and avoiding substitutions with more expensive items. Operator productivity increases with improved accessibility at the point-of-use with distributed locations, avoiding stock-outs, and IMM propagates best practices (like best tool for the task). Tools are no longer missing; allowing for reduced expense for tools, less wasted labor searching for a needed tool, and ensured tool maintenance.

IMM helps insure that gauges and instruments damaged or needing inspection are not available for use. Usage or elapsed time since last calibration can be tracked with alerts being sent when re-calibration is due. Also, safety equipment availability and the proper item being dispensed can be recorded and audited. For items that can be used for a limited time, the elapsed time can be monitored and a reminder sent when it needs to be replaced (as with a respirator).

Overhead Reduction: The “crib automation” capability means fewer people for operating the centralized crib. Dispensing and record-keeping are automated (people provide restocking). Also, for those with multiple shifts, the use of skilled trades people or extended crib operations (with either overtime or a second-shift) can be reduced or eliminated.

Back-office Benefits: An IMM system provides software that generates reports and exception notices. These tools help supervisors and purchasing to avoid stock-outs and better manage spend. Also, the software can automate and enforce business rules, and initiate requisitions or purchase orders (PO). The total cost of administration and issuing a PO is reduced.

This automation of the back-office repetitive tasks frees the procurement professional to do what they are trained to do – negotiate good contracts. The IMM system knows inventory status and usage volume across the enterprise, which is used in negotiating an agreement that reduces cost, inventory and obsolescence.

Financial Cost Accounting Benefits: An IMM system can be configured to prompt for allocation information, i.e. work order, cost center, etc. With this information, Activity-Based Cost (ABC) accounting is enabled, i.e. more accurate costing to better assess profitability of specific products. These costs are often hidden in overhead and, when they are exposed, opportunities for improvement in the product or process are also exposed.

Alignment with a Lean Manufacturing program: Lean Manufacturing's focus is eliminating waste and an IMM system helps reduce waste particularly in the areas of Waiting, Transporting, Processing, and Inventory. Within a Lean program, a fundamental practice is 5S (Sort, Set in order, Shine, Standardization, and Sustain). IMM supports all aspects of 5S.

Compliance: Government regulations mandate reporting requirements and manufacturing practices that are difficult or impossible without an IMM system. The span of regulations include OSHA (safety), RoHS (waste), SOX (financial) and more. In many instances, compliance is neither practical nor achievable with manual systems. For example, the Aerospace & Defense and Life Science industries need traceability and genealogy. Using a paper-based manual system, this quickly becomes unmanageable and out of compliance. Imagine trying to determine the application of a defective tool or out-of-specification MRO material by searching through boxes of handwritten documents to find where it was used. With IMM, electronic records provide the needed documentation and speed of inquiry.

IT Considerations: Typically, IT resources are consumed for existing applications and infrastructure allowing only critical new projects. One should look for an IMM system that is hosted externally for fast implementation with minimal impact on scarce IT support resources. Once installed, consider integration with your existing ERP (purchasing system), accounting system (cost allocation and charge back), and Maintenance Management (spare parts inventory management) applications.

IMM Solution from SupplyPro

SupplyPro Inc. (www.supplypro.com) offers a solution for the IMM market that is consistent with the recommendations provided above. In those instances where control was in a central crib, SupplyPro allows for distribution of the inventory with access and control to the point of use. With the automated access control, the cabinets do not need to be in a central location with people to monitor item usage. Cabinets are geographically distributed to their point-of-use which minimizes traveling by production workers to the central crib.

The software monitors user and product access, transactions, inventory min/max values and can re-order MRO materials automatically when needed according to flexible business rules. The software application is hosted and accessible via the Internet providing authorized persons –



including the supplier of the materials, the users and supervisors – to have access to reports, database administration, alerts and business rules. This allows for improvements in Vendor Managed Inventory (VMI) by providing control of usage without a human present. SOX requires documentation of VMI inventory for it to be included in the supplier’s financial report and SupplyPro fills this need.

SupplyPro’s solution for the IMM market provides improved controls for managing costs related to MRO materials and tools. It provides management and information where, often, there has been no control or visibility. There is “low hanging fruit” here and their customers often report payback periods of 2 to 9 months.

SupplyPro's IMM solution is in use by two types of business models. One is direct with an installation owned by the manufacturer. Second, MRO distributors provide IMM as a value-added service to their customers while also reducing their costs for providing crib management.

Conclusions

- Manufacturers and processors should consider an IMM solution to reduce your MRO spend and improve the operational efficiency of production personnel.
- Distributors of MRO materials should consider providing an IMM solution for their major clients. This will lower your costs for providing a tool crib and increase your share of their MRO business.

This paper was written by ARC Advisory Group on behalf of SupplyPro, Inc. The opinions and observations stated in the paper are ARC's. For further information or to provide feedback on this paper, please contact the author at rrio@arcweb.com.