



## Unlock MRO value

### Optimizing MRO Spares and Materials Inventories using IBM® Maximo MRO Inventory Optimization

#### Situation

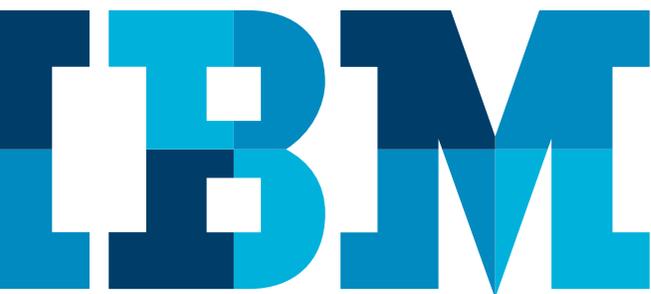
##### **Quantifying business value can be elusive**

Reliability affects business outcomes, but the eternal challenge for maintenance is to quantify its value to the business. For asset-intensive organizations, effective management of the maintenance function helps to enable the ability to maximize uptime, function safely and sustainably, operate efficiently, and meet enterprise business goals.

#### Challenge

##### **Pressure to minimize cost while maximizing performance**

In a dynamic environment of increased competition, tougher regulations and ongoing demands to sustain profitability, maintenance, repair and operations (MRO) practitioners face enormous pressure to trim costs while maintaining service levels and driving operational excellence. As companies add new types of assets to the mix and address ongoing economic challenges, inventory optimization is an increasingly critical practice for minimizing MRO costs and maximizing asset performance.



## Solution

### Adding IBM® Maximo MRO Inventory Optimization

MRO Inventory Optimization is a powerful solution that can be leveraged to enhance efficiency and cut inventory costs while helping to drive MRO performance and contribute to organizational profitability. MRO Inventory Optimization goes beyond simple query and reporting tools by analyzing data for patterns and relationships that might not be apparent otherwise. MRO Inventory Optimization helps to optimize MRO inventory levels, ensuring the right spare parts are available at the right time and at the right cost, while maintaining or improving asset uptime.

## Results

### Increased savings, efficiencies and performance

Using MRO Inventory Optimization to help optimize your MRO spares and consumables inventories can help you achieve these key objectives and more:

- Up to 50% reduction in unplanned downtime related to parts
- Up to 40% reduction in inventory costs
- Up to 35% savings in maintenance budgets
- Up to 25% increase in service levels
- Decrease inventory holdings and improve asset reliability
- Avoid costly stockouts while minimizing safety stock
- Reduce write-offs of surplus and obsolete stock
- Increase asset uptime and production output

MRO Inventory Optimization can help utilities, oil and gas, mining, manufacturing and companies in other asset-intensive industries achieve up to 40 percent savings in MRO inventory-related costs. But that's only half the story. MRO Inventory Optimization also helps ensure recommended reductions in MRO spares and materials levels do not negatively impact internal service levels. Given up to 50 percent of unplanned asset downtime is due to a lack of spares or stock outs\*, MRO Inventory Optimization plays a key role in helping to maximize asset and plant uptime.

\*Source: Aberdeen Group: [http://oniqua.com/wp-content/uploads/2017/09/Aberdeen\\_MROInventory\\_RP.pdf](http://oniqua.com/wp-content/uploads/2017/09/Aberdeen_MROInventory_RP.pdf)



## Introduction

### Optimize MRO Inventory Optimization – boost reliability, cut costs

For companies in asset intensive industries – like oil and gas, mining, utilities and process manufacturing – effective maintenance, repair and operations (MRO) management enables the ability to deliver increased service levels, function safely (with regard to personnel, the public and the environment), operate efficiently and meet enterprise business goals.

In today’s dynamic business environment, asset-intensive organizations face particularly hard decisions around how and where to trim costs while meeting productivity and service goals. Even moderate improvements in maintenance performance can yield significant savings

But many organizations do not have the resources or the knowledge base to carry out the necessary procedures required to correctly balance the dynamics of MRO spares and material demand. Consequently, organizations are forced to carry excessive inventory, incur frequent expedition costs (freight), and/or experience costly stock outs.

MRO Inventory Optimization is more than simply a storage area for maintenance materials. Its true intent is to help provide the right materials to the right place at the right time, at the lowest cost. Unavailability of critical spares inevitably leads to costly downtime. Maintenance schedules can be hampered due to stockouts. Just as bad, the fear of stockout results in overstocking and unnecessarily high inventory holding costs.

MRO Inventory Optimization represents a valuable tool for asset-intensive organizations to help with cutting inventory, enhancing efficiency and maintain assets and equipment at top performance. Using analytics to optimize inventory and help implement best practices into inventory management processes makes MRO operations more effective now; and enables continuous improvement over time.

As organizations take on new types of assets and face ongoing economic challenges, MRO Inventory Optimization is an increasingly critical practice for maximizing asset performance while helping to minimize MRO costs. Table 1 illustrates why optimization is difficult to impossible without analytics

**Table 1: Key reasons to use an analytics tool for MRO Inventory Optimization**

Inventory optimization requires significant expertise, time and effort. It is impossible to realistically manage the sheer volume of transactions and item detail for tens or hundreds of thousands of items without an analytics tool.

| TASK                               | VARIABLES   |
|------------------------------------|---|
| Determine supplier characteristics | Delivery, locality, availability...                     |
| Determine demand characteristics   | Movement, volatility, forecasting...                    |
| Identify material characteristics  | Criticality, workaround, inventory cost...              |
| Apply constraints                  | Warehouse space, procurement process, budget...         |
| Apply business rules and policies  | Organization strategy, continuous improvement policy... |

# The ABCs of MRO Inventory Optimization

Optimization is a journey – getting there requires four fundamental steps, as illustrated in Figures 1, 2, 3 and 4:

1. Understand MRO material movement (Figure 1)
2. Establish MRO inventory stocking strategy (Figure 2)
3. Decide on demand forecasting (Figure 3)
4. Optimize inventory stocking levels (Figure 4)

To begin, it's important to make an assessment of the true state of your MRO spares inventory. Ask yourself:

- Is the current situation acceptable?
- What inventory KPIs are in place?
- Does periodic stocking decision review occur?
- Does periodic investment recovery for surplus and obsolescence occur?
- Does periodic parts catalog standardization occur?
- Where is improvement needed?

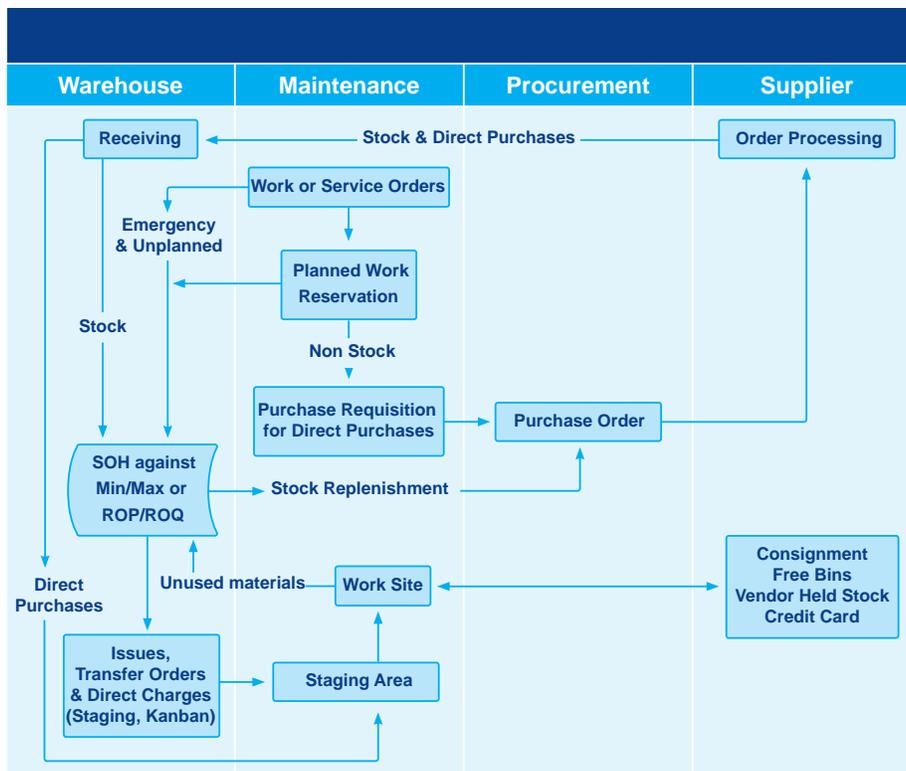


Figure 1: Understand material movement through the inbound MRO supply chain

MRO Inventory Optimization provides clear insight to make accurate decisions around having the right spares on hand at the right time and place, for the best cost. What should the stocking strategy be? When is stocking items in the warehouse the right choice? Which items could be handled more effectively by vendor managed inventory (VMI) or consignment? Which spares have usage patterns that indicate whether on demand or direct order is best?

Understanding material movement is the first step in leveraging analytics to make accurate stocking decisions. Numerous critical factors come into play:

- Historical demand
- Where-used, criticality
- Replenishment costs
- Holding costs
- Planned demand
- Demand variance
- Workaround options
- Stock-out cost risk
- Pack/set/issue size
- Lead time variance
- Calculated lead times (including internal approvals and receipt-to-consumption delays)
- Selection and application of ‘best’ forecast models

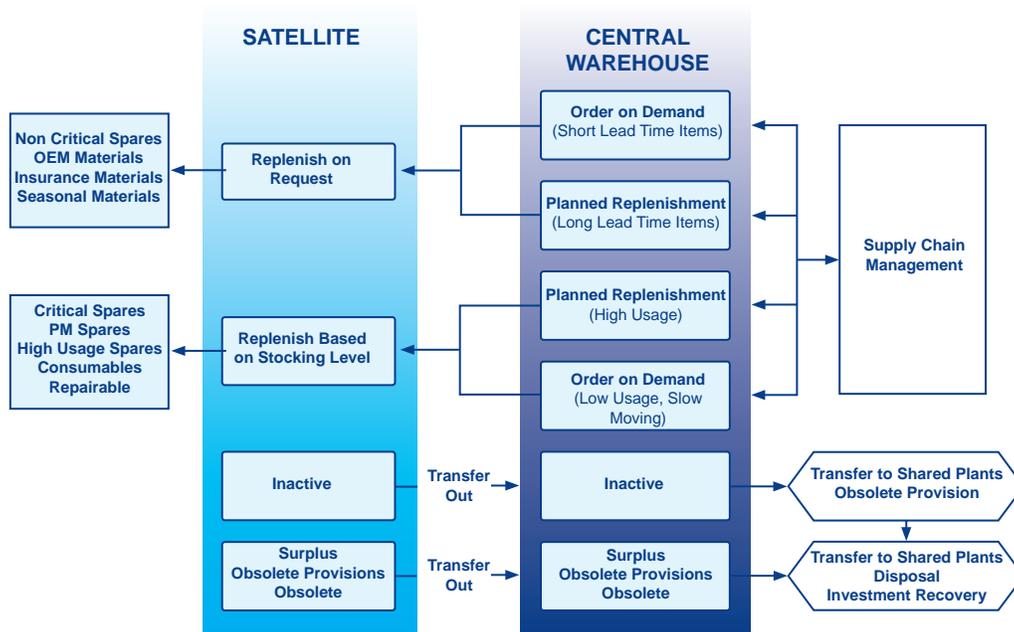


Figure 2: Establishing an MRO inventory stocking strategy

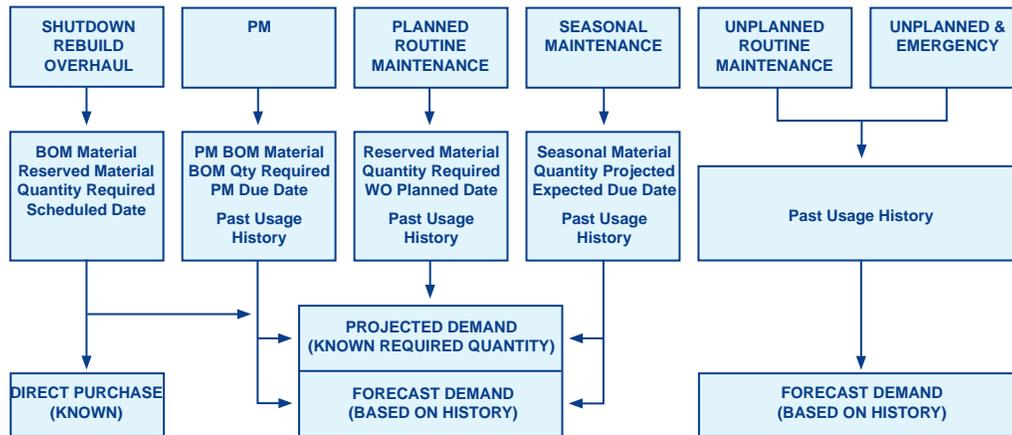


Figure 3: Forecast demand based on maintenance requirements and item characteristics

MRO Inventory Optimization makes it easier for asset performance management and/or materials management professionals to accurately forecast demand. First, establish inventory control segments and set distinct strategies for each. Identifying items by criticality further refines the ability to optimize stocking levels. To truly optimize MRO inventory, the MRO Inventory Optimization solution provides special logic for optimizing irregular demand and slow moving spares.

Optimizing MRO spares and consumables inventory with MRO Inventory Optimization helps asset intensive organizations like yours:

- Decrease inventory holdings and improve asset reliability
- Avoid costly stockouts while minimizing safety stock
- Reduce write-offs of surplus and obsolete stock
- Increase asset uptime and production output
- Cut replenishment administrative costs
- Save time by managing inventory more efficiently
- Improve supplier performance

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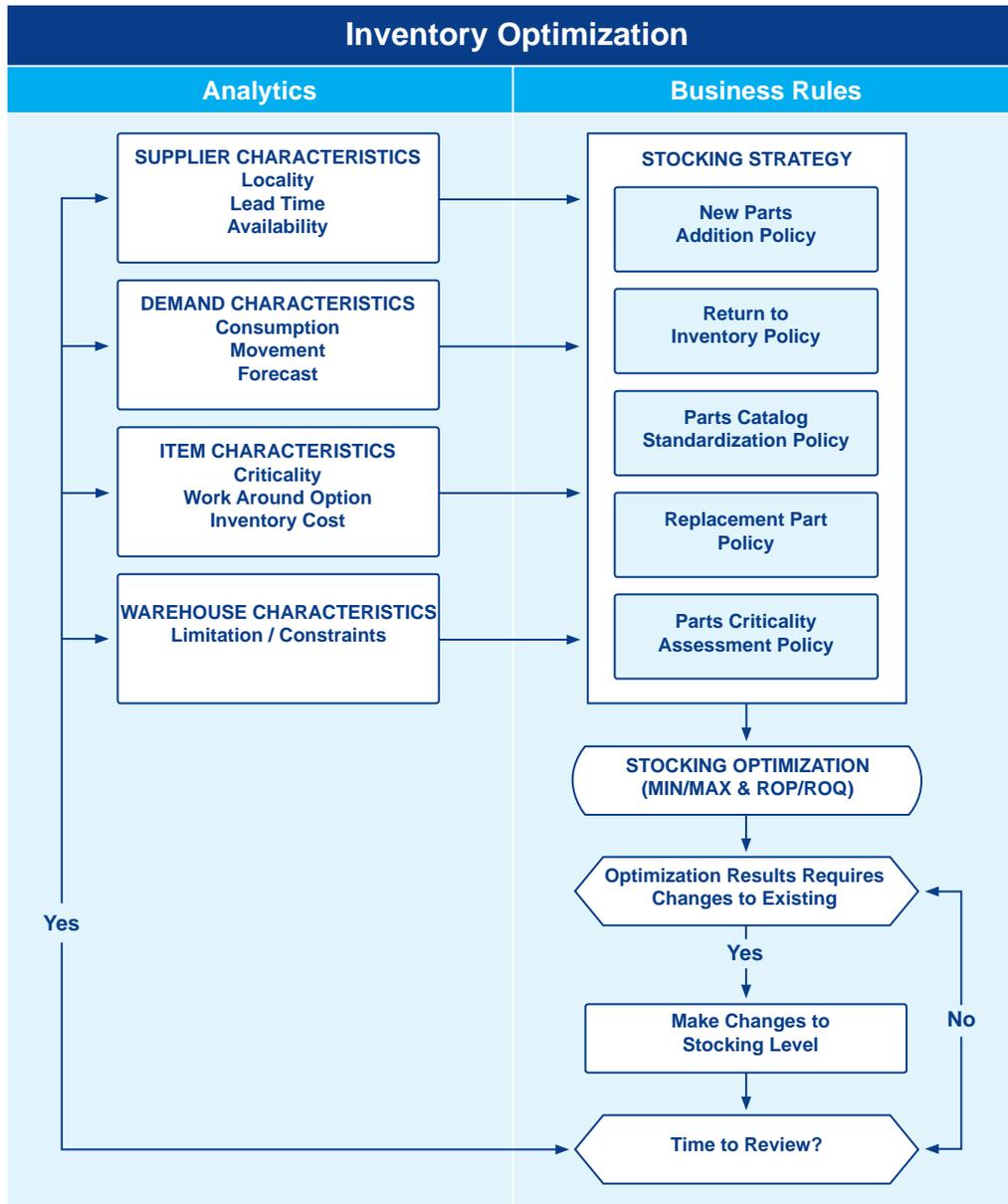


Figure 4: Optimizing MRO Inventory Stocking Levels – A continuous process

MRO Inventory Optimization is not an end state, but a continuous process. Any comprehensive MRO Inventory Optimization solution should provide proactive obsolescence management by providing visibility into upcoming or potential obsolescence instead of reacting to a list of non-movers after some fixed period. MRO Inventory Optimization is one of the only solutions to do this.

Additionally, continuous data cleansing ensures that duplicate items are eliminated, item information is accurate and complete and that item descriptions are standardized. With the detailed reports generated from MRO Inventory Optimization, inventory managers can more easily and accurately determine the optimum quantity of spares to stock and eliminate excess inventory.

## Summary and conclusion

MRO Inventory Optimization helps to enable asset-intensive organizations to efficiently and effectively gather all pertinent data associated with inventory items and apply algorithms to

- Facilitate greater control of asset maintenance schedules and work processes.
- Limit unnecessary costs, reduce total cost of ownership and boost asset productivity.
- Improve maintenance efficiency, inventory performance, supplier management and supply chain effectiveness.
- Understand exactly how MRO helps drive productivity and bottom line performance.

Using MRO Inventory Optimization to optimize MRO spares and consumables inventory can help drive key operational goals: help cutting costs, improving service levels and maximizing plant uptime

For additional information regarding IBM® Maximo MRO Inventory Optimization, visit: [www.ibm.com/services/process/mro-inventory](http://www.ibm.com/services/process/mro-inventory)



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