# Power Plant Retirements and Conversions:
## Overcoming key challenges through effective MRO inventory optimization

Ensure reliability and minimize write-offs by getting ahead of the curve

Changes in environmental and regulatory requirements as well as improved economics for natural gas-fired generation in the utility markets often lead to power plant retirements and conversions. Retiring or converting a power plant is no simple task. Instead, it is a complex and expensive undertaking fraught with risk.

Part of the complexity is maintaining just the right amount of inventory to support reliability and operations through to the decommission date while minimizing write-offs of stranded material assets.

A prescriptive approach to planning plant retirements and/or conversions can improve inventory visibility and optimization for assets via demand forecasting and planning. Intelligent optimization of critical maintenance spares, materials inventory and assets that support power generation can provide phased MRO inventory depletion. Thus, plant operators can focus and prioritize MRO inventory utilization to capitalize on potential cost saving opportunities.

*"ERP and EAM systems that are built around material resource planning or other manufacturing processes are not sufficient to handle these MRO problems and are only good at performing transactions and reporting. Existing systems typically do not perform tasks such as prescriptive analytics, inventory forecasting, and exceptions management. For such circumstances (the use of ERP and EAM systems), companies that can provide an asset performance management solution with advanced analytics to optimize MRO spares and materials are expected to secure a leadership position in the market."*

*- Sankara Narayanan, Senior Analyst, Frost & Sullivan*
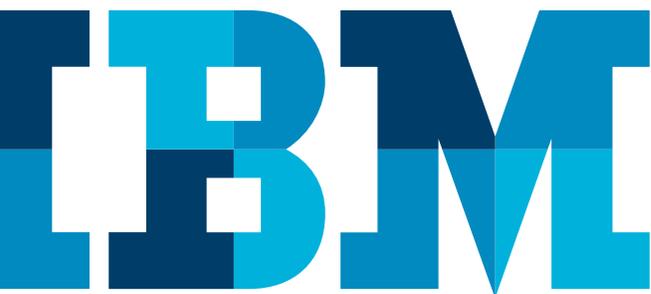
## Requirements and inventory optimization challenges

Asset-intensive facilities such as power plants require a proactive, intelligent approach to the management of critical maintenance spares and materials. This approach is even more critical during a retirement and conversion project as plant owners and operators are pressured to:

- *Get the plant safely to retirement without capital investments*
- *Make prudent and creative maintenance decisions to keep availability of the plant as high and consistent as possible*
- *Provide work around (stretch) options versus expensive part replacements*
- *Optimize MRO inventory decisions to maintain service levels with reduced budgets*
- *Manage 10's or 100's of thousands of spare parts that support a wide variety of nuclear, coal, gas, hydro, wind, transmission and distribution assets*
- *Adapt to changes in equipment and maintenance plans*
- *Accomplish important inventory - and maintenance - related tasks with prudent cost control decisions to keep equipment safe and reliable*

Plant owners and operators must respond and adapt to changes in equipment and maintenance plans throughout the project timeline. So relying on conventional tools such as spreadsheets to manage MRO inventory can be a complicated task fraught with errors, even with strong reliance on long-term plant operations staff. Incomplete or inaccurate data and limited staffing can make it even more difficult to respond and adapt to changes during a plant retirement or conversion event.

Establishing optimized stock levels for retirement and conversions to determine true surplus MRO inventory poses significant challenges to plant owners. In many cases, inventory levels are rarely reviewed and adjusted to account for volume, variable lead times, work arounds (repairs, run to failure with increased inspections), or changed maintenance activities such as shorter, more intense outage schedules. It is not uncommon for surplus inventory to account for a significant portion of total inventory, and, during the retirement project, any surplus should be an early focus for inventory reduction initiatives.

## Improved decision-making with MRO inventory optimization analytics
**Phased inventory depletion**

Factoring plant retirement and conversion requirements into MRO inventory optimization can help improve visibility and optimize inventory by standardizing data and profiling inventory based on cost, criticality, usage, lead-time, work-around options as well as other parameters. If stock levels remain unaddressed and spare parts inventories are not optimized, the cost of stranded assets after retirement can be significant. The impact of these additional costs affects the management and activities leading up to retirement through reduced budget capacities and lost opportunities. That's why a phased inventory depletion approach helps to ensure cost savings by identifying inventory that can be run down to zero over the retirement project, sharable stock opportunities, items for maintenance stretch opportunities, as well as isolating and identifying — early into the project — any actionable excess that can be transferred or, if needed, sold on the market.

## Reallocation of shareable MRO inventory

Multiple facilities often share the same equipment. Reallocating that shared inventory across facilities provides current and future value and cost savings. When business rules are applied to assets, demand for inventory can be forecasted, lead times based on historical transactions can be calculated, and transferrable stock can be identified immediately. Forecast retirement calculations, such as projected usage of stock prior to facility shutdown or identifying inventory transfer opportunities between plants, maximizes cost-saving opportunities while minimizing write-offs of stranded spares. Furthermore, unavoidable restock requirements are identified by prioritizing critical stock levels.
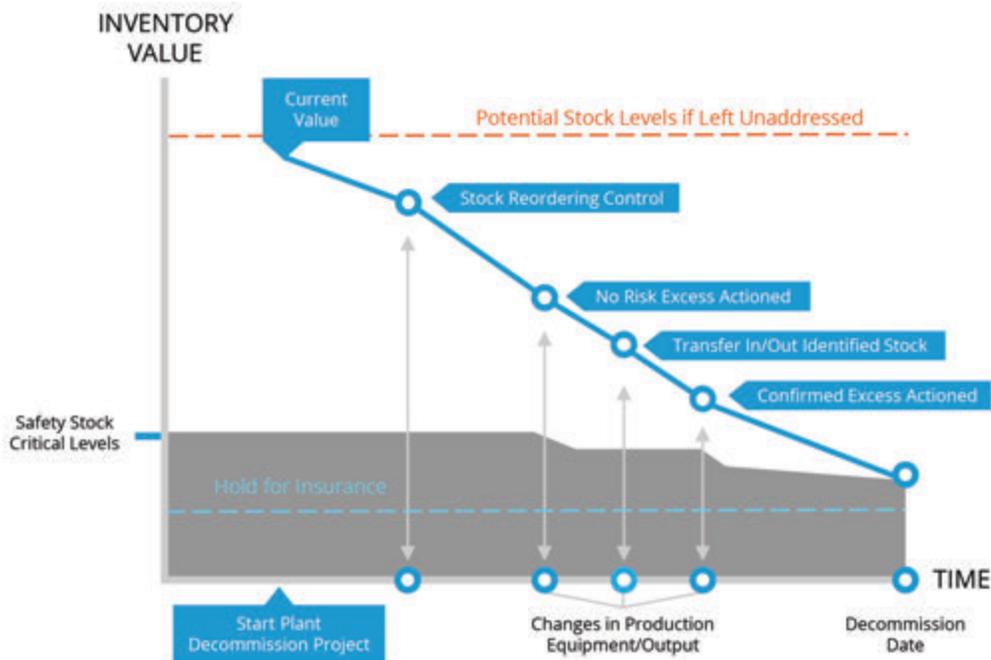


*Figure 1: Recommended retirement inventory optimization timeline*

## Connecting the dots with ERP and EAM systems

Prescriptive data applications leverage cross-functional information from ERP and EAM systems to "connect the dots" from these transactional systems to segment inventory based on criticality of items and calculated lead-times while also eliminating inventory surplus. Without these applications, many stock level decisions are subjective and lack consistency and accuracy. Exceptional MRO inventory optimization applications also aggregate data from various information systems to minimize stock-outs and improve decision making by streamlining data access and volume challenges.

Workload planning can be facilitated by centralized data systems. MRO inventory optimization applications then help to enable collaboration between supply chain and maintenance for consistent and sustainable application of best practices and continuous improvement with enter-prise-wide visibility of critical spares inventory. Focusing on key areas to help maximize personnel and material resources reduces workload stress by improving dialogue among operations business partners, ultimately resulting in more accurate, consistent, and data driven inventory decisions.

## Get ahead of the curve

Reducing the overall cost, complexity and risk associated with plant retirement and conversion projects requires proactive planning. Prescriptive MRO Inventory Optimization helps to enable plant owners and operators to maintain the right mix of inventory to support maintenance and operations through to the decommission date while minimizing write-offs of stranded material assets. Exceptional critical spares and materials inventory optimization applications focus on key areas to help maximize resource efforts and minimize risk and waste – leading to more cost-effective, streamlined retirement and conversion projects.

## Get started

IBM can help you make better decisions regarding your plant retirement or conversion initiatives. Contact us today to learn more https://www.ibm.com/services/process/inventory

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