



**Expense Reduction
Manufacturing**Solutions

Maintenance, Repair and Operation (MRO)

Market Challenges and Cost Saving Opportunities



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Executive Summary

This aim of this white paper is to outline current best practice for the procurement of MRO and to discuss how good procurement practices can deliver improved business performance. The main topics in this white paper are:

- What is the definition of MRO (Maintenance Repair and Operation).
- Describe how good MRO procurement practices can deliver cost savings.
- Discuss supply chain resilience in the new world of disrupted supply chains.
- Show how good MRO procurement can unlock improved manufacturing processes and performance.
- Using good MRO procurement practice to release working capital back into the business.
- How to work with the supply chain to improve stock control and warehousing practices.
- What is an MRO Consolidator?
- What are the advantages and disadvantages of outsourcing the procurement of MRO through the supply base.

1. Introduction – Why is it important to focus on MRO?

Anything used in the manufacturing of, but not employed in, a final product may be considered MRO. Usually, this will include spare parts, equipment such as pumps and valves, consumables such as cleaning supplies, plant upkeep supplies such as lubricants, and activities completed to restore or maintain the functioning of needed equipment.

The problem many organisations face is that MRO supplies are often purchased through multiple budgets and included in numerous processes. This often leads to a misunderstanding of the importance of the category and poor procurement practices. Indeed, MRO purchases often fall into the tail spend of many organisations and are provided by multiple vendors with no coherent strategy to deal with the complexity

This white paper will demonstrate how changing procurement practices and making use of either ERP systems, CMMS, stores software or vendors to track, manage and control inventory can streamline processes. This will ensure key MRO items are on hand as soon as they're needed. Centralising the acquisition of inventory and tracking maintenance repair and operating supplies, simplifies the process and improves organization.

“

That's been one of my mantras – focus and simplicity. Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it's worth it in the end because once you get there you can move mountains.

STEVE JOBS

This white paper will attempt to cover the following topics;

- Provide a definition of MRO
- Provide a Commercial overview of the MRO Market, cost drivers and major players in this category space
- MRO value chain
- Cost saving opportunities
- MRO as driver for reduction of downtime and process Innovation (e.g. Industry 4.0 smart factory)
- MRO Consolidators



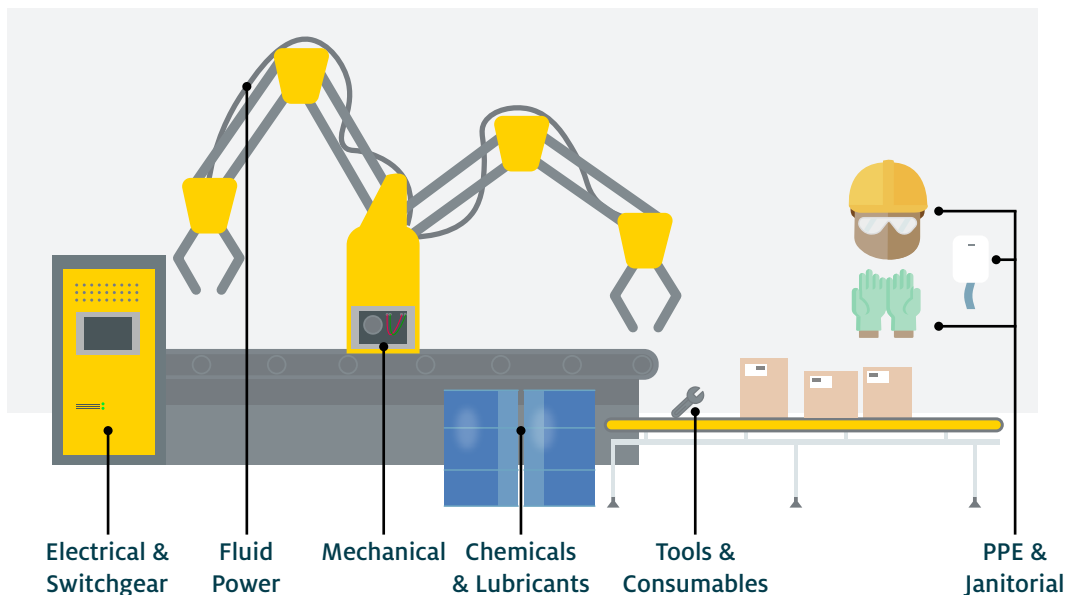
2. MRO definition, Market Place and Supply Chain Fundamentals

What is MRO (Maintenance Repair and Operation)?

Maintenance Repair and Operation (Hereafter referred to as MRO) should not be confused with Maintenance Repair and Overhaul, which is a common practice in the airline industry to maintain fleets of aircraft.

MRO in this context is the procurement of spare parts and equipment, such as pumps and valves, consumables such as cleaning supplies, plant upkeep supplies such as lubricants, and activities completed to restore or maintain the functioning of needed equipment. Anything used in the manufacturing of, but not employed in, a final product may be considered MRO.

The key product categories are:



Size of MRO Market Place, Market Basics and Key Players

In 2020 it is estimated that the MRO total global market is approx. \$600 billion and the market in Europe is approx. \$200 billion (Beroe Procurement Intelligence 2019). The market basics are;

MRO Market Basics

IMPACTFUL COST COMPONENTS

Raw material prices constitute nearly 55-65 percent of total costs of MRO spares.

For maintenance services, labor constitutes the major cost. In developed countries it impacts around 40-50 percent on the total maintenance service cost.



NEGOTIATION LEVERS

Contract and volume negotiations

Management fees

Rebates



PREFERRED PRICING MODEL

Distributors:

Cost Plus

Integrators:

Management Fee Model

MRO CONTRACT PERIOD

Average period:

3 Years

The market place is highly fragmented meaning sources of MRO comes from a multitude of vendors. Examples of which are:

- Multinational Distributors
- National Distributors
- Local and Regional Distributors
- Consolidators
- Direct purchase from manufacturers of spares
- Purchase of spares from Original Equipment Manufacturers (OEM)
- Internet only distributors

Major multinational companies in the MRO category space only represent 10% - 15% of the overall market sales. However there has been considerable consolidation in the distributor market creating large multinational groups with a global presence.

MRO Supply Chain Challenges – Supply chain disruption, authenticity of parts and why it is important to have the right blend of suppliers to mitigate manufacturing risks

Global Supply Chain - Many MRO parts are low cost small engineering items. Often the manufacture of these items has been moved to regions of the world where raw materials are readily available (Steel, etc) and labour costs are low. Even precision items like bearings very often have component parts (Casings, balls, rollers, etc) manufactured in one part of the world and assembled in another. Also, with the rise of internet direct sellers it can be difficult to verify the authenticity of the parts. This can lead to issues with safety and a company's ability to comply with their own policies and those of their customers. Even affecting in some cases, a company's ability to meet its statutory duty.

Supply Chain Disruption - Another issue that has arisen in recent times is the interconnected nature of the global economy and the effect of natural disasters. With the advent of COVID -19 we are seeing disruption and even in some cases the collapse of MRO supply chains. As MRO in general are high volume, low margin items, manufacturing has been pushed to economies with a low cost of labour, mainly in Asia and Eastern Europe. The effect of this is the inability of advanced economies to source basic items, such as PPE. However, this is not a new phenomenon. When the tsunami hit Japan in 2011, the manufacture of specific types of microchips was interrupted. As this was one of only two places in the world these microchips were manufactured it caused world-wide shortages and price rises for many MRO components that relied on these chips for their operation.

Trade disputes and relationships – As we have entered an era of global supply chain disruption it would be easy to forget normal international trading issues. In the UK the full impact of Brexit is yet to be understood and internationally tensions between nations has led to trade disputes (notably China and the USA). Either of these examples could seriously affect the flow, cost and availability of key items of MRO. So good procurement practice once again is vital to build resilience against these ongoing economic issues.

With global supply chain disruption becoming an ongoing probability, it is more important than ever to focus on MRO procurement to ensure that supply chains are as resilient as possible to ensure business continuity. The key issues to be aware of are:

- MRO parts copies – cheap alternatives with inferior performance characteristics
- Grey imports - Warranty by the manufacturer will no longer be in place
- Force Majeure (Natural disasters and disease)
- Changes to trading relationships causing changes to import procedures and tariffs

3. MRO Value Chain – Why it is important to have sound MRO procurement processes

The MRO value chain closely mimics a typical Material Resource Planning (MRP) process. However, the outputs are slightly different in that they track supplier performance, stock management and maintenance requirements. The value chain outputs can be used to reduce costs (Item price and process costs), release cash (reduced stock holdings and elimination of obsolete parts) as well as drive operational performance through efficient maintenance practices.

MRO Value Chain Component and Integration Diagram



3 core components that drive the MRO value chain they are:

- A. IT infrastructure
- B. Operations
- C. Operational support activities

These core activities integrate to drive the overall MRO category strategy.



A. IT Infrastructure

IT infrastructure is key to tracking, controlling and driving best value in the MRO category. Without visibility of spend linked to forecast operational demand and Maintenance strategy it is difficult to build a coherent process.

The key IT building blocks for effective MRO management are;

- Engineering Stores / Stock Management Systems
- Computerised Maintenance Management Systems (CMMS)
- Enterprise Resource Planning (ERP)
- E-Procurement Systems
- Other Business Finance Software

The concept is essentially the same as any Materials Requirement Planning tool, however rather than creating finished goods you are ensuring key parts are available in an appropriate lead time, driving best value by measuring turnover, grouping material spend and forecasting usage to set accurate budgets. The main problem for most SMEs (and often larger organisations!) is that MRO requirements are spread over numerous systems that do not talk to each other. The resource that could make sense of the puzzle is often employed carrying out essential duties (like fixing the plant) and the spend is so fragmented that utilising suppliers to provide meaningful data can be problematic.



B. Operations

1. Planning and Forecasting

To set an effective MRO strategy production planning and forecasting is essential to help build the requirement profile. Planned outages and production scheduling should feed into the MRO requirement plan, driving stock holding and scheduling the replenishment profile.

2. Maintenance and repair / plant operations

Maintenance strategy at an asset level should drive the MRO item profile, defining fast moving items and identifying key safety stock requirements. The overall maintenance strategy (e.g. Reactive, Preventative, Predictive, etc) will dictate the level and complexity of the MRO stock holding and supply chain.

One item often overlooked is the investment in assets via Capex. These acquisitions often change requirements in MRO stock holding, both in new parts and the creation of obsolete stock items. MRO disposal and future requirements should always be factored into the total cost of ownership calculation of any new equipment.



C. Operational Support

1. Sourcing Activities

Coherent category management carried out in conjunction with key operational stakeholders will determine the success of the MRO value chain performance. Working with key stakeholders will:

- Set the number and type of suppliers.
- Define supplier performance KPI's in line with maintenance strategy.
- Help mine the supply base for innovation that can help deliver a competitive advantage to the overall business.

2. Procurement Activities

This is not just P2P (Purchase 2 Pay) activities and expediting orders. It is the key task of procurement to streamline processes and ensuring best value is extracted from the existing supply base. Key activities are:

- Development of e-catalogues with key suppliers
- Ensuring contracts are adhered to
- Off contract spend is kept to an absolute minimum.

3. Inventory Management

Stock control and cash management is all about ensuring stores processes reduce business cash tied up in the form of inventory. This could be everything from the introduction of Vendor Managed Inventory through to the conversion of OEM parts to generic alternatives

4. Warehouse and storeroom activities

Day to day operational activity and accurate record keeping are key to the success of any MRO category strategy. Without delivering the basics all the hard work upfront can be lost.

4. Cost Saving Opportunities

This white paper will now describe a flavour of the “art of the possible” of cost reduction opportunities effective MRO procurement can deliver. This is as a natural extension of the MRO value chain described in the previous section. There are six broad areas in which cost saving opportunities can be delivered;

- Supplier Consolidation
- Stock control
- Improved Supplier Service
- OEE improvements and reduced engineering down time
- Supplier Innovation
- E-procurement, Industrial Internet of Things (IIoT) and Process streamlining

I. Supplier / Vendor Consolidation

A survey (RS Components 2019) of manufacturing companies showed that on average each company had at least 39 companies providing some form of MRO. MRO suppliers can be the very definition of “Tail Spend”.

This leads to several operational issues such as:

- No price leverage with spend volume
- Multiple contact points and complex supply chains
- High chance of duplication of parts with multiple prices charged for the same item
- Lots of admin to service PO's and deliveries
- Little or no focus on supplier performance with the real chance of stock outs and inventory generated down time.

It would be glib to suggest that everything could be consolidated under a single supplier, because in general this is an impossibility (there is one case in which this would be possible and will be discussed in a last section of this whitepaper). However, understanding the actual spend profile and grouping spend items into tenderable baskets will yield tangible cost savings together with the opportunity to improve service and potentially deliver supplier innovation. The key benefits of supplier consolidation are:

- Parts savings through leveraging spend
- Improved commercials (Payment terms, credit levels etc)
- Supplier focus on the account
- Improved service levels by being able to set the correct KPI's
- Supplier innovation
- Opportunity to reduce stock levels by reducing duplication and reducing safety stock levels through better understanding of requirement
- Improved stores operation (See next section)

II. Stock control and Working Capital Improvements

As mentioned previously in a survey of manufacturing companies (RS Components 2019), only 25% of companies had some form of vendor-managed inventory (VMI). Whilst the lack of VMI is in itself not an indication of poor stock control, it is symptomatic of not extracting benefit available from the MRO supply chain. Often because of the fractured nature of the supply chain Engineering stores and stocks can be the “land that time forgot”. Sometimes large amounts of business cash can be tied up in spares that are rarely used or obsolete. Whilst fast moving spares can be continually “out of stock” and often couriered in at great expense at the time of a breakdown. Once the supply base has been “optimized” into key spend areas you can often utilise the supply base to help with stores operations. This can take the form of supply of simple racking through to state-of-the-art carousels and vending machines linked directly to the internet able to allocate costs to internal budgets and on site 3rd party contractors, as well as generating self-billed replenishment orders.



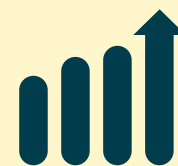
By working with the supply chain stock control can be revolutionised and working capital liberated for use in other parts of the business

III. Supplier Service Improvements

It is important for organizations to maintain an optimum mix of regional and global players to ensure consistency in the supply of spares, materials, and services to meet maintenance/service requirements. However, by strategically consolidating spend it is possible drive performance setting KPI's. This not only drives the performance of your suppliers but will also allow you to benchmark the performance of your businesses internal stock processes.

KPIs IN MRO

- Inventory turnover ratio
- Lead-time for product delivery
- Improvement of service levels
- Potential for innovation that results in cost savings



The performance of suppliers can also be linked to a portion of their fee and can be paid upon the rendering of services in a satisfactory manner.

IV. Manufacturing Downtime and OEE Improvements

In a survey carried out by “RS components” (reference) in 2019 of European manufacturing companies, it was found that the key drivers of process down time that year were:

1. 54% of manufacturing companies cited “Maintaining Ageing Assets”
2. 50% of manufacturing companies cited “Lead time for key parts”
3. 36% of manufacturing companies cited “No Replacement Parts on site”

Whilst no MRO strategy can eliminate completely any one of these 3 main causes, an effective MRO strategy utilising the right blend of local and international suppliers can have a huge positive impact to reduce these factors.

For example, Maintaining Aging Assets can be improved by:

1. VMI of strategic parts
2. Changing out obsolete parts for modern equivalents
3. Introduction / retrofit of modern sensors to monitor asset performance
4. Move from OEM parts to generic equivalents more readily available
5. Working with suppliers to find alternative sources of supply for wear parts
6. Modern lubrication improvements

The list of possibilities is endless if you partner with the right supply base that can support your business with innovation and sound engineering expertise.

V. Supplier Innovation

Working with the right mix of suppliers can drive improvements in the following areas;

1. Stores IT systems and ordering integration
2. Stores infrastructure
3. Specialist Engineering services
4. Specialist proactive / predictive maintenance services
5. Energy Efficiency programs
6. Support implementation Industry 4.0 projects
7. Hard FM Outsourcing of non-core services

Once again this is not an exhaustive list of opportunities only a starting point from which a sound MRO purchasing strategy can deliver real innovation into any business.

VI. E-procurement, Catalogues, Industrial Internet of Things (IIoT) and Process streamlining

The advent of the internet allows a real opportunity to improve tendering, create bespoke parts catalogues, streamline P2P processes and link key elements of the supply chain. However, like so many of the process's improvement promised by the ever-increasing connectivity of the modern industrial age, it requires expert knowledge and the resource to implement changes. Once again utilization of not only the MRO supply base but their network of specialist collaborators can help SMEs in particular to benefit from improved systems and processes.

5.0 MRO Consolidators

What is an MRO Consolidator?

An MRO consolidator is a third party that aims to consolidate and streamline MRO processes within your business. Embedding itself into the heart of your company a good MRO consolidator integrates into your business and becomes an extension of your team.

It delivers all the benefits of an MRO distributor's branch on your site, including high levels of customer service and year on year cost-saving delivery through vendor optimisation and a reduction in the purchasing and transaction costs associated with indirect supplies; all with a single point of contact for orders and customer service enquiries.

Roles of an MRO Consolidator

There are four main types of work that an MRO consolidator will carry out. These are divided into core activities, performance measurement, supplier management and other services.

Core activities include product identification, order handling and expediting as well as parts standardisation, technical support and supplier management. MRO specialists help you by pro-actively identifying cost-saving opportunities across these areas.

Performance measurement involves monitoring progress against agreed KPIs and objectives, including Service Level Agreements and the measurement of cost savings against achieved targets. This gives you total transparency over performance.

Supplier management focuses on dealing with technical specialists, supplier engineers and regional teams as well as supply chain partners.

There are many other services that an MRO consolidator can potentially perform depending on client requirements. These include stores design and restructuring, providing and managing MRO e-commerce sites and online catalogues from which to order, employee training, condition monitoring and designing and implementing improvement projects. These can bring lasting benefits to your business.

Advantages and Disadvantages of a MRO Consolidator

As with all these types of out sourcing there are many factors to consider;

Advantages

Cost savings is what draws most people into the idea of employing a service of this kind. With the right firm, you can expect to see high-level cost savings as well as a reduction in downtime and processing. Alongside this factor, clients are also most likely to experience an increase in productivity as now company processes are streamlined.

Another very important factor is the dedicated resources you will receive on your site. Usually, you will have a dedicated individual or team working with you on-site. This will allow you to establish a relationship with not just a company but a person who can get to know your organization in-depth and ensure the service is completely tailored to your needs. Most consolidators sell based on unit cost savings and supplier reduction, but without engineering expertise, this is short-sighted and that's all you'll get. If the supplier understands your processes, you're more likely to see value creation through continuous improvement.

Disadvantages

The main disadvantage is the length of the contract. For a service of this sort, you can expect to be tied into a contract for a minimum of three years and sometimes longer if the consolidator has had to make a considerable investment in infrastructure and staff. There is also the potential to damage relationships with existing suppliers who may be cut out of the supply chain by the MRO consolidator who wants to use their core services and parts.

Lastly, there is the cost of this kind of service. In the early part of the contract in general the savings far outweigh the costs. However, the law of diminishing returns starts to apply as the contract matures leading to queries over the cost of management fees etc. Sometimes it is easy to forget in the third, fourth or fifth year of an outsource contract what benefits in cost reduction and improved service were like in years one and two. A truly outstanding consolidator will refresh the innovation opportunities each year keeping the client company constantly happy with the service.

Value Through Insight™

Established in 1992, Expense Reduction Analysts is one of the world's leading consultancy organizations. Specializing in cost optimization and supplier relation management, ERA delivers **Value** through **Insight™** to clients in both the private and public sectors.

With more than 700 consultants operating in over 35 countries, the award-winning business boasts international expertise while simultaneously offering a local presence to clients. Through in-depth industry knowledge and insight across a variety of expense categories, ERA adds value to organizations by advising on industry-specific best practices, reducing costs and ultimately delivering tailored solutions to benefit business health and growth. A few of ERA's core expense categories include Banking and Financial Services, Insurance, Corporate and Administration Support Services, Logistics and Distribution, Energy and Utilities, Medical and Pharmacy, Facility and Property Management, Maintenance, Repair and Operating Supplies (MRO), Personnel and HR Services Delivery as well as Information & Communication Technology (ICT).

For over 25 years, Expense Reduction Analysts has improved business performance for thousands of its clients, including many well-known names.



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Bob has had a successful career with over 30 years experience in the food manufacturing industry, working for blue chip companies that manufacture some of Britain's most iconic brands.

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