



Global  
Digest

# Maintenance, Repairs and Operations

## Background

CASME held Maintenance, Repairs and Operations (MRO) RoundTable meetings in Asia, Australasia, the EMEA region, Latin America and North America. The following main topics were discussed:

- Stakeholder engagement
- Company requirements
- Financial analysis
- Strategies
- Contracts
- Performance management
- Trends and technology.

This Digest provides the key points, good practices and insights into future trends identified by CASME members at the RoundTable meetings held around the world.

## Stakeholder Engagement

- The key stakeholders for MRO products and services are the directors, managers and teams within Engineering, Manufacturing, Maintenance, Operations and Facilities Management (FM), as well as the research and development (R&D), supply chain, quality, and environment, health and safety (EHS) teams.
- Procurement engages and aligns with the MRO stakeholders by:
  - Identifying and engaging with the key stakeholders and decision-makers for each MRO sub-category
  - Conducting regular meetings with the on-site stakeholders and procurement managers to determine the MRO procurement requirements and challenges for each site, and involving them in developing strategies to address these
  - Collaborating with the stakeholders to develop preventative maintenance schedules, the lists of spare parts for inclusion in purchasing catalogues, and MRO strategies that fulfil their requirements and provide the flexibility to accommodate changes within the company and the market.
- Effective approaches for influencing the stakeholders who will be most affected by and potentially resistant to changes to the MRO strategy and/or supply base include Procurement:
  - Developing comprehensive and convincing business cases to obtain support from the stakeholders and senior management for proposed MRO strategies
  - Gaining support from senior management and procurement champions to encourage the stakeholders to participate in MRO procurement projects
  - Demonstrating the benefits of effectively managing the MRO category, such as reducing spend and increasing the efficiency of the purchasing process and the company's operations
  - Piloting the strategy at a single site and encouraging the on-site stakeholders to communicate the success of the pilot to their colleagues at other sites
  - Establishing collaborative partnerships and regular communications with the on-site stakeholders
  - Demonstrating in-depth category knowledge and the value Procurement provides through effective strategies, such as maintaining production levels and reducing equipment downtime
  - Assisting the stakeholders with conducting market research and total cost of ownership (TCO) analysis, and with sourcing MRO suppliers and service providers that fulfil their requirements.

## Company Requirements

- Procurement obtains visibility of the organisation's long-term capital equipment purchasing plans by:
  - Conducting regular meetings with the relevant teams to remain up to date with capital expenditure (CapEx) projects, discuss CapEx project pipelines, and the associated MRO requirements and budgets
  - Engaging with the engineering, maintenance and reliability teams before and during capital equipment purchasing projects, and planning the MRO strategies and maintenance schedules for the equipment
  - Collaborating with the enterprise project management office (EPMO) during CapEx projects
  - Establishing project working groups comprised of representatives from Procurement and the operations and project teams, to discuss CapEx projects and the related MRO requirements.
- Procurement manages the MRO requirements and spend related to CapEx projects by:
  - Including MRO requirements in CapEx strategies and negotiations for capital equipment contracts
  - Obtaining regular updates from each site regarding their CapEx projects and MRO requirements, and engaging with the engineering teams to ensure that their critical requirements are addressed

- Communicating with the local MRO stakeholders to gain an understanding of the machinery and equipment at each site, the parts and services required, and the implications of downtime
- Establishing a strategic sourcing team within Procurement dedicated to CapEx projects
- Developing the business cases, conducting the requests for proposals (RFPs), and defining the contractual requirements for capital equipment and the associated MRO requirements
- Implementing a capital equipment catalogue in the procurement system to enable the stakeholders to purchase capital equipment with spend below a defined threshold
- Establishing mechanisms to prevent duplicated buying from both capital equipment and MRO suppliers.
- Strategies for ensuring the continuity of supply of MRO products and services include Procurement:
  - Requesting detailed descriptions and specifications of critical items from the stakeholders, as well as information regarding the relevant suppliers
  - Categorising parts into critical, non-critical, and regular consumables
  - Maintaining a historical record of the spare parts that are purchased, as well as the delivery lead times and annual price adjustment dates
  - Monitoring the supply market for potential risks and encouraging the supply teams to maintain the correct levels of safety stock for critical items at each site
  - Identifying additional sources of supply for critical MRO products and services
  - Implementing a material requirements planning (MRP) system that monitors stock levels and issues requisition orders based on pre-defined minimum stock levels
  - Contracting third parties to manage the company's spare parts requirements and/or inventory and storing vendor managed inventory (VMI) on-site
  - Establishing a modular maintenance programme and a preventative maintenance schedule to reduce the need for costly emergency repairs
  - Placing timely orders with suppliers, particularly for items with long lead times, stockpiling inventory in preparation for peak seasons, and monitoring logistical issues that may impact delivery lead times
  - Determining when equipment will become obsolete and need to be replaced
  - Negotiating agreements with suppliers to ensure that they stock the correct levels of inventory to fulfil the company's requirements within a specific time frame.
- Procurement contributes to the organisation's environmental sustainability objectives when purchasing MRO products and services by:
  - Aligning the sustainability objectives for the MRO category with the company's, and considering sustainability during maintenance activities, production processes and the acquisition of new equipment
  - Requiring key suppliers to list their sustainability activities, such as reducing carbon emissions and increasing recycling
  - Establishing the criteria for evaluating suppliers during the RFP process regarding their ESG activities and plans, and requiring increased visibility from suppliers of their supply chains
  - Applying sustainability policies within the procurement process and supplier auditing procedures
  - Requiring MRO suppliers and service providers to sign agreements to comply with the company's code of conduct and register with EcoVadis and/or Sedex to be assessed for sustainability and supply-chain risk
  - Developing strategies for recycling, reusing, repurposing or selling end-of-life equipment
  - Purchasing refurbished parts, or using service providers that can repair or refurbish existing parts.

## Financial Analysis

- Procurement is increasing visibility of MRO spend and the accuracy of spend data by:
  - Using centralised procurement and/or enterprise resource planning (ERP) systems for recording the MRO spend at each site
  - Integrating the systems that are being used at various sites
  - Ensuring that MRO suppliers, products and services are accurately classified with the correct taxonomies in the ERP/procurement system and in purchase orders (POs), and removing free text fields from POs
  - Using dedicated platforms such as the IBM Maximo Application Suite specifically for purchasing MRO products and services and recording MRO spend data
  - Developing databases of MRO products, services, suppliers and prices, and making these available to the stakeholders
  - Contracting third parties to organise and cleanse the spend data using artificial intelligence (AI), machine learning and big data applications

- Ensuring that all MRO items within the company's storerooms are linked to the supplier contracts maintained in the company's systems
- Mandating Procurement's involvement in and approval of MRO purchases with spend above a defined threshold
- Comparing the spend data obtained from the stakeholders and the suppliers to the data recorded in the procurement system
- Regularly auditing the integrators' procurement processes and the prices paid.
- Procurement is increasing the amount of MRO spend under management by:
  - Implementing MRO catalogues, or increasing the number of items in existing catalogues
  - Centralising the MRO procurement activities for high-value, strategic MRO products and services
  - Contracting business process outsourcing (BPO) providers, integrators, or integrated facilities management (IFM) providers to manage MRO requirements on the company's behalf
  - Rationalising the supply base and consolidating supply with fewer suppliers
  - Centralising sourcing and applying effective working models across the organisation
  - Increasing the use of procurement systems, e-Sourcing and e-Commerce platforms
  - Mandating the use of a single ERP system and procurement process across all sites.

## Strategies

- The strategic sourcing initiatives that have provided the greatest benefits include:
  - Applying a top-down approach to consolidating and rationalising the MRO supply base, and piloting the strategy in specific sites before rolling it out on a regional or global basis
  - Accommodating regional and local MRO requirements and markets when developing strategies
  - Consolidating regular orders and standard MRO services across various sites to improve consistency and benefit from volume-based pricing agreements
  - Managing relationships and establishing strategic partnerships with key MRO suppliers to ensure continuity of supply
  - Segmenting MRO suppliers according to levels of spend and the criticality of the products or services they provide, and identifying preferred partners for each of the MRO sub-categories
  - Contracting third parties to analyse the MRO data that is available and to recommend improvements to the processes that are used for capturing, standardising and using the data
  - Contracting integrators and using consolidators for specific MRO sub-categories
  - Considering MRO requirements as part of the TCO of capital equipment, and developing strategies for improving the management of the TCO of equipment
  - Establishing preferred supplier agreements with the manufacturers that supply the spare parts to the original equipment manufacturers (OEMs) of the company's capital equipment
  - Implementing minimum and maximum limits for inventory items, to minimise the storage of unnecessary or excessive amounts of stock on-site.
- The alternative solutions that are being used for buying MRO products and services include:
  - Implementing catalogues for frequently purchased or critical items, which may be accessed through supplier portals or the procurement system
  - Establishing an Amazon Business catalogue in the procurement system for consolidating tail spend and reducing on-site inventory
  - Buying MRO items from online marketplaces or e-Commerce platforms such as [Amazon Business](#), [Americanas Empresas](#) and [GOMRO](#)
  - Participating in consortium buying or joining group purchasing organisations (GPOs) to combine requirements with other companies and obtain reduced volume-based pricing from the suppliers
  - Engaging service providers such as [CH Master Data](#) for data management, material recording and supplier registration, and for co-ordinating purchases through GPOs in exchange for a share of the cost-savings achieved
  - Using MRO trading companies to consolidate the purchasing of multiple items from various countries, rather than from multiple individual suppliers
  - Installing vending machines for supplying items with high turnover rates at the point of use, such as personal protective equipment (PPE), adhesives, tools, and cleaning products.

## Contracts

- Procurement's preparations for negotiating with MRO suppliers and service providers include:
  - Identifying the scope and specifications for the MRO products and services required
  - Aligning with the MRO stakeholders and technical teams before conducting negotiations
  - Determining the extent to which flexibility can be applied to specific points of negotiation
  - Benchmarking suppliers' prices and rates against historical spend data and the market rates
  - Separating the service rates into categories that can be assessed and negotiated individually
  - Researching suppliers' profiles and the amount of spend that is being placed with them.
- Effective strategies and tactics when negotiating MRO contracts include:
  - Negotiating the prices for standard items based on cost breakdowns requested from the suppliers of their material and operating costs
  - Using indices such as the consumer price index (CPI), producer price index (PPI), and the wage price index (WPI) to assess the suppliers' proposed prices
  - Negotiating contracts that facilitate mutually-beneficial relationships between the company and the suppliers and incentivise them to agree to specific clauses
  - Using consolidated volume as leverage to obtain favourable pricing and discounts
  - Including MRO requirements in contracts for capital equipment
  - Negotiating realistic fill rates for items that are required both frequently and occasionally
  - Developing a demand management plan to assist the suppliers in fulfilling the company's requirements.
- Negotiations and contracts with MRO suppliers address requirements and clauses regarding:
  - Prices, discounts and rebates
  - Management fees and/or mark-ups
  - Cost savings
  - The frequency for auditing the supplier's POs
  - Service schedules and costs
  - Payment terms
  - Guarantees and warranties
  - Limitation of liability
  - Consequential loss
  - Force majeure
  - Crisis management
  - Continuity and assurance of supply
  - Sustainability criteria
  - Termination for cause or convenience.

## Performance Management

- The service level agreements (SLAs) for MRO suppliers and service providers address:
  - Delivery lead times, and the management of late or inaccurate deliveries
  - Spend thresholds for quotes being required before approval
  - Assurance of supply
  - Inventory and minimum stock levels
  - Substitution of items with alternatives of equal quality
  - Maintenance schedules
  - The time frames for conducting repairs and maintenance services that directly impact production
  - Product and service quality and safety standards
  - Process efficiencies
  - Price increases and adjustment mechanisms.
- The KPIs that are being applied for managing the performance of MRO suppliers and service providers include requirements and metrics regarding:
  - Delivery in full, on time (DIFOT)
  - Accurate lead times
  - Response times
  - Quotation completion timescales
  - Invoice accuracy
  - Part and product availability



- Fill rates
  - Equipment uptime and downtime
  - Process and efficiency improvements
  - Service and product quality
  - Safety
  - Customer satisfaction
  - Cost reductions and savings
  - Innovation.
- Penalties may be applied for the suppliers failing to fulfil the requirements stipulated in the SLAs and KPIs, and bonuses and gain-share schemes may be applied to motivate performance excellence.
  - Procurement collects, records and reports supplier performance by:
    - Obtaining feedback and ratings from the stakeholders using surveys and scorecards
    - Requiring the suppliers to provide self-reporting to increase their accountability
    - Cross-checking the suppliers' reports against the internal data
    - Using the time-sheet integration function within [SAP Fieldglass](#)
    - Auditing the monthly cost savings declared by the suppliers, performed by the finance team
    - Recording and monitoring the data in the ERP or procurement system
    - Using data visualisation software such as [Power BI](#) and [Tableau](#) to develop dashboards for reporting supplier performance data to the stakeholders and senior management.
  - Procurement conducts quarterly business reviews (QBRs) with key stakeholders and suppliers to discuss the results of performance evaluations, provide feedback and develop corrective action plans if necessary.
  - Supplier relationship management (SRM) may be conducted with critical and key suppliers, and annual strategic meetings may be held with or between the senior executives of the client and supplier companies, to discuss and align strategic objectives and strengthen relationships.
  - QBR and SRM meetings also provide opportunities for MRO suppliers and service providers to present innovative solutions that may benefit the organisation.
  - Additionally, Procurement organises supplier innovation days to which suppliers are invited to present innovative solutions to the stakeholders, or case studies regarding successful projects they have implemented with other customers that could be applied to fulfil the company's requirements and business development objectives.

## Trends and Technology

- The technological and digital solutions that are being used to increase the efficiency of MRO operations include:
  - Robotic process automation (RPA) applications for ordering MRO products and services, for which the item registration and coding need to be accurate, and user-friendly interfaces for the stakeholders and suppliers are necessary to be successful
  - Total productive maintenance (TPM) systems and processes
  - MRO inventory management systems and software such as [Coupa Inventory Management](#) and [IBM Maximo MRO Inventory Optimization](#)
  - Quick response (QR) codes for tracking inventory and usage levels, and the locations of specific items
  - 3D printing to replace parts that are difficult to source, particularly for older equipment
  - Self-diagnostic equipment and AI analytical applications that monitor the functionality of machinery and indicate when maintenance, repairs or replacements are necessary
  - The internet of things (IoT) and bluetooth connectivity for self-diagnostic equipment to report maintenance and repairs requirements to the internal or external maintenance teams
  - Remote connectivity between sites and suppliers that enables maintenance to be conducted remotely using virtual technology such as [Google Glass](#), training to be provided remotely by the suppliers, and tablets to be used for ordering items and documenting inventory
  - Virtual reality (VR) applications that enable off-site technicians to remotely guide on-site teams through maintenance and repairs
  - Augmented reality (AR) applications for monitoring services as they are performed and completed.

## Resource Centre Links

The following are links to the full meeting reports for each region:

- [Asia](#)
- [Australasia](#)
- [EMEA](#)
- [Latin America](#)
- [North America](#)

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**EMEA and Head Office:** 1 Holt Barns, Frith End, Bordon, GU35 0QW, United Kingdom  
 T: +44 1420 488355 W: [casme.com](https://casme.com) E: [info@casme.com](mailto:info@casme.com)





**Europe & Head Office**

**T: +44 1420 488355**

**Americas**

**T: +1 973 218 2566**

**Asia**

**T: +65 6832 5584**

**Australasia**

**T: +61 2 8216 0942**

**[casme.com](http://casme.com)**



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