

The background of the top section is a grayscale photograph of an industrial facility, possibly a refinery or chemical plant. It shows complex piping, metal walkways, and a large cylindrical tank. The sky is filled with white clouds. The title text is overlaid on this image.

Managing Your Indirect Supply Chain

CONFIDENCE THROUGH VISIBILITY

The background of the bottom section is a grayscale photograph of a worker in an industrial setting. The worker is wearing a hard hat, safety glasses, and work clothes, and is focused on a task involving a large, circular metal flange. The background shows more industrial structures and a cloudy sky.

MRO Supply Chain Management Series (Part 1 of 4)

OVERVIEW

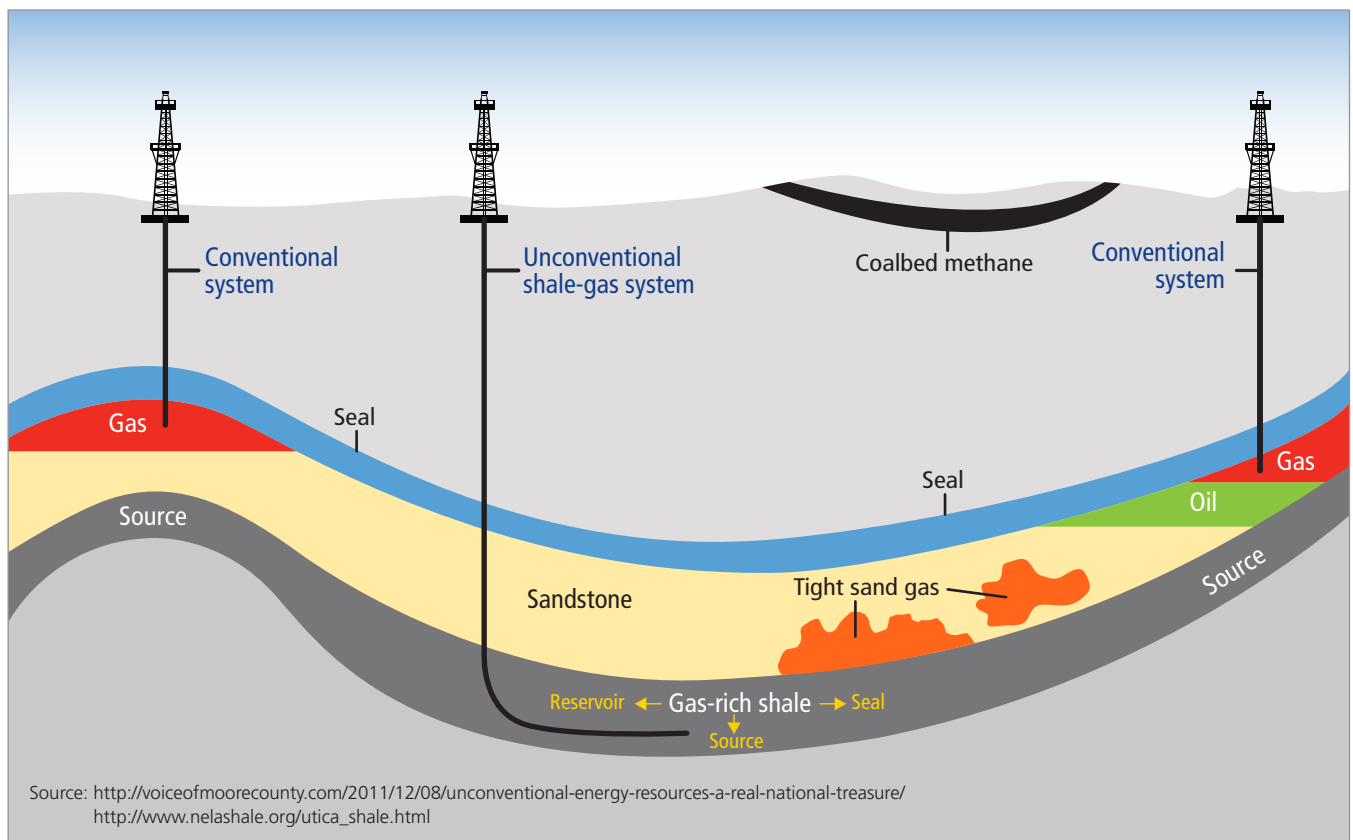
This past year contained many exceptional challenges for upstream and downstream Maintenance, Repair and Operations (MRO) professionals in the energy industry, and it does not appear to be getting any easier in the years to come. Fluctuations in demand along with price volatility have forced energy companies to look for ways to reduce costs, which have led to sourcing more supplies from low-cost locations and shifting production to areas that are both remote and unfamiliar. This sourcing transition for both production and supplies has increased the complexity and extended the length of the supply chain.

Additionally, the days of producing “easy” oil are coming to a close. Some estimates suggest that conventional production is declining by 5 percent per year. These changes are requiring companies to consider extraction of unconventional oil (Figure 1), such as the Canadian tar sands or natural gas sites in politically challenging

“Easy oil has disappeared. We need to have larger projects for the more difficult stuff. Having all the proper back-up documents and certifications that accompany various equipment – that’s increased a lot. Again, I would say that’s really tied to the increasing complexity of the projects, as the types of materials we use now are very different, with oil sands and offshore, than ten years ago.”

Head of Materials Management, Energy, Americas

Figure 1: Comparison of Oil Production Methods: Conventional versus Unconventional



environments, such as Israel and Mozambique. In addition, hydraulic fracturing of shale rock is becoming more commonplace.

Already struggling to adapt to this changing business environment, energy companies face internal pressures to do more with less. Companies have increased the oversight of the indirect material supply chain spend, driven by a belief that this area can produce savings.

Meanwhile, stringent regulatory requirements have intensified the already considerable focus on safety and compliance at the sites, resulting in escalating production and personnel costs.

These trends are in conflict with one another – the external environment forces companies to develop a more effective indirect material supply chain and invest in deepening its expertise, while internal savings targets drive it to reduce spend.

Maintenance, Repair and Operations (MRO) is defined as all indirect material supporting plant, equipment, replacement parts, maintenance activities, and MRO consumables for planned and unplanned routine maintenance, turnarounds, and small capital projects.

To assess priorities and concerns in this evolving environment, Exel interviewed industry experts and energy professionals (upstream and downstream) in procurement, supply chain and materials management roles. In four separate reports, Exel will discuss the most salient issues facing the energy industry:

1. Confidence through visibility
2. Supply chain performance
3. Supplier and supply chain management
4. Safety and compliance



PART 1 OF 4: CONFIDENCE THROUGH VISIBILITY

As the oil and gas industry evolves, indirect materials management requirements are becoming more complex and wide ranging. This evolution, which is creating new challenges in the indirect materials supply chain, is being driven by three major trends:

1. Expanding production into emerging markets
2. Development of remote extraction sites
3. Focus on cost reduction

These trends have made it more important than ever for energy companies to have full visibility over the indirect material supply chain. Companies have stated they need clear oversight of which suppliers have responsibility for each aspect of the supply chain in order to avoid duplication of effort. They need to know the location and amount of inventory so when deliveries are made the end user is guaranteed to have the materials they require. Finally, companies need metrics that offer robust insight into productivity and costs. Without visibility in all these areas, it becomes challenging to maintain production and improve processes.

“Companies are sourcing and delivering globally. The realization of the challenges involved in that has driven companies to focus more efforts on supply chain.”

Head of Supply Chain Faculty,
Major university in the Midwest

EXPANDING PRODUCTION INTO EMERGING MARKETS

Since 2005, when global production of regular crude oil hit a ceiling of 72 million barrels a day, supply has not kept pace with rising demand.¹ As the need to locate new extraction sites increases, many companies are migrating their sites to emerging markets and sourcing new basins with conventional and unconventional oil. This next phase in oil and gas



extraction means projects are being undertaken in countries where companies have limited presence or lack prior experience. As a result, local support networks that manage the indirect material supply chain processes have limited functional resources.

In addition, complicated new processes, such as extraction from tar sands and hydraulic fracturing of shale rock, are forcing companies to make the right purchasing decisions in order to keep ahead of lead times for these large-scale projects. Adding to the complexity is the issue that each country maintains their own regulatory requirements and safety procedures, many of which North American oil and gas companies have not had to deal with in the past. This necessitates investment in compliance software and skilled personnel with the capabilities to oversee strict adherence across multiple countries. Many companies readily admit they do not have access to these skills or systems in house; thereby driving interest in delegating such responsibilities to external experts.

¹ Murray and King, *ibid*

DEVELOPMENT OF REMOTE EXTRACTION SITES

Many energy companies are expanding into remote sites in their home countries, which brings a new set of hardships. Sourcing for these remote sites initially must come from local providers, rather than suppliers who are able to offer customized solutions. This means there are limitations to what services are available. In addition, transportation can be difficult as a result of underdeveloped roads or lack of infrastructure. Finally, with existing high demand for science, technology, engineering and math (STEM) graduates in populated areas, it becomes even more of a challenge to find these individuals within commutable distances of a remote site. Overall, these locations are expensive to service, suggesting an innovative approach may be needed.

FOCUS ON COST REDUCTION

Oil production from existing fields is easier and cheaper than finding new fields or using unconventional extraction, both of which are quickly becoming necessary for future production. The price of crude oil is already volatile and subject to wild swings and it is difficult to predict future trends, especially when extraction processes change.² These pressures are being felt in the indirect supply chain where supply chain professionals suggest they are struggling to keep costs under control. Contributing to this growing pressure is that the MRO spend is expected to increase at 6 percent annually over the next five years.³

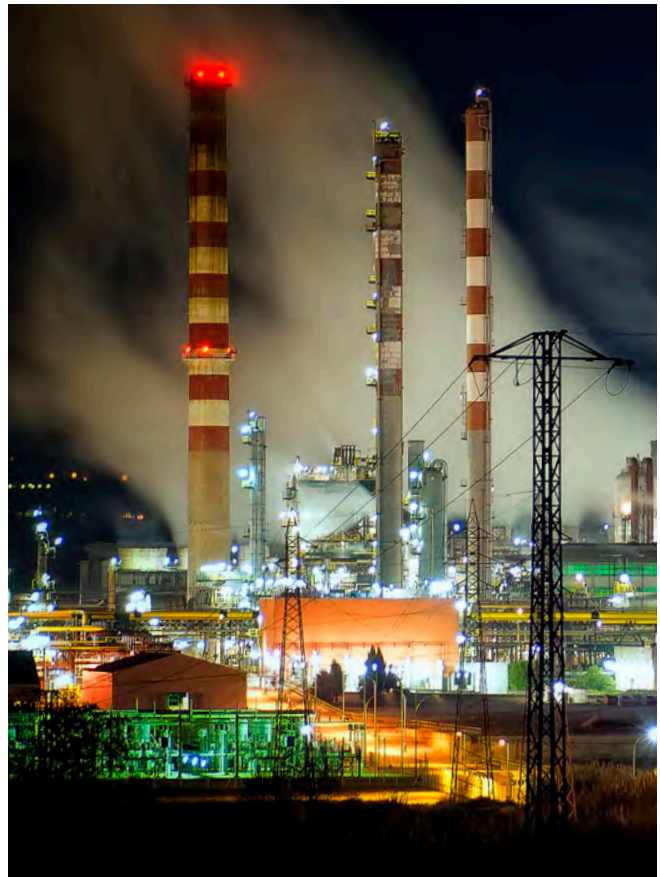
These developments precipitate a need for better insight into which processes are effective, which processes need to be improved, and where efficiencies can be gained to increase the productivity of labor and suppliers.

“Commodity pricing is critical for us. The prices of natural gas, oil and steel have a real impact on what we can do at the company.”

Materials Manager, Coal Mining, USA

“Previously, we may have had warehousing and storage where our factories were. But as we’ve been getting more intensive, most of our stuff is in Northern Canada so it’s a three hour drive [from a major city]. It’s very isolated, so rather than have everything concentrated at the wellheads, we need to think about how to locate storage to service more locations to respond more quickly to needs.”

Supplies Manager, Upstream Oil and Gas, Canada



² Murray and King, *ibid*

³ Oliver Wyman, Airline economics are transforming the MRO landscape, http://www.oliverwyman.com/pdf_files/AAD08-MRO-Survey08.pdf

3PLs OFFER ALTERNATIVE SOLUTIONS FOR THE NEW SUPPLY CHAIN

As more companies focus on their indirect supply chain as an area for improved performance and cost savings, they are realizing the current supply chain model is not necessarily equipped to meet their needs. As a result, a growing number of companies are exploring the option to outsource their indirect materials supply chain to third-party logistics providers (3PLs). In fact, a recent report even suggests that in-house MRO services for industrial production are expected to decline by 3 percent over the next three years.⁴

Third-party logistics providers can help energy companies address the challenges of entering emerging markets, servicing remote locations and streamlining the supply chain. Those providers who have a global presence and are experienced in serving the energy industry can provide solutions that improve the visibility of indirect materials

and increase maintenance productivity. This enhanced visibility can help identify cost savings that could range between 10 and 20 percent.

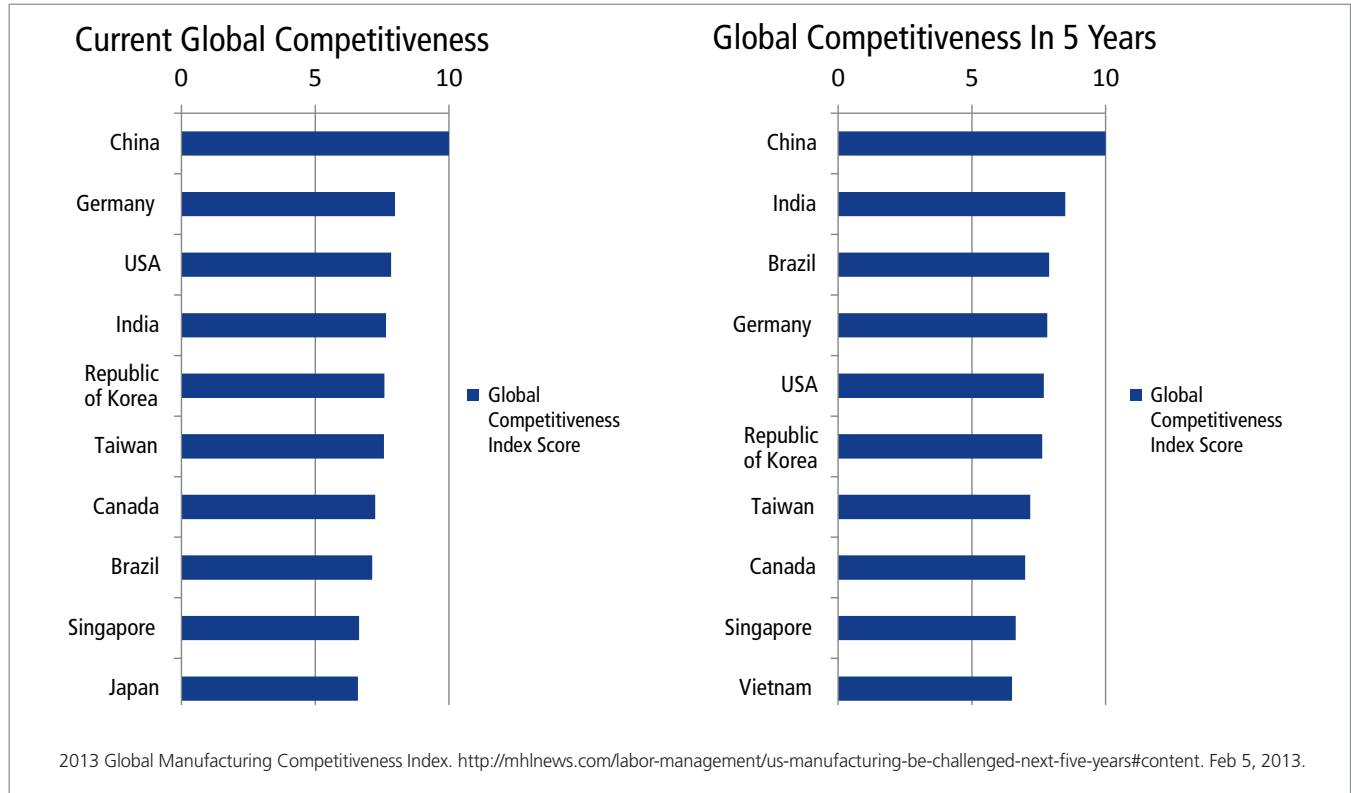
“We have evaluated onshore and offshore providers in the past. For us, the delivery and service components are most important. We need them to be 24 / 7 partners... It’s no good saying you’re only able to work on U.S. time.”

Head of Materials Management, Energy, Americas



⁴ AT Kearney, MRO on the Move, http://www.atkearney.com/automotive/featured-article/-/asset_publisher/S5Uk00zy0vnu/content/mro-on-the-move/10192

Figure 2: **COMPETITIVE FUTURE**



SUPPLY CHAIN MANAGEMENT ACROSS BORDERS

Managing the supply chain between countries for routine maintenance and capital projects along with building new production sites in emerging markets can be a daunting task. Certain factors are necessary to ensure a successful operation:

- Close adherence to compliance procedures
- Control over material tracking
- Understanding of the local political / regulatory environment

Outsourcing partners must be experts in compliance, with consistent procedures in place for Health, Safety, Security and Environment (HSSE) compliance across the supply chain as a basic minimum. In addition, they should have: excellent existing relationships with customs authorities; be able to offer comprehensive solutions for navigating complex regulations; and have best-in-class technology for managing the supply chain internationally.

In regard to material tracking, global deliveries present many challenges when trying to maintain visibility of materials in transit. These challenges include retaining

transparency across different modes of transportation, multiple transportation providers and throughout the customs clearance process. Inefficiencies due to a lack of visibility is the reason companies need a provider that has the capabilities and international presence to take responsibility for global transportation. For example, an integrated material tracking system that is linked to ordering / replenishment systems would allow for containers and packages of supplies to be recorded and time stamped. This enables better traceability across the supply chain. Post delivery, key conformance statistics on shipping accuracy and on-time shipping / receiving will provide the metrics to evaluate if delivery expectations are being met.

Finally, a global 3PL who is already established in those emerging markets with strong future potential (Figure 2) can provide an understanding of the local political and regulatory environment along with an existing infrastructure, including facilities, workforce and relationships with local vendors.

SERVICING REMOTE SITES

The industry is calling for service to more remote locations, but managing this can be difficult without the right resources. To facilitate servicing these locations, companies must provide visibility to the flow of materials. This is achieved by installing the right systems to link the order entry process with MRO supply locations; thereby ensuring clarity on chain of custody. Additionally, material consolidation sites (cross docks) should be strategically located in relation to remote sites in order to:

- Help reduce congestion to the sites by consolidating shipments
- Initiate receipt of goods earlier in the receiving process
- Verify order accuracy of material against packing list and purchase order before the material arrives at final destination

This infrastructure helps minimize transportation costs, lower inventory carrying costs, and guarantees that indirect material supplies are always available

when needed by the end user. Finally, any provider engaged will need to be flexible, potentially adopting a collaborative approach with a select group of manufacturers based near one another in a remote location in order to reduce costs for an individual client.

“Offering us greater economies of scale is the main attraction [of outsourcing]. Rationalization and finding ways to share things with theoretical competitors... We have done some work with companies to rationalize freight routes. We’ve encouraged our suppliers to work with all the groups so we’re not all sending half-ton trucks up there.”

Supplies Manager, Upstream Oil & Gas, Canada



COST IMPROVEMENT OPPORTUNITIES

MRO ASSESSMENT

Research suggests that few organizations have robust visibility into the components of its MRO spend. As there is not always reliable data or standard nomenclature, it may be difficult to create a spend baseline with existing information.⁵ In order to truly understand how efficiently or inefficiently an indirect supply chain is working, companies need a big-picture view of its processes and costs. An MRO supply chain assessment is one way to identify any inefficiency in the indirect supply chain.

A full-scale assessment can be conducted using a variety of inputs⁶ to create detailed supply chain maps; baseline total costs for MRO management; and identify and prioritize improvement opportunities in order to build a picture of where redundancies might be eliminated and savings found. Benchmarking enables performance comparisons to the wider industry and can help determine relative performance. By utilizing all the data from both observations at the facilities and interviews with personnel, a process improvement plan is created that enables management teams to minimize waste in indirect supplies, during a time when costs may be rising elsewhere on the balance sheet.

INVENTORY MANAGEMENT

In addition to deploying the infrastructure, the correct stocking strategy needs to be considered. To start, the development of an inventory/material stocking strategy should be designed to address critical parts and response times. This can be combined with the development of a low-dollar, high-volume material strategy which focuses on developing a split between controlled access for higher value parts and uncontrolled access (free issue bins) for those low-value, quick-moving parts. These strategies focus on savings associated with labor and inventory by converting to a just-in-time stocking strategy.

CAPITAL PROJECTS

As capital project materials do not fall into the inventory category, it may be difficult to keep track of all the material and relevant paperwork, especially when setting up a new

location. Most enterprise resource planning (ERP) systems do not have the capability of tracking expensed items, so companies have a high reliance on manual processes to track this material not only during transit, but post receipt. This typically results in users re-ordering materials they already have simply because they do not have direct visibility to the location of the material. Additionally, companies do not have a central repository for tracking and filing paperwork, such as the Mill Test Report (MTR) or Product and Manufacturing Information (PMI). If there is any type of failure, this paperwork is key to locating the original manufacturer and associated specifications material.

By having a partner who can help manage the paperwork and materials process, companies can eliminate the need to reorder lost materials which can delay projects. Many companies will compensate for lost parts by overbuying by as much as 20 percent to ensure they have the inventory when they are ready for the part. Particularly in emerging markets, it is critical to have a partner who can take control of the paperwork, manage material effectively to new sites and understand the local environment.



⁵ Everest Group Research, Succeed with MRO Outsourcing, 2012

⁶ For example, profile order management, warehouse productivity, stores productivity, cribs productivity, plant safety, controls environment, material flow, inputs for value calculators, understanding of KPIs and key units of measure

CONCLUSION

As extraction methods and projects change, so do the supply chain requirements. A third party logistics partner must provide infrastructure support in remote locations, local knowledge in emerging markets, a rigorous focus on compliance, visibility of parts and materials through best-in-class systems and processes and the oversight to manage the cross-border supply chain. Most of all, as the energy industry moves into its next phase of development, a company needs full confidence that its partner will be able to provide the support and expertise in indirect material supply chain management that is required, both now and in the future.

READ THE ENTIRE MRO SUPPLY CHAIN MANAGEMENT SERIES:

- 1. Confidence through visibility**
2. Supply chain performance (May 2013)
3. Supplier and supply chain management (August 2013)
4. Safety and compliance (November 2013)

ABOUT EXEL

Exel is the North American leader in contract logistics, providing customer-focused solutions to a wide range of industries including energy and chemicals, automotive, consumer, retail, engineering and manufacturing, life sciences and healthcare, technology, energy and chemicals. Exel's innovative supply chain solutions, skilled people and regional coverage bring together all aspects of contract logistics in addition to a wide range of integrated, value-added and specialist services. Exel is a wholly owned entity of Deutsche Post DHL, the world's leading logistics group.

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