SYSPRO™
Simplifying your Success

White Paper

Mining and ERPs

Supply Chain Management and Beyond

Introduction

With the demand for commodities increasing globally and competition among suppliers increasing, the mining and resource (M&R) industry is facing new challenges. To address these challenges they need to be ever more efficient at supplying the right product, to the right markets, in the right form, and at the right time.

Supply Chains

Consumer products, retail, automotive, and similar industries, have functioned in demand–driven and highly competitive environments for decades. They have learned how to overcome many Supply Chain Management (SCM) challenges, and how to optimise their responses and performance.

The best in these industries have integrated their operations across the entire value chain to ensure synchronization and alignment to the task. The result has been the delivery of finished goods, on time, in full, and to specification. The best continue to meet the challenge for highest throughput from limited assets, with the least investment in inventory.

In contrast, the M&R industry has focused successfully on pricing, investment, and risk management aided by scenario planning IT tools. M&R has seen similarly good results from their geological analysis and modeling.

The Complexity of Supply Chain Management in M&R

Most industries have a Production and a Maintenance supply chain. However, in M&R there is an additional need for a People and Equipment supply chain, and in M&R all the various supply chains have challenges unique to this context.

The **Product Supply Chain** in M&R has many characteristics found in other manufacturing operations where planning and scheduling are required to use capacity effectively. The product has to be mined and then converted to become a saleable end item. The intermediate bulk products must be transported (often by third parties) to the next stage to meet the end-to-end plan. Stockpiles must be managed to keep working capital at optimal levels, and there are consumable products that must also be planned into the process.

The most significant differentiator is the waste and bi-products that must be further processed, managed, stored or disposed of safely.

The **Maintenance Supply Chain** has to keep capital equipment running, above ground, below ground or in the pit. Spare parts and consumables are often procured from afar and transported across inhospitable territories. These must then be stored, distributed, and often returned for refurbishment or repair.

Maintenance needs to be performed on multiple sites. Operators must have access to the appropriate tools and equipment, much of which they share with a number of remote sites.

The supply chain servicing people and equipment is of an extremely large scale. Thousands of people need to move into and out of mining operations every day. These people need to have the correct safety and work equipment, and have their possession of the equipment monitored.

Additionally, many in this large workforce live in hostels or houses on the mine. These people have to be supplied with food, linen, cleaning materials, etc., often obtained from shops on site run by the mine. The onsite medical clinics need to address their health needs, and these clinics require specialised procurement.

While effective SCM in the M&R industry does have some similarity to other industries, there are typically many significant and challenging variations. The management of multiple Supply Chains adds yet another challenge.

Supply Chain Challenges in M&R

The complexity of the M&R context manifests in discrete areas: Visibility, data reliability, functional silos, accessing and managing high volumes of data, and grade control, among others.

Knowing what is where in the beneficiation process is critical to scheduling work at the various stages and to making sound, reliable business decisions. There are a number of factors hindering visibility.

Visibility
Typically, disparate IT systems are in place to manage planning, production accounting, information, procurement, and other functions, with many poorly integrated or not integrated at all. The information in these disparate systems lacks standardization, hindering the ability to monitor and react.

Functional Silos
Historically M&R companies have a silo-type structure with individual mines and facilities functioning autonomously. As a result, bottlenecks occur between operations as local priorities takes precedence over the "master plan."

The silos in the M&R industry compromises the coordinating of complex global distribution networks across multiple regions and modes of transport. In silos, the focus is on the local operational output and not compliance to an overall supply-chain end-to-end plan. Even where there is an inclination to integrate operations, there remains real constraints to responding and synchronising between these operations.

Managing Data
Mining companies are expert at sophisticated geological modeling and mine control. Their planners and managers in operations rely surprisingly heavily on their own spreadsheets. These spreadsheets inform other spreadsheets and when flawed, compound the lack of reliability. The result is poor data, impeding effective analysis, decision-making, priority scheduling, and other business requirements.

In the M&R context, high volumes of data must be captured and need to be summarised before they are useful to business systems. Too often, this data is stored and used locally or in comparison to different operations, but is not used as an input to the business decision systems. The use of real-time execution input into the end-to-end supply chain plan, and to downstream operations offers a valuable opportunity.

An ERP Solution (Supply Chain Systems)

The two sub-areas of Supply Chain systems, Procurement/Sourcing, and Supply Chain and Logistics, are both relevant to M&R.

M&R has focused on the total cost when working with suppliers and less so on the suppliers' delivery or overall capabilities. This results in inappropriate delivery times and delays to the overall end-to-end plan. A more holistic and strategic supplier relationship strategy driven by a Supplier Relationship Management program may facilitate improvement.

Short-term forecasts in M&R can be volatile and unreliable due to commodity movements, customer changes and execution disruptions. The relationship, however, between long-term forecasts to determine capital investment, medium-term forecasts to enable synchronisation of the overall plan, and short term forecasts must be linked top to bottom. All operations can use the resulting forecasts as input to their local short-term execution, and medium term compliance. This process can be efficiently managed through the use of Sales and Operation Planning and specialist IT Demand Forecasting and Supply Planning tools.

The sophistication of inventory management systems developed for other industries could well enhance inventory management in M&R. Inventory of all types including high-value and safety-critical maintenance spares, hazardous materials, safety equipment, consumable materials, precious metals, short shelf-life materials, and more, need efficient managed. Tracking is required for new and refurbished items, by batch, grade and serial number, and for shrinkage and theft, handling and movement, returns, and more. These all require different degrees of control to ensure that appropriate service is maintained, and effective financial and legislative requirements are met.

Coordinating movement between beneficiation stages and customer locations in M&R could range from conveyor and simple truck delivery, to coordinated cross-border and multi-modal, truck, train, or ship transport. This could require quality or laboratory checks before and after shipment. It might involve the management of the company's own transport, specialist vehicles, third-party logistics providers, or freight forwarders. Scheduling linked operations between African countries,

for example, can involve significant and unpredictable delays due to infrastructural issues such as rolling stock capacity to the port, and non-tar road conditions.

Such complex processes are better managed and coordinated through an ERP system.

ERP was originally designed to be the back-end system for all users and where all data resides in one place or on one database. Today ERP includes much more advanced functionality than this, but it is still the primary place to keep transactional data giving visibility of who did what, where items are located, and when changes were made.

Why SYSPRO for the Mining & Resources Industry?

ERPs and other solutions can be overly complex and make it more difficult to get visibility and accurate data. SYSPRO ERP matches developing nation's requirements, and the needs of remotely located M&R organisations with the most appropriate balance of process fit, IT functionality, and ease of use. SYSPRO has the functionality M&R requires and is designed with the "keep it simple" principle foremost. Additionally, SYSPRO's total cost of ownership is still lower than its more complex competitors.

The SYSPRO Approach

SYSPRO software is an award-winning, best-of-breed Enterprise Resource Planning (ERP) software solution for cost-effective on-premise and cloud-based utilization. Industry analysts rank SYSPRO software among the finest, best-in-class enterprise resource planning solutions in the world. SYSPRO software's powerful features, simplicity of use, scalability, information visibility, analytic/reporting capabilities, business process and rapid deployment methodology are unmatched in its sector.

SYSPRO, formed in 1978, has earned the trust of thousands of companies globally. SYSPRO's ability to grow with its customers and its adherence to developing technology based on the needs of customers is why SYSPRO enjoys one of the highest customer retention rates in the industry.

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