
Material Management in the Oil Industry

Oil Exploration, Drilling, Refining, and Infra-structure Support

Situation

We worked for one year with an international oil company to totally rethink the way they manage materials.

The Implementation EngineeringSM was to identify the size of the opportunity for inventory reductions and material supply organization cost reductions and included detailed recommendations for achieving the reductions. The Implementation Execution Plan recommended the following areas:

- Purchasing policies and practices
- Material control policies and systems
- Cataloging and spare parts policies
- Materials supply interfaces with project management
- Materials supply interfaces with drilling
- Equipment standardization policy

The Implementation Execution project implemented the recommendations resulting from the Implementation EngineeringSM. The Plan included work to benchmark the company against a known leader in materials management and logistics. The company they partnered with was also an oil company in a remote, harsh environment that had exceptional supply and logistics considerations.

Approach

The benchmarking work involved the project management team spending one week visiting the operations of its benchmarking partner. During that week, the operations were toured and in depth interviews were conducted and documentation was shared. This enabled the team to understand the processes, procedures and systems of the partnering company. Then a detailed report was written which contrasted the two companies. It included a discussion of those areas where the partner's approach would be a clear fit and provide a large benefit if adopted.

Results

Implementation EngineeringSM

The first step of the project was to get an understanding of the inventory, which included identifying the inventory and putting a value on it. The value was \$1.251 billion. We then stratified the inventory based on how we thought it should be managed. The stratification categories were as follows:

- Spare parts inventory to support equipment in refining operations
- Consumable inventory to support operations as well as the large living and working infrastructure
- Pipe for oil drilling operations
- Rotating inventory
- Materials to support projects

We could then analyze each category and decide how to manage it and set inventory turn goals. For example, spare parts inventory was to support equipment running in the field. It could have long procurement lead time and not having it could cost the company millions should an important piece of equipment break down. Therefore, policy had to reflect always having it and not expecting it to turn quickly. On the other hand, we expected consumable inventory to turn very quickly.

The next step was to identify opportunities for the various types of inventory, turn those opportunities into recommendations, and then estimate the benefits that could be received by implementing the recommendations during an Implementation Execution project. Of the \$1.251 billion in inventory, we identified \$420 million of inventory reduction opportunities. Those opportunities fell into three categories:

- Supplier lead time corrections \$70 million
- Drilling procurement management \$140 million
- Supplier agreement expansion \$210 million

Supplier lead time corrections would simply correct the lead times in the system and, in effect, reduce inventory because they were, on average, one month too long. That meant that material was arriving one month early, hence not turning as quickly as it could.

It was recommended that drilling procurement management change the practice within the drilling function of over ordering and early ordering to cover every "just-in-case" possibility.

Supplier agreement expansion involved setting up supplier partnerships and blanket orders that would enable Purchasing to reduce unit costs and lead times, both of which would contribute to inventory reductions.

We also identified cost reductions in the Material Supply organization that would come from implementing the following items:

- Using restricted vendor lists
- Enhancing the supplier information system
- Discontinuing repetitive price developments and placing items on blanket agreements
- Promoting the use of local suppliers
- Providing expediting
- Implementing a vendor appraisal system

The cost reductions from this area were difficult to estimate, but we made a rough estimate of about \$40 million per annum.

Implementation Execution Project

The Implementation Execution project was to implement the recommendations resulting from the Implementation EngineeringSM. The approach used was to assign full-time teams responsible for implementing sets of recommendations. Each team had a leader who maintained a project plan and time table for each recommendation and reported to the overall Implementation Execution project management. The project management reported to corporate top management.

- In the area of purchasing improvements to decrease inventory, the work to correct supplier lead times and achieve \$70 million in inventory reductions happened surprisingly quickly and the expected inventory reductions were achieved.
- Improving the drilling procurement management after close to one year had reached over 20 percent of the \$140 million potential reductions. This result did not come easily or quickly, primarily because of the large size of the drilling organization and its associated bureaucracy.



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- Similarly, the work to expand supplier agreements achieved in the first year about 10 percent of the expected \$210 million in reductions. The pace of achievement here was slow because this type of work takes time, and in this particular case, the level of expertise in the Purchasing Department was not high, but the number of suppliers was. The plan was to achieve all \$210 million in reductions over three years, but it actually took five years.
 - In the area of reducing operating costs in the material supply organization's operations, after one year, while there were noticeable improvements to operating procedures, they had yet to have an impact on the total cost of running the organization. At last contact, there have been significant cost reductions due to improved operations and people reductions (from attrition). However, the actual amount of cost reduction was not available.