

Indian Oil Improves Supply Chain with Honeywell's Supply Chain Management Solution



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Uttam Kumar Basu, General Manager, Optimization, IOCL

Benefits

Indian Oil Corporation Limited (IOCL) has implemented Honeywell’s Supply Chain Management solution to integrate and optimize the supply chain of five separate refineries. The project has resulted in the following benefits:

- Integrated supply chain planning which optimizes the entire supply chain providing higher margins and increased profitability,
- Crude selection and allocation which takes into account product demands, refinery capabilities and effect of crudes already procured,
- Optimal refinery production planning considering crude assays, unit capacities, product specifications and demands; and feedstock availability.
- Optimal distribution planning considering transportation costs, taxes and duties and transportation constraints

Indian Oil experienced major benefits on account of:

- Improved visibility into its supply chain process across the five selected refineries
- Investment analysis for refinery units, pipelines, etc.
- Analysis to formulate strategies to meet future scenarios like change in specifications
- Faster, more effective decision making on exchange strategies, imports and exports
- Improved response and execution capability

Background

Indian Oil Corporation (IOCL) is India’s number one oil company and holds the 189th spot on the famed Fortune 500 list of companies. It is the 19th largest petroleum company in the world and has also been recognized as the number one company in petroleum trading among the national oil companies in the Asia-Pacific region.

As India’s flagship national oil company, IOCL accounts for 56% petroleum products market share among public companies, 42% national refining capacity and 69% downstream pipeline throughput capacity. The company has a countrywide sales network of more than 23,000 retail outlets, including more than 10,000 petrol/diesel stations – backed by 165 bulk storage facilities, 95 aviation fuel stations and 85 LPG bottling plants. Its subsidiary, IBP Co. Ltd., has another 3,000 retail sales outlets.

IOCL operates 10 of India’s 18 refineries with a combined rated capacity of one million barrels per day (bpd). The company also owns and operates the country’s largest network of cross-country crude oil and product pipelines of 7,730 km, with a combined capacity of 58.62 million metric tons per annum.

For the year 2004-05, IOCL sold 50.1 million tonnes of petroleum products, including exports of 1.96 million tonnes. Its seven own refineries achieved a throughput of 36.63 million tonnes, and the pipeline network transported 43.03 million tonnes of crude oil and petroleum products.

Challenge

As a leading oil supplier, IOCL had the multifaceted challenge of maintaining its leadership position and meeting its vision of being a diversified, integrated energy company with a strong environment conscience and national role in oil security and public distribution. As the company looked for ways to maximize profits one thing was clear – more visibility into the supply chain and finding ways to optimize this value chain was critical. IOCL evaluated different supply chain management solutions to address this business problem and how best to implement a solution that integrates five separate refineries.

“A multi-site refining company has various supply chain problems to solve including which crude to buy, where to process it, how much to buy and make, what to make and where and how to transport it,” said Uttam Kumar Basu, General Manager, Optimization, IOCL. Traditionally different departments or divisions within one organization manage their own disparate project of this complex process and don't always talk with one another. As a result, decisions are sometimes made based on incomplete data or they can't be applied across the entire corporation.

“Our challenge was how to plan for various possible breaks that could occur in the supply chain and how to best optimize each specific point to increase our profitability and link activities of five separate refineries,” continued Mr. Basu. To put it in perspective IOCL had challenges in the supply chain to integrate, view and make decisions based on 80 crudes sourced from South America to South East Asia, 10 refineries and five detailed models, along with a large network of 200 depots, 40 terminals, 17 pipelines and six transportation modes. The resulting decision was to implement an integrated, multi-plant planning solution.

Solution

After serious consideration and an arduous evaluation process, IOCL selected Honeywell's Supply Chain Management solution. At the heart of this solution is Honeywell's Refinery and Petrochemical Modeling System (RPMS) known for its integrated planning features, cost effective implementation, passion and people commitment and unique investment modeling capabilities. The models developed with Honeywell's solution covered the entire supply chain of IOCL from crude purchases at the refinery gate or ports to product distribution at the terminals. “The scope of this problem was undocumented and we knew we needed not just a vendor, but a true partner to invest in and help undertake such a challenging project – we found that partner in Honeywell,” said Basu.

The Supply Chain Management solution provided by Honeywell consisted of the following modules:

- Demand planning: for demand forecasting and aggregation of the final demand numbers
- Integrated planning: for the complete IOCL refining supply chain
- Distribution planning: for generating operational plans for feedstock allocation and product distribution
- Refinery production planning: for generating operational plans for production

An integrated planning model is actually an aggregation of refinery sub models and distribution models requiring large amounts of data. The refinery models along with the crude assay data are directly embedded into the Integrated Planning Model and supply and distribution structure is obtained from the supply chain database. This provides flexibility to build in more details in distribution models than what is required from the perspective of corporate-wide optimization.

Basu commented, “We were able to shift our supply chain to a demand-driven one. The Supply Chain Database was truly a paradigm shift within the company and one that could not be taken lightly and needed support from the executives down to the operator level.”

In order to implement this challenging project a true partnership was formed between Honeywell and IOCL with teams of people involved at each stage including consultation, implementation and support.

“We knew we were taking on an almost impossible task and something that was unprecedented in our business – we had to change our usual way of thinking and plan every step of the way using models that were developed years ago but had to be applied to our specific situation. By using IOCL and Honeywell's proven experience and resourcing the appropriate subject matter experts for each specific phase we had an incredibly quick implementation – taking only two months to measure its effectiveness,” continued Mr. Basu.

Amazingly it took only 10 months to have 5 refineries fully integrated. “With Honeywell's help we have set a worldwide benchmark in the area of Supply Chain Planning.”

The resulting project has set a defacto standard in Supply Chain Planning. Replacing the traditional planning model, which was sequential and decomposed and not responsive to demand, the new integrated planning approach utilizes the synergies that exist between each functional phase (procurement, manufacturing, sales and distribution) to maximize the corporate profit.

Basu added, "The investment modeling capabilities of Honeywell's RPMS software also provides a unique opportunity for us to look at every investment as a capital expenditure and make decisions based on sophisticated investment analysis."

"We knew we needed a team approach that demanded committed consultants with proven industry background and models but also had the flexibility and maturity to build a partnership and forge new ground," said Basu. "During the project it was difficult to identify who was an Indian Oil employee and who was a Honeywell employee – we are a true combined team who look for ways to creatively solve problems and develop a new path."

Indian Oil has committed to a five-year contract with Honeywell to provide for ongoing support and enhancements as well as a continuous upgrade of skills and induction of new people and training as needed.

"We chose Honeywell because of the feature/functionality, cost-effective integrated planning solution and people commitment – not once did I hear them tell me how many 'man-hours' they were spending and now we look forward to the future long-end planning in the next 15-20 years with the help of Honeywell," concluded Basu.

More Information

For more information on any of Honeywell's Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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Honeywell Supply Chain Solution

Honeywell's Supply Chain solution effectively helps manage business complexity and optimize the supply chain. With real-time knowledge collaboration and visibility across the enterprise, decisions are made more quickly and disruptions minimized. Internet-enabled supply chain applications dynamically model the supply chain, and when combined with advanced execution solutions, substantially improves profitability through measurable inventory and product cost reductions. These benefits are realized through faster reaction to market opportunities, improved customer relations, and true collaboration with suppliers and customers.

Integrated with Honeywell's advanced applications and the Experion control platform, these products offer an integrated suite of advanced forecasting, planning, and scheduling to manage the supply chain. An integrated framework supports various modules and state-of-the art tools for a broad range of business decisions. These enable the business to monitor the condition of the supply chain and provide immediate feedback and exception notices.