LNG major optimizes supply chain by sprucing up scheduling, terminal operations

Achieves 35% improvement in operational efficiency, whittles down time taken for annual delivery planning from 75 days to 1 day

wipro

Client background

Client: One of the world's largest LNG producers

Services: Develops, produces and markets hydrocarbons. Annual LNG production of close to 80 million tonnes per year

Geographies: Primarily the Middle East

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Challenges

The LNG major needed to address one tactical and two operational challenges. One was to do with planning and scheduling, and the other two were to do with voyage management and terminal operations.

They did not have an efficient tool to manage complex planning and scheduling that involved creation of production and delivery plans for all products. The planning and scheduling was needed to manage the supply chain, storage and loading facilities. It took them 75 days to prepare annual delivery plans using spreadsheets for data compilation and the more than 2-month timeframe was detrimental to their annual tactical plan execution.

The LNG major also faced some operational challenges related to terminal operations. Their tank farm had common storage for LNG and other products, and they used trains from different ventures within the company for deliveries to the tank farm. The contracts were by train capacity. When any venture-owned train was shut down, an agreement between the ventures would adjust for the change, calling for a separate accounting process. In addition, each venture had limited storage for products. This meant any change in storage/trains would mean an adjustment in production to minimize excess payment for storage.

On the other hand, the LNG major was shopping for a tool to address vessel scheduling for shipping LNG to their customers. The special-purpose cryogenic LNG vessels used by the industry could only deliver cargo and could not carry any return cargo. The vessels used the cargo itself as fuel and had to compensate for boil off gas. After factoring in weather conditions, passage requirements for the Suez Canal and berth feasibility checks prior to each journey, shipping and voyage optimization and management became a complex task.

Solution

Wipro stepped in as the technology assessment and implementation partner for the LNG major. We rolled out transformations in three key areas.

- **Planning & scheduling:** We did an end-to-end analysis of the supply chain, identified factors driving decisions, constraints and KPIs for each function to arrive at the optimal solution. It was determined that a Quintiq platform was ideal to optimize the planning and scheduling function

- **Shipping analysis/voyage management:** After determining the need to have a solution with an interface to shipping and manufacturing systems, we implemented ShipNET. This is a standard solution used for O&G. To adapt it to an LNG environment, we included different parameters such as discharge terminal opening times, vessel/port compatibility, Suez Canal convoy times, type of vessel, sailing speed, gas up/cool down process, loss modeling for jetty and voyage boil off, etc.

- **Terminal operations:** After analyzing contracts between venture-owned train associated with the client and storage capacity for various products, Wipro created a virtual inventory management system using the Quintiq platform. The system separately accounted for each venture. Alerts were set up to adjust production and these alerts were triggered when storage limits were breached.

Business impact

Planning & scheduling

- Reduced time taken for annual delivery planning from 75 days to just 1 day
- 7%-10% margin improvement

Shipping analysis/voyage management

- Improved accuracy of voyage cost planning figures by 10%, which was earlier 80%-90%
- Moved voyage cost calculation, including fuel consumption, port and insurance charges, from industry standards to actual values
- Reduced demurrage charges by 20% with accurate scheduling

Terminal operations

- Operational efficiency improved by 35% due to accurate schedules, better visualization, inventory optimization and better visibility across departments
- Co-ordination efforts reduced by more than 50%

Wipro led the transformation for the LNG major that unlocked their ability to make spot deals and work out charter opportunities for LNG ships, resulting in annual savings of $5-10 million.

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