

Marine Operations Solution for Hovensa



Challenge

Hovensa, a joint venture between Amerada Hess (NYSE: HES) and Petróleos de Venezuela, S.A. (PDVSA) is a refiner located in St. Croix, U.S. Virgin Islands, and operates one of the most modern refineries in the world. With crude oil processing capacity of 525,000 barrels per day (BPD)/72,000 metric tons (MT), it is one of the largest refineries in the world. Due to its location on the island of St. Croix, Hovensa is entirely reliant on its marine operations to bring in crude oil and distribute its products. Only a small fraction of the total output of the refinery is consumed locally with the vast majority being transported over 13 docks and stored at a massive tank storage facility on the island. There are no pipelines leading to or from the island.

Based on this, the lifeblood of the refinery is its marine operation and ensuring that this operation runs as smoothly as possible is critical to the refinery's success. Any miscues in its marine operations can have costly consequences with a number of undesirable side effects, including:

- Idle time for vessels resulting in unnecessarily high demurrage costs
- Miscues at the dock resulting in lengthy vessel turnaround times
- A lack of storage space for crude oil or refined product
- Not enough feedstock to keep the refinery's units fully utilized

With today's increased use of global marine transportation, ensuring that marine logistics are aligned with inventory, production, equipment and other resources is a critical requirement for any terminal operator or refiner. Hovensa required a tool that could serve as a central point of management, scheduling and coordination for operating its marine terminal in the most efficient manner while taking the refinery's constraints into account. Hovensa found those capabilities in Synthesis®.

Solution

Hovensa decided that Emerson’s (formerly Energy Solutions International) Synthesis application was the right solution to manage its marine business. Synthesis was designed from the beginning specifically for the purpose of providing world class logistics management solutions for the oil and gas industry. Today, Synthesis assists Hovensa in optimizing its marine operations by providing a comprehensive marine management solution that integrates, coordinates and streamlines its business processes while sharing data with critical operations systems. Hovensa’s business is working in a synchronized, integrated and real time manner and it is able to gain access to unparalleled business intelligence and tools that are used to make meaningful decisions to manage its marine operations more efficiently. The Synthesis solution footprint for the marine space is depicted in Figure 1.

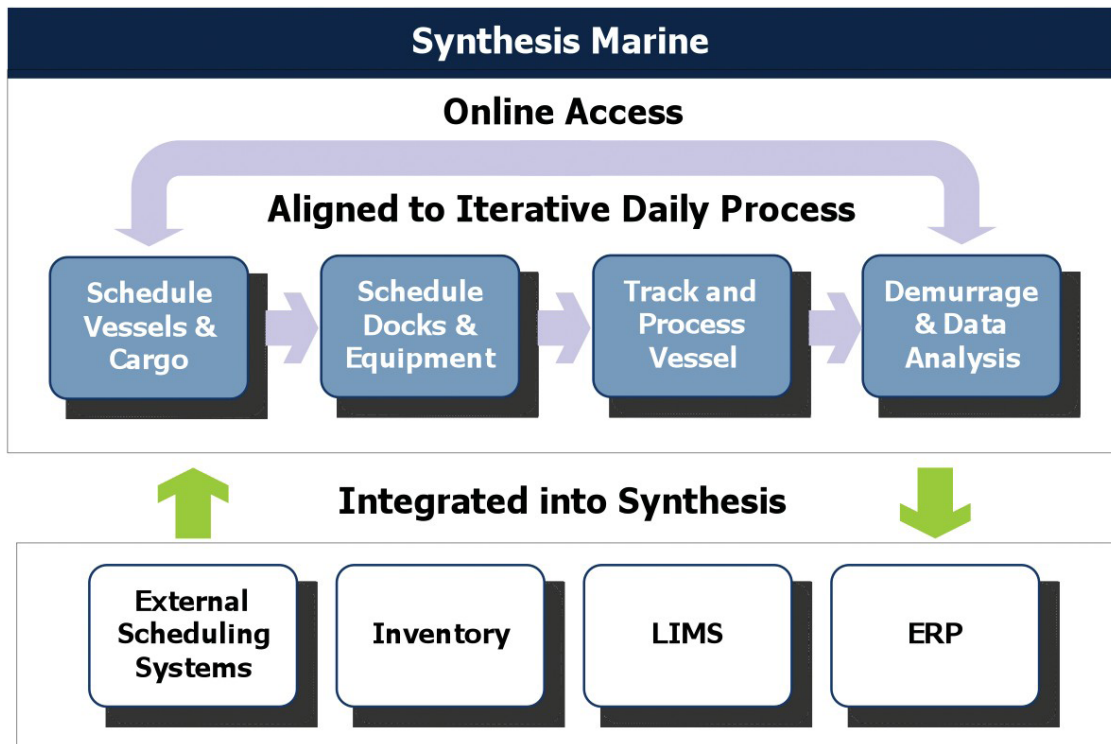


Figure 1. Synthesis Terminal Solution Footprint

Emerson believes that there is no “one size fits all” approach to solving our customer’s problems. However, through a thoughtfully architected solution the same common application core can be used across a broad spectrum of customers to support varying needs. Due to this approach, Hovensa and Emerson partnered together to enhance the Synthesis core application and provide highly tailored, yet packaged software functionality that meets Hovensa’s needs as well as the needs of other marine customers.

Synthesis User Figures

- More than 225 terminals
- More than 35M m³ products monitored
- More than 5,000-strong user base

“Managing the challenge of coordinating marine operations with plant and customer constraints is a logistics dance. Any missteps can have dire consequences.”

Key Capabilities

Some of the core functions of the Synthesis Marine solution include:

Module	Description
Marine Dashboard	A web portal that provides an overview into operational metrics and health of marine operations including dock utilization, dock schedule, demurrage exposure, inbound and outbound traffic and other key metrics. This portal can be accessed by internal and external parties, should a customer choose to implement it in this manner.
Vessel and Barge Scheduling	Complete support for vessel and barge scheduling for company and third-party owned ports.
Dock Scheduling	Graphical and tabular views into dock schedules including vessel and dock constraints, equipment line-ups (hoses, tanks), dock scheduling.
Time Logs	Electronic capture of time logs and associated documentation, including personnel data to ensure that a complete audit trail of vessel and shore times is captured and maintained.
Demurrage Management	Uses vessel schedules and time logs to estimate demurrage exposure and track the demurrage management process through to completion. Lets operators see the impact of their decisions on demurrage.
Vessel Turnaround Management	Ability to manage the vessel's turnarounds, including equipment line-ups (tanks, lines) and product availability such as whether product is certified for loading.
Measurements (Ticketing)	Full measurements functionality that captures ship, shore and inspector measurements and can further net out all volumes and account for marine specific functions such as Vessel Experience Factors (VEF) and track them.
Loss Control	Captures foreign port measurements as well as local measurements to track the volumetric losses incurred during a vessel's journey.

Table 1. Synthesis Marine Functions

Results

By selecting Synthesis as its logistics management solution, Hovensa gained a highly tailored, yet standardized off-the-shelf solution that meets its needs today as it did in 2004 when it was first installed. Hovensa has upgraded the system twice since its inception and Emerson continues to enhance the marine solution rapidly.

The payback period for this solution is typically less than a year, and is primarily driven by reduction of demurrage costs. While Hovensa does not publish its ROI, the chart on the left reflects actual results of a different Synthesis marine customer who has achieved a nearly 75% demurrage reduction within the first 8 months after implementation.

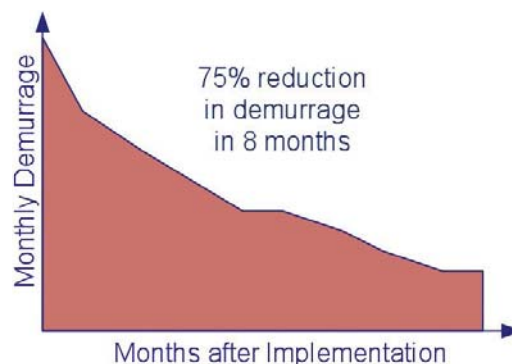


Figure 2. Synthesis Terminal Solution Footprint

Benefits Realized

Reduced Demurrage

By providing additional visibility into the vessel's schedules combined with the ability to track all time demurrage savings are significant. Typical demurrage savings are in the 10% range, and this translates to a Return on Investment of under one year. As shown above, some customers have experienced much greater decreases in demurrage.

Increased Dock Utilization

Dock utilization improvement in the order of 20-30% due to improved visibility and controls surrounding dock schedules have been measured.

Better Control over Volume Losses

By tracking foreign port measurements, as well as Vessel Experience Factors (VEF) it is easier to determine and pinpoint the reasons for liquid losses due to transportation.

Few Administrative Headaches

With an electronic trip document repository, it is easy to catalogue critical trip documentation and access it online. All trip files can be accessed over the web through a secure connection providing all stakeholders with access to critical documentation.

Better Operational Control and Coordination

Having all vessel schedules, dock schedules, product availability and inventory on line and available in the same system lets all stakeholders stay up to date while viewing the same real-time information. This is highly effective in breaking down communication barriers and ensuring that all personnel are coordinating with one another.

Hovensa continues to improve its operations using Synthesis and continues to be a vital partner for Emerson. Since Hovensa first began using the marine functionality, other oil and gas companies have begun to adopt the Synthesis solution for their marine operations. Combined with the pipeline and terminal functionality, Synthesis is emerging as the leading supply chain management solution for Oil & Gas companies.



**Global Headquarters
North America and Latin America**
Emerson Process Management
Remote Automation Solutions
6005 Rogerdale Road
Houston, TX, USA 77072
T +1 281 879 2699
F +1 281 988 4445

www.EmersonProcess.com/Remote



Europe
Emerson Process Management
Remote Automation Solutions
Unit 8, Waterfront Business Park
Dudley Road, Brierley Hill
Dudley, UK DY5 1LX
T +44 1384 487200
F +44 1384 487258



Middle East and Africa
Emerson Process Management
Remote Automation Solutions
Emerson FZE
PO Box 17033
Jebel Ali Free Zone - South 2
Dubai, UAE
T +971 4 8118100
F +1 281 988 4445



Asia Pacific
Emerson Process Management
Asia Pacific Private Limited
Remote Automation Solutions
1 Pandan Crescent
Singapore 128461
T +65 6777 8211
F +65 6777 0947

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