

HMEL Guru Gobind Singh Refinery Started Operations

with Flawless procedures by Yokogawa Technologies

“Yokogawa/Sim Infosystems has provided us with superior service and support since starting this project. It made sense to choose Yokogawa to apply advanced technology to our facility with the most well coordinated automation technology including a state-of-the-art process simulator for operator training. It has helped us successfully Installation our refinery and high level competence on the way we operate.”



HMEL Guru Gobind Singh(GGS) Refinery

Benefits

As India's one of the largest with advanced technology applying oil refinery, HMEL Guru Gobind Singh refinery has coming nearly completed Plant construction installation of Integrated Control & Safety system this year. This stage is under the pre-commissioning stage. Recognizing the need for a complete integrated instrumentation for safety and control, objectives were to keep safety operation and to improve the plant efficient operation with advanced technology in the Yokogawa's Integrated distributed control & safety system (ICSS).

HMEL selected Yokogawa as the Major Automation Contractor specialist and key partner to cooperate advanced refinery construction through the Full Refinery site-wide ICSS. This technology facilitated the centralization of refinery operations arranged in advanced ergonomic designed control room. Operators have been trained on the full realistic operation environment system with Yokogawa's simulation technology.

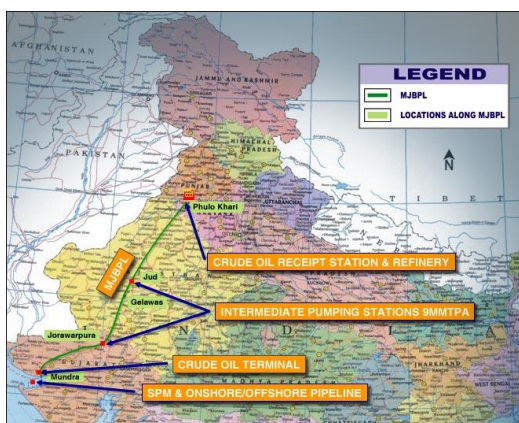
Sim Infosystems has prepared Training environment for 11 processes to accustom competence of operator effectiveness and helped the refinery comply with regulatory requirements and curb the loss of operation or efficiencies. In addition:

1. CDU/VDU
2. Fluid Catalytic Cracker
3. Diesel Hydrotreater (DHDT)
4. Naphtha Hydrotreater (NHT)
5. VGO Hydrotreater
6. Hydrogen Generation (HGU)
7. Isomerization

8. Continuous Catalytic Regeneration (CCR)
9. Sulphur recovery, Amine Treating, Sour water sweetening
10. Delayed Coker (DCU)
11. Polypropylene

Yokogawa technology helped increase reliability and length between start-up and shutdowns the effective use of control systems while meeting Euro-4 product spec. and economic objectives. Other benefits from the Yokogawa partnership include:

- Intimate communication with project members, OTS development integrator Sim-Infosys Chennai and operating performance information. Sim Infosys's managing Director Mr. Raman play the Process Consultant and coordinator.
- Integrated safety and control systems have providing seamless operation between Control and Safety
- Advanced process control minimize the Operation loss and Operator heavy burden
- On-time delivery – Flawless start up accomplished on time
- Familiarized operators with advanced operation system and improved training by developing skills in realistic operation environment
- Standardization of operator interfaces helped to keep high efficiency



HMEL Web reference



Yokogawa provided automation and simulation technology to improve operations at HMEL's oil refinery.

Background

With operation management by Conglomerate Company, HMEL is the joint venture between Hindustan Petroleum Corporation limited and Mittal Steel to aiming the new energy supply company in growing up country. HMEL engages in all aspects of the petroleum industry, as a challenger, development and production and Oil transportation operations by long distance pipe line.

Taking its name from one of the historical god in ancient story, the HMEL-owned oil refinery is currently one of the largest with a processing capacity in excess of 10 million tons per annum (over 180,000 barrels per day). Coming on-stream in 2009 and now incorporating some of the most advanced refining design and installation processes has been operated, the refinery has the flexibility to process some different types of crude oil. The refinery is ideally situated geographically to take advantage of oil consumer world largest Megalopolis Delhi.

Challenge

HMEL's refinery had some specific challenges applying the Advanced control packages to key control loops of its plant. In addition to a DCS with Safety instrumentation integration plan, the refinery also wanted to incorporate a simulation solution to help consolidate the combined experience of its operators and improve learning skills through a detailed program and structured approach.

"Our automation technology is most latest and we knew an investment was needed in a simulator to help our operators gain valuable experience to effectively meet the requirements for safe and efficient operation with maintenance as life Cycle support," said **G.C Misra** HMEL GGS Refinery.

Solution

With Yokogawa's solutions, support and systems the refinery was able to start up smoothly with flawless and move into a steady operation by centralized control room. "Working side by side with Yokogawa, we were able to develop a comprehensive plan and execute it together to validate DCS/SIS logics," said **G.C Misra**, Guru Gobind Singh Refinery.

The central control room has coordinated operator efficiency by providing operators comfortable access operation to more process knowledge to make optimum decisions. Operators now have a plant-wide view across the refinery to ensure process operations are running safely and effectively, meeting operational targets at various stages in the refinery.

The Guru Gobind Singh refinery implemented Yokogawa's OmegaLand high-fidelity operator training simulator to train employees on its systems, processes and procedures to help comply with regulations and demonstrate its commitment to operator competency.

"We knew that in order to make this instrumentation a success it was critical to ensure that we trained our operators to make effective use of the latest technology and make sure they are fully supported to make the transition," said **G.C Misra**, GGS Refinery. "Yokogawa's simulator gave us a first class

product and together we developed an ever-growing training program to continuously improve our operational effectiveness and the people who deliver it. Our strategic direction requires that we making best use of the simulator and give operators the confidence they can run the refinery at its optimal performance consistently and safely.”

Yokogawa’s simulator has now effectively facilitated the capture of critical operational experience into training guides to retain operational knowledge which is rarely gained by on-the-job training. Guru Gobind Singh refinery operates a formalized training program to increase operator effectiveness, as well as retain critical experience within the operations team.

Although the refinery had challenges to overcome with the integration of new simulation software and data integrity, the site acceptance test was carried out successfully and earned excellent feedback from GGS Refinery operators.

“We realized how to maximize the use of Yokogawa’s simulator and provide a very robust, lifelike environment incorporating realistic training exercises and regular updates to maintain fidelity,” said **G.C Misra**. “Yokogawa’s experience and expertise in advanced control and simulation systems made the difference in our refinery and helped us achieve our project goals and improve our efficiency.”



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PROJECT REFERENCE LETTER

Yokogawa India Limited had subcontracted M/s. Sim Infosystems Pvt Ltd, Chennai for the design and development of operator training simulator (OTS) for HMEL GGSR Bathinda refinery (PO no: 207393 dated: 29.09.2009). The scope of work for Sim Infosystems included Design, development and implementation of custom simulation models for the following 11 process plants of the grass root refinery:

1. CDU/VDU
2. Hydrogen Generation
3. NapthaHydrotreater
4. Isomerization
5. Diesel Hydrotreater
6. VGO Hydrotreater
7. FCC with Propylene recovery
8. Delayed Coker
9. SRU, SWS, ARU
10. Polypropylene
11. CCR

The simulation models were developed on Visual Modeler tool with Yokogawa Centum VP DCS and Prosafe RS SIS systems.

This was a prestigious multi-million dollar project and together with Sim Infosystems, we could successfully complete the work to the full satisfaction of the client and the system is being used extensively for operator training since Dec 2010 by the refinery.

We appreciate the professional services provided by our partner, Sim Infosystems and looking forward to working with them on more such simulation projects.




Anil Dutt
GM, Head-Plant Centric Solutions

