KOC SIMULATOR

For Operator Efficiency & Safety

Background

Kuwait Oil Company (KOC), nationally owned Company is responsible for the exploration, drilling, and production of oil and gas within the State of Kuwait since 1934. Kuwait Oil Company is also involved in the storage of crude oil and delivery to tankers for export.

Kuwait Oil Company manages the production and export of oil and gas with the associated facilities from more than twelve developed oil fields in the state of Kuwait. A Booster Station is part of an oilfield facility installed to fully utilize the separated gas from the Gathering Centers. Typically, a Booster Station has the following functions:

- Receives the gas from various Gathering Centers and compresses it.
- Separates the condensate from the gas stream.
- Dehydrates (removes water) from both compressed gas.

SCOPE OF SUPPLY

Sim Infosystems has developed simulator for BS140 and BS150 booster station facilities of KOC. The simulator was installed and commissioned during August 2011 and consists of the following major components:

- Simulator computers and peripherals
- OmegaLand Simulation platform
- Instructor Station software
- Operator Station – Experion emulation
- Custom simulation model for BS140
- Custom simulation model for BS150
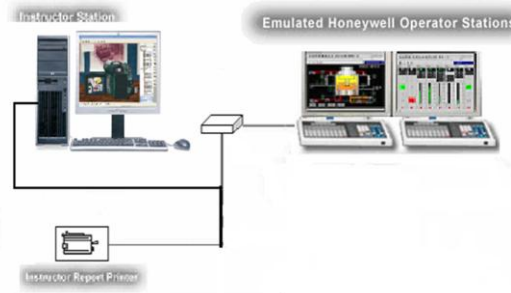
The simulation models are developed on the state-of-the-art "OmegaLand" dynamic simulator of Omega Simulation Co, Japan. OmegaLand is an integrated dynamic simulation environment consists of multiple functional modules including Instructor Tool Kit (ITK) and Visual Modeler (VM).

Simulation modeling platform

Visual Modeler (VM) is GUI based High fidelity simulation model based on rigorous application of first principles calculations. VM provides a comprehensive Physical Property methods Database, thermodynamic, unit library, instrument/control library and Pressure-Flow network solver. The custom simulation models for BS140 (2 trains) and BS150 (3 trains) are developed on the Visual Modeler platform and tuned to meet the actual plant parameters and dynamic performance. Each Train consists of:

- Low stage compressor section

- High stage compressor section

- Gas Dehydration section with
  glycol regeneration

- Fuel gas system

- Flare and blow down system

The models include detailed simulation of turbine control systems (CCC) and trip logic systems.
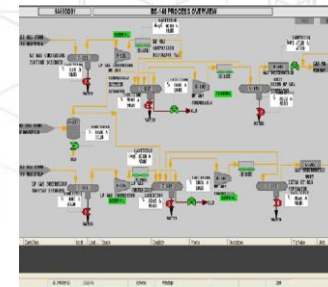
KOC Simulator

INSTRUCTOR STATION

The ITK provides functions to control the execution and monitoring of Operator Training System (OTS). The major features of ITK are as given below:

-graphical user interface for OTS instructors
-Constructing OTS configuration for Instructor
-Monitoring the selected variables interactively
-Simulation variable set interactively
-Activating malfunctions interactively
-Simulation event log display
-Reporting
-Evaluation
-Record and Replay

OPERATOR STATION

The simulator is provided with emulation for Honeywell Experion DCS. All functions and features that are essential for training are included in the emulation including emulated DCS keyboard. The controls, turbine CCC panels and ESD logic are also simulated and provides exact replica of the real plant systems. The field operations are simulated through separate FOP graphics on the operator station.

Experion Emulation

Sim Infosystems Pvt Ltd
2, Dsilva Road
Mylapore
Chennai 600004
INDIA
Tel: +91-44-24982617
info@siminfosystems.com