

# PS3000: Refinery Operations Simulator

The PS-3000 is a simulation software package is rigorous and detailed simulation models of Refinery process plants. The benefits of this package are:

## For Academic

- ▶ Industrial Exposure for Students
- ▶ In-depth Process Understanding
- ▶ Carry out In-house projects
- ▶ Sound Fundamental Concepts of Process Control and safety with DCS Operations
- ▶ Understanding the Intricacy & Complexity of process dynamics

## For Industries

- ▶ Improved Plant Safety
- ▶ Smooth Startup & Shutdown
- ▶ Evaluation of Operator Proficiency
- ▶ Faster Recovery from External/Internal Process Di
- ▶ Increased familiarity of Controls & Interlock Syste



The package consists of simulation models for various refinery plants. Each model simulates a refinery plant with its control, instrumentation and safety systems and field devices. The Instructor can invoke malfunctions, disturbances and instrument failures and evaluate the trainee performance. Trainee can perform normal operations, emergency operations as well as startup / shutdown operations on these models.

### PS-3001: Atmospheric Distillation Unit:

The model simulates a refinery Atmospheric Distillation Unit which includes Pre heat trains, Desalter, Crude heater, Atmospheric column, side strippers, and pump around systems, overhead system and stabilizer

### PS-3004: Hydrogen Generation Unit:

The model simulates a refinery Hydrogen plant which includes the following sections: Desulphurization, Reforming, CO conversion (shift section), Separation of H<sub>2</sub> and Steam Generation.

### PS-3002: Vacuum Distillation Unit:

The model simulates a refinery Vacuum Distillation Unit which includes vacuum heater, vacuum distillation column, overhead steam ejectors, hotwell, product strippers and coolers.

### PS-3005: Hydrodesulphurization Unit:

The model simulates a refinery hydrodesulphurization plant which includes feed section, preheat system, heater, reactor, High Pressure system and Product Section.

### PS-3003: Fluid Catalytic Cracking Unit:

The model simulates a refinery fluid catalytic cracking Unit which includes feed section, reactor – regenerator section, Fractionation section and Gas concentration section.

### PS-3006: Catalytic Reforming Unit:

The model simulates a refinery catalytic reformer unit which includes feed preheat section, reactor section, Product Separator section and Debutaniser section.

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## **PS-3007: Continuous Catalyst Regeneration Unit:**

The CCR unit Catalyst transfer and Catalyst Regeneration. In catalyst Transfer, it is transferred from the Catalytic reforming reactors to the Regenerator and back again to regenerate the catalyst. In Catalyst regeneration, the coke is burned off at a high temperature and low oxygen concentration and the catalyst passes into the Chlorination Zone where it is oxidized at high temperature and high oxygen concentration. The "Logic" is divided into Master Controller, Lock Hopper No.1 4k4o.2 Controllers and miscellaneous Logic

## **PS-3009: Sulphur Recovery Unit:**

This model simulates a Sulphur recovery unit which includes Feed gas knockout drums, Combustion chamber, Reaction furnace, Sulfur condensers, Steam re-heaters, Catalytic converters and Sulphur pit.

## **PS-3011: delayed coking unit:**

The model simulates a Delayed Coking Unit which consists of Coker furnace, Fractionator, Coke drums and Pre heat exchangers.

## **PS-3013: NAPHTHA HYDROTREATER UNIT:**

The model simulates a Naphtha hydrotreater Unit which consists of Feed surge Drum, Reactor feed heater, Lead and main Reactors, Hot Separator, Recycle gas compressor and Naphtha stripper.

## **PS-3015: ISOMERIZATION UNIT:**

The model simulates a Kerosene isomerization Unit which consists of Feed surge Drum, H2 makeup compressor, Feed dryer, Hydrogen dryer, Isomerization reactors and Stabilizer.

## **PS-3008: hydrocracker unit:**

This model simulates a refinery Hydrocracker unit which includes Feed preheat exchangers and surge drum, Lead and Main reactors, HP, LP Hot Separators, HP, LP Cold Separators, H2S absorber, Recycle Gas compressor, Makeup Hydrogen compressor trains, Fractionator furnace, Main Fractionator and Product strippers.

## **PS-3010: Amine Treating Unit:**

This model simulates an Amine Treating Unit which consists of Absorber Section, Turbines and Pumps Section and Stripper Section.

## **PS-3012: diesel hydrotreater unit:**

The model simulates a diesel hydrotreater Unit which consists of Feed Coalescer, Feed surge Drum, Reactor feed heater, DHDT Reactor, Cold HP Separator, Cold LP Separator, Makeup gas KOD and compressor and Recycle gas compressor.

## **PS-3014: KEROSENE HYDROTREATER UNIT:**

The model simulates a Kerosene hydrotreater Unit which consists of Feed surge Drum, Reactor heater, Hydrotreater reactor and Stripper.