

PS5000: Power Plant Operations Simulator

The PS-5000 is a simulation software package is rigorous and detailed simulation models of various types of power 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 Disturbances
- ▶ Increased familiarity of Controls & Interlock

The package consists of simulation models for various power & utility plants. Each model simulates the 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.

PS5030 Boiler Operations Simulator:

This package consists of following independent simulation models of a boiler in a power plant:

- Pulversier Fuel System
- Oil Firing System
- Flue Gas and Air System
- Super Heater (SH) and Re-heater (RH) Systems.
- Boiler Drum.
- Water Treatment Plant

PS5040 Turbine Operations Simulator:

This package consists of following independent simulation models of a steam turbine in a power plant:

- Condensate system.
- Deaerator System.
- Condenser Vacuum System.
- Circulating Water System.
- Cooling Water System.
- Gland Sealing System.
- HP LP by-pass System.
- Turbine Steam Extraction System.
- Turbine Lube Oil System.

PS5050 Electrical Operations Simulator:

This package consists of following independent simulation models of a boiler in a power plant:

- Generator Cooling Water System.
- Generator System.
- 6.6 kv System Layout.
- 415 kv System Layout.
- 220 kv Switchyard Layout.

PS5010 210 mw power plant simulator:

The 210MW Power Plant Simulator consists of a comprehensive Model of a fossil fired (coal, oil, gas) power plant:

FUELS: Coal, Heavy Oil (warm-up), Light Oil (ignition).

STEAM: GENERATOR: Drum type, Natural Circulation.

Furnace Air and Gas Systems:

2 Forced Draft Fans, 2 Induced Draft Fans, Primary Air fans (1 for each Pulverizer), 1 Igniter Fan & 1 Scanner Fan, Windbox, 1 Regenerative Air Heater, Soot blowers, Electro-static precipitator.

Fuel and Burner Systems:

6 Coal Feeders, 6 Pulverizes, 2 Ignition Oil pumps, 2 Fuel Oil Pumps Coal and Oil Burners at 6 Levels.

Boiler Water and Steam Systems:

Economizer, Steam Drum, Downcomer, Waterwalls, Primary Superheater, Secondary Superheater, Reheater, Attenuators for Superheater, Auxiliary Steam Header.

Turbine and Generator Systems:

HP/IP/LP Turbines, Main Stop Valve with Bypass, 4 Turbine Control Valves, Turbine Turning Gear, 2 Turbine Lube Oil Pumps, Turbine Lube Oil Cooler, Turbine Lube Oil Cooling Water Pump, Turbine Lube Oil Filters, Bearing vibration monitors, Rotor eccentricity monito, Diff exp monitor, Generator with Exciter and Automatic Voltage Regulator, Syncroscope, Hydrogen Cooler, Hydrogen Seal Oil Pump, Stator Cooling water Pump.

Condensate and Feed water System Equipment:

Condenser, 2 Air Ejectors, 2 Circulating Water Pumps, 2 Condensate Extraction Pumps, Condensate Storage Tank, 1 Makeup Pump, Air Ejector Steam Condenser, Gland Seal Steam Condenser with Exhaust Fan, Condensate Polisher, 3 Low Pressure Heaters, Deaerator with Storage Tank, 2 High Pressure Heaters, 3 Boiler Feed Pumps (motor driven).

PS5000: Power Plant Operations Simulator

PS5014 Combined Cycle Power Plant:

The standard Combined Cycle Power Plant simulator is a comprehensive, dynamic simulation of a typical combined cycle power plant. The model is designed to operate on a simulator, which: a DCS emulation and Instructor Functions. Capacity: 450 MW, Fuels: Natural Gas; Fuel Oil. The main equipment simulated are Circulating water pump, Gland steam condenser, Feed water. Condensation, Condenser circulating water, Make up water, Deaerator, Air Compressor, Evaporator, Heat Recovery Steam Generator (HRSG), Burner, Fuel (Gas, oil), Flue gas, Turbine, Generator, DC excitation, Transformer.



PS5015 Steam and Utility System:

The standard Steam and Utility system simulator is a comprehensive, dynamic simulation of a Steam and utility system available in process industries. The model is designed to operate on a simulator, which: a DCS emulation and Instructor Functions. Functionally, the simulated plant: BOILER Section, TURBINE Section, CONDENSATE Section and STAEM section and UTILITIES section. FUEL AND BURNER SYSTEMS:

The Boiler Section Consist of Steam Drum, SH System, Fuel gas layer, Flame System, Burner System, Gas & Air System, Induced Draft & Forced Draft. Turbine Section consist of Steam Extraction System & Generator System. The Condensate Section consist of Steam Condenser, Condensate Extraction pumps (CEP), Deaerator, Boiler Feed Pump (BFP), LP & HP Heaters. The Steam Utility section: HP, MP & LP Steam headers and its utilities.

PS5016 Diesel Generator:

The standard Diesel Generator simulator is a comprehensive, dynamic simulation of a Diesel Generator power plant used in industries. The model is designed to operate on a simulator, which: a DCS emulation and Instructor Functions. The diesel power plant relies on the diesel engine along with the generator/alternator for the power production and the fuel is diesel and air for combustion inside the engine. The Diesel Generator: Fuel and Air Section, Engine Section and Cooling Water Section.

PS2018 Gas Turbine:

In Gas Turbine compressed air and fuel oil or fuel gas are ignited, drives the turbine, which in turn drives the electric generator. In the Generator section, which produces 75 MW electrical power at 3000 RPM, with a voltage of 15.75 KV at 50 Hz. Once the fuel is ignited, the compressor turbine rotation becomes self-sustaining. As the air-fuel mixture burns, the gas of combustion expands and flows across the turbine blading, providing rotation to the shaft to drive the compressor and generator. The gases exhausted from the turbine section flow through the gas flue and either out the stack or into the HRSG to produce steam for other plant operations. The generator is an air-cooled 75 megawatt (MW), 15.75 kilovolt (KV) machine whose shaft is driven by the compressor-turbine shaft through a gear box.