

Three Phase Separation Trainer with DCS Control

Function:

The primary separation operation for crude oil occurs when the crude stream flows through a vessel of sufficient capacity to allow gravitational separation of the gas, liquid hydrocarbon and water phases. This process trainer blends air, water and refined oil to emulate a crude oil stream. This fluid mixture then flows into a horizontal separator vessel fabricated of clear PVC. Gas flow passes through a secondary vertical 2-phase separator. The separator is equipped with industry-typical process measurement devices. The entire trainer is controlled from a distributed control system (DCS).



Model Series: 3PS-100 (not showing new layout with integrated blower)

Process Highlights:

- Continuously variable flow of process fluids: air, water and oil
- Liquids are recycled, air is vented
- Time to reach steady state after a reasonable step change - less than 20 minutes

Equipment Specification Highlights:

- Clear PVC separator vessels and process piping
- 610 x 1830 mm (24" dia. x 72") horizontal separator
- Electronic process measurement and control system with 5 control loops, plus low/high level and pressure sensors
 - o Three level control types - displacer, ultrasonic and capacitance sensors
 - o Pressure control
 - o Three flow controls with averaging pitot, orifice and turbine meters
 - o High level (2 types) and pressure switches
- Centrifugal pump for water and gear pump with variable speed drive for oil
- Oil and water storage tanks
- Complete unit mounted on a steel structure/skid

- Approximate dimensions of process skid - 2100 x 4877 x 2300 mm high (7' x 16' x 7.5' high) Dimensions may be adjusted based on room size and layout.
- Variable speed roots type air blower (new lower sound level model is mounted on process skid)
- Available in all world voltages / frequencies (customer to specify electrical power available on-site)

Controls Options:

- Industrial standard DCS
- 4 - 20 mA Hart is our standard
- Instruments by various manufacturers on request

Instrument Air Option:

This trainer can be supplied with a dedicated air compressor/receiver/drier to provide the required instrument quality air on request.