

# Portable Distillation Trainer - Glass, with Chiller



# Model: 130-DTU2

## How Does the Distillation Process Work?

Distillation is a common industrial process used to separate mixtures based upon the different conditions required for phase change of the mixture's components. For example, distillation is a key process in crude oil refining. Crude oil is distilled into various component products, such as naphtha, kerosene, and gas oil, based upon the differences in their boiling points.

Industrial distillation takes place in a distillation tower or column. Although the process can be quite complex as it is customized for each particular application, the essential underlying process involves heating a mixture, such as crude oil, to force its components parts, each of which has a different boiling point, into the gas phase.

As the vapor rises in the distillation tower, it is eventually condensed back into a liquid and collected, either for final use or further refinement to increase its purity. In addition to crude oil, distillation is also commonly used for a wide variety of other applications, such as alcohol production, creation of liquefied gases, desalination, and chemical manufacturing.

Bayport Technical's Portable Distillation Trainer - Glass, with Chiller (130-DTU2) is designed to enable distillation operations personnel and maintenance technicians to visualize what occurs inside the distillation towers/columns that dominate the landscape in a petroleum refinery or petrochemical plant.

This trainer foregoes automatic controls, so that the unit's operation will rely solely on the actions of the operator or technician. The glass fractionating column allows operators to see the results of their actions very quickly.

The Portable Distillation Trainer - Glass, with Chiller provides hands-on experience with a wide variety of real industrial equipment, including: a main column, four pumps, overhead condensers, heat exchangers, a cooling system, a reboiler, temperature gauges, and piping. Together, this equipment provides instructors with a working model of the equipment used in refineries or petrochemical plants and accurately demonstrates distillation on a small scale.

The trainer comes with a carrying case, which also acts as a stand for the unit. The Portable Distillation Trainer - Glass, with Chiller can be used to teach students everything from how to draw P&IDs to the actual operation of a distillation column. The unit is extremely flexible and forgiving. You can demonstrate different flooding scenarios and have it recover in just a few minutes. The students' comprehension of distillation principles is greatly improved by seeing the color graduation of the components across the column.

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## **SPECIFICATIONS**

- Fractionating column with ten (10) perforated trays
- Reboiler (with electric heating element)
- Overhead accumulator
- Heat exchangers (4)
- Centrifugal pumps (4)

- Flow control/indicating rotameters (5)
- Charge tank
- Rundown tanks (2)
- Cooling water tank
- Refrigerant type cooler
- Panel mount thermometers (2)
- Four-dial thermometers (5) with chiller unit
- Digital manometer

### **UTILITIES**

- Requires 115V/60Hz/20A/1ph electrical.

### **PRODUCT DIMENSIONS**

- Uncrated unit, mounted on casters, is approximately 38" long X 24" deep X 72" tall.
- Unit is mounted on a cart approximately 20" wide X 38" long X 53" tall with a framework of 1/2" square tubing.

#### **Address**

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