

SUPERVISED CONTINUOUS DISTILLATION

REFERENCE : MP1011



Non contractual photo

SERVICE : 230 V / 50 HZ / SINGLE PHASE: 4 KW. 230 V / 50 HZ / SINGLE PHASE: 0.5 KW. COLD WATER 20 ° C / 3 BAR: 1 M3 / H. SEWER.
DIMENSIONS : 1,55 M X 0,65 M X 3,05 M

WEIGHT : 180KG

Principle of operation :

Distillation allows the separation of a mixture of compounds having different boiling points. The boiling of the mixture makes it possible to obtain vapors of compositions different from the liquid. Re-condensations and multiple re-evaporations progressively enrich the vapor phase to the most volatile product. The vapors are condensed and then distributed between the distillate (recovered continuously) and the reflux via a column head valve. The residue is also recovered continuously from the bottom of the boiler.

Educational Objectives :

- Study of the hydrodynamics of the column.
- Influence of the operating conditions on the separation of a binary solution
- Remote process control by an industrial supervisor.
- Thermal balances.
- Material balance.
- Determination of the number of theoretical plates (McCabe and Thiele, Ponchon and Savart).
- Determination of the number of transfer units

Technical specifications :

Equipment :

- Storage can of the polyethylene feed solution.
- Feeder dosing pump, 316L stainless steel - PTFE. with remote control.
- Feed preheater with two valves for 33% or 66% column feed, equipped with minimum level safety and maximum temperature safety.
- Continuous boiler in borosilicate glass, electric heating, equipped with minimum safety level and maximum temperature safety.
- Refrigerant for differential pressure test.
- Column in borosilicate glass, in three elements with lining.
- Three stainless steel 316L recentring trays, each equipped with a sampling valve and temperature sensor.
- Borosilicate glass column head, with temperature measurement, equipped with a timer valve to control the reflux ratio.
- Vertical condenser made of 316L stainless steel.
- Two refrigerants of distillate and residue in 316L stainless steel.
- Recipe for borosilicate glass distillate.
- Recipe for borosilicate glass residue
- Two containers for receiving the distillate and the polyethylene residue.
- 316L stainless steel connection pipes.
- Support frame in 304L stainless steel tubes and aluminum nuts.

Instrumentation :

- Condenser cooling water supply equipped with a float flowmeter with

its control valve and a water circulation controller to stop heating due to lack of cooling.

- Measurement of pressure loss of the column.
- Industrial Supervisor with real-time process visualization, data acquisition and remote instrumentation control.
- Control and control cabinet, IP55, equipped with emergency stop, operating buttons and the following interfaces:
- Communicating preheater temperature controller.
- Temperature regulator of the communicating column head.
- Heating controller of the communicating boiler.
- Control regulator of the communicating supply pump.
- Digital converters of four Pt100 ? probes (column temperature profile) communicating.
- Two digital temperature indicators of 12 probes type Pt100 ? including a communicating.

OPTIONS :

Option 1: Touch screen to view temperatures and control the regulators. With data storage and data recovery on USB stick in .txt files.