LABORATORY REACTOR

REFERENCE : MP1073

Non contractual photo

SERVICE : 230 V / 50 HZ / SINGLE PHASE: 3 KW. COLD WATER 20 ° C / 3 BAR: 1 M3 / H. EMPTY 100 MBAR: 2 NM3 / H SEWER DIMENSIONS : 1 M X 0,6 M X 1,5 M

WEIGHT : ~ 100 KG

Principle of operation

The reaction is a fundamental operation of the chemical industry, making it possible to produce, from simple molecules (reagents), more and more complex compounds intended for a growing number of industries (chemistry, pharmacy, etc.). The presence of a distillation column makes it possible to evaporate a solvent in the same reactor, to separate the products of the reaction when the desired degree of conversion is reached or to eliminate one of the products of the reaction (case of reversible reactions for move the thermodynamic equilibrium). At the end of the handling the products of the reaction are recovered after cooling. The juice reagent supply system makes it possible to convert the plant for a continuous distillation, by supplying the reactor which has become a boiler in product to be continuously distilled. The reactor also makes it possible to make "batch" crystallizations, and to see the nucleation and growth phase of the crystals.

Educational Objectives :

- Study of kinetics of reaction.
- Study of reversible or irreversible reactions.
- Study of evaporation.
- Crystallization by evaporation, chemical reaction or cooling.
- Total reflux reactions.
- Material balance.
- Conversion rate

Technical specifications :

Equipment

- Storage reagent recipe in borosilicate glass, graduated with "juice elevator" system for filling reagents.
- Cylindrical reactor type "GRIGNARD": with double thermal fluid heating jacket and flush drain valve
- Variable speed stirring system in 316L stainless steel with impeller turbine.
- Cooling coil of the 316L stainless steel reaction mass.
- Column in borosilicate glass, in one element with 316L stainless steel lining.
- Inclined condenser in 316L stainless steel, borosilicate glass ferrule, simple effect with baffles.
- Borosilicate glass distillate coolant.
- Recipe for borosilicate glass distillate, graduated.
- 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.
- Control and control cabinet, IP55, equipped with emergency stop, operating buttons and the following interfaces:
- Control regulator for reactor heating or thermal fluid bath.
- Variator of the stirring speed.
- Digital indicator of stirring speed.
- Two digital temperature indicators of four probes type Pt100 ?

OPTIONS :

Option 1: Vacuum line including: . A borosilicate glass vacuum trap . A vacuum meter -1 to +0.6 bar . A control valve . A diaphragm vacuum pump (max. 160 mbar vacuum) Option 2: Data acquisition including: . A 9.7' touch screen to view: o The synoptic of the machine o Real-time parameters (temperature, stirring speed, etc.) on the synoptic o Visualization of the curves of each parameter . USB port to retrieve data in CSV format via built-in USB port on electrical box Option 3: 6 L Pocket Filter Option 4: 2 dosing pumps to feed reagents directly into the reactor (max. flow rate: 17 L/h) (replaces old system).