CHEMICAL REACTORS APPARATUS

Mod. CRBS/EV

INTRODUCTION

The full apparatus mod. CRBS/EV includes 6 chemical reactors (a continuous stirred-tank reactor CSTR, two plug flow reactors PFR, a batch reactor BR, 3 reactors in series and a laminator flow reactor LFR), interchangeable on the same service unit mod. CRB/EV) and a supervision software with interface.

The minimum purchasable configuration is represented by the service unit (mod. CRB/EV) and by one of these reactors.
The service unit (mod. CRB/EV) includes feeding tanks, feeding pumps, temperature control system and various instruments for the CSTR (mod. CR1/EV), for the plug flow reactor (mod. CR2/EV), for the batch reactor (mod. CR3/EV), for the CSTRs in series (mod. CR4/EV), for the plug flow reactor (CR5/EV) and for the laminator flow reactor (mod. CR6/EV).

The reaction proposed is the classical saponification of ethyl acetate with sodium hydroxide, checked in real time with a conductivity meter.

TRAINING PROGRAM

This unit enables to deepen the following issues:

- Comparing CSTR, PFR, LFR and BR
- Variation of the conversion with the residence time
- Kinetic equation from experimental data
- Effect of temperature on reaction rate
- Effect of mixing degree on the reaction

TECHNICAL SPECIFICATIONS:

Service unit Mod. CRB/EV

- Bench-top framework of AISI 304 stainless steel
- 2 tanks of AISI 304 stainless steel with capacity of 5 litres/each, for feeding reagents
- 2 peristaltic feeding pumps, with flow rate of 0 - 118 ml/min
- Circulation pump of AISI 304 stainless steel for hot water, with electronic temperature control and safety thermostat
- Digital conductivity meter with sensor
- Electric switchboard of painted carbon steel with ELCB
- 2 displays for r.p.m. of pumps, a display for stirring rate and electronic thermostat

Power supply: 230 Vac 50 Hz single-phase - 1 kVA
(Other voltage and frequency on request)
Dimensions: 850 × 700 × 770 mm
Weight: 70 kg

Continuous Stirred-Tank Reactor (CSTR) Mod. CR1/EV

- Capacity: 0.4 - 1.5 litres
- Made of borosilicate glass, stainless steel and PTFE
- Stirrer of variable speed
- Inner coil of AISI 304 stainless steel
- Removable baffles
- Connections for temperature and conductivity sensors

Plug Flow Reactor (PFR) Mod. CR2/EV

- Capacity: 0.4 litres
- Length of reactor: 20 m
- Tank of Plexiglas for immersing the reactor
- Connections for temperature and conductivity sensors

Batch Reactor (BR) Mod. CR3/EV

- Capacity: 1 l
- Made of AISI 304 stainless steel
- Vacuum insulation
- Inner coil of AISI 304 stainless steel
- Variable speed stirrer
- Connections for temperature and conductivity sensors

CSTRs in series Mod. CR4/EV

- 3 continuous stirred-tank reactors (CSTR) of borosilicate glass and PTFE connected in series; each reactor is equipped with stirrer of variable speed and connection for conductivity sensor
- 2 conductivity sensors

Plug flow reactor (PFR) Mod. CR5/EV

- Framework of AISI 304 stainless steel
- Plug flow reactor:
  - Made of borosilicate glass
  - Working volume = 1 litre
  - Length = 1100 mm
  - Packing = 3 mm diameter glass beads
  - Static premixer

Laminator flow reactor (LFR) Mod. CR6/EV

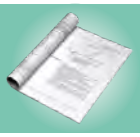
- Framework in AISI 304 stainless steel
- Laminar flow reactor:
  - Made of borosilicate glass
  - Length = 1100 mm
  - Jacketed
  - Static premixer

Data acquisition software with interface Mod. SI-CR/EV

- For Windows
- Synoptic with values of measured variables
- Real-time trend
- Historical trend

SUPPLIED WITH

THEORETICAL – EXPERIMENTAL HANDBOOK



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