DEMONSTRATION CAPABILITIES

> Investigation of dynamic behaviour of stirred tank reactors in series
> Effect of step input change
> Response to an impulse change
> Influence of flow rate
> Investigation of time constant using a dead-time coil
> Investigation of chemical reaction in a three-tank system

TECHNICAL DESCRIPTION

The Armfield Stirred Tank Reactors in Series Unit is designed to follow the dynamics of the perfectly mixed multistage process. Dynamic behaviour can be studied as can multistage chemical reaction. Bench mounted and self-contained, the unit requires only to be connected to a single-phase electrical supply for operation.

There are three reactor vessels connected in series, each containing a propellant agitator driven by a variable-speed electric motor.

Two reagent vessels and two variable-speed feed pumps feed reagents into the first reactor in line.

For certain experiments the feed can be connected to the third reactor and a dead-time coil, also positioned on the vacuum-formed plinth.

Each reactor and the exit port of the dead-time coil are fitted with conductivity probes for monitoring the process.

Conductivity is displayed on a digital meter on the console through a selector switch and all four probes can be connected to the optional Armfield data logging accessory.

ORDERING SPECIFICATIONS

• A self-contained bench mounted small scale unit fitted with three continuous stirred reactors in series which are fed from two 5l tanks. Each reactor is fitted with a conductivity probe
• There are two independent, variable-speed feed pumps
• A dead-time residence coil can also be attached to the exit of the last reactor in the series
• Demonstration capabilities:
  > Investigation of dynamic behaviour of stirred tank reactors in series
  > Influence of flow rate and step input change
  > Investigation of chemical reaction in a three-tank system
  > Investigation of time constant using a dead-time coil

The latest version of this data sheet is available at: discoverarmfield.com/en/products/view/cepmkii
REQUIREMENTS

Electrical supply:
- CEP-MKII-A: 220-240V / 1ph / 50Hz / 5A
- CEP-MKII-B: 120V / 1ph / 60Hz / 10A
- CEP-MKII-G: 220-240V / 1ph / 60Hz / 5A

OVERALL DIMENSIONS

Height: 0.55m
Width: 1.00m
Depth: 0.50m

SHIPPING SPECIFICATION

Volume: 0.8m³
Gross weight: 50kg

ORDERING CODES

CEP-MKII-A: 220-240V / 1ph / 50Hz / 5A
CEP-MKII-B: 120V / 1ph / 60Hz / 10A
CEP-MKII-G: 220-240V / 1ph / 60Hz / 5A

OPTIONAL ARMFIELD ACCESSORY

CEP-MKII-DTA-ALITE data logging accessory

SOFTWARE CAPABILITIES

The software is designed to simplify the tasks of both the students and faculty, by eliminating repetitive tasks, providing instruction on the investigation and the theory, and providing a record of the results. It enables the student to complete the investigation and process the results in a standard laboratory session, giving the time to repeat any necessary measurements and analysis.

Software features include:

- Presentation screens outlining the investigations, the theory and the equipment
- Detailed help texts describing how to use the software, set up the equipment, perform the investigation and the associated theory
- Real-time schematic representations of the equipment and sensor measurements
- Data logging, with full control over sample rates
- Fully flexible graph plotting
- Student questions

SOFTWARE ORDERING SPECIFICATION

- Data logging accessory and educational software for Stirred Tank Reactors in Series
- Interface device, software and leads

SOFTWARE TECHNICAL DESCRIPTION

The system uses the Armfield data logging software package, which digitises the analogue inputs and transfers the data to the computer. This enables the temperature or conductivity measurements, together with an indication of the pump rates set on the chemical reactors service units to be logged on a PC. The package comprises the hardware and appropriate software for the reactors. The interface to the PC is via USB, requiring no additional hardware in the PC. Therefore any PC including laptop and notebook versions may be used. The software is provided on a CD.

ESSENTIAL EQUIPMENT

A PC (not supplied by Armfield), running Windows 98 or above with a USB port.