

Microlabequipment-R.T.D. Studies In Continuous Stirred Tank Reactor Compressed Air Feed System manufacturer in india (MTCRE-104A)



RTD Reactions: Real reactors do not satisfy the idealized flow patterns, back mix flow or plug flow deviation from ideality can be due to channeling of fluid through the vessel, recycling of fluid within the vessel or due to the presence of stagnant region or pockets of fluid in the vessel. To predict the exact behaviour of a vessel as a Chemicals reactor, RTD or stimulus response technique is used. The setup consists of one feed tank through which water is fed to the reactor. The flow rate can be adjusted by operating the needle valve and measured by Rotameter.

Description :

RTD Reactions: Real reactors do not satisfy the idealized flow patterns, back mix flow or plug flow deviation from ideality can be due to channeling of fluid through the vessel, recycling of fluid within the vessel or due to the presence of stagnant region or pockets of fluid in the vessel. To predict the exact behaviour of a vessel as a Chemicals reactor, RTD or stimulus response technique is used. The setup consists of one feed tank through which water is fed to the reactor. The flow rate can be adjusted by operating the needle valve and measured by Rotameter. The compressed air is used for circulation of feed. The continuously stirred tank reactor made of Stainless Steel is provided for understanding the R.T.D. characteristics. Pressure Regulator & Pressure Gauge are fitted in the compressed air line.

EXPERIMENTATION:

- To plot RTD curve for a CSTR. Using pulse tracer.
- To determine the Dispersion No.

UTILITIES REQUIRED:

- **Electricity Supply:** Single Phase, 220 V AC, 50 Hz, 5-15 Amp combined socket with earth

connection. Earth voltage should be less than 5 volts.

- Compressed Air Supply at 2 Bar, 0.25 CFM.
- Water Supply.
- **Floor Area Required:**1 m x 0.75 m.

- Floor Drain.

Instruments, Laboratory Glassware and Chemicals required for analysis as per the system adopted.

Specifications :

- **Reactor** : Material Stainless Steel, Capacity 2 Ltrs. (approx.)
- **Stirrer** : Material Stainless Steel Impeller and shaft coupled with FHP motor
- **Feed Tank** : Material Stainless Steel, Capacity - 20 Ltrs. (approx.)
- **Feed Circulation** : By compressed air.
- **Flow Measurement** : Rotameter.
- **Piping** : Stainless Steel and PU pipe.
- **Pressure Regulator** : 0-2 Kg/cm²
- **Pressure Gauge** : Bordon type 0-2 Kg/cm²
- **Stop Watch** : Electronic
- **Control panel comprises of** : Standard make on/off switch, Mains Indicator etc.

Arrangement is done to inject tracer into the reactor.

An ENGLISH instruction manual consisting of experimental procedures, block diagram etc. will be provided along with the Apparatus The whole set-up is well designed and arranged on a rigid structure painted with industrial PU Paint.