ChemDist

Microreactor-Continuous Flow Synthesis Technology

In Collaboration With CSIR-NCL Pune

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Introduction

Flow chemistry, also known as continuous processing or continuous flow synthesis, begins with two or more streams of separate reactants being fed into a integrated micro channel or tubular micro-reactor at preset flow rates. A reaction occurs, and the resulting product is collected in the stream at the outflow.

To generate the final product, the solution can also be sent to consecutive flow reactor loops. Because very minimal amounts of material are required, process safety is greatly improved.Continuous flow technology's fundamental architecture allows for reaction settings that batch reactions cannot safely accomplish. As a result, the product is of greater quality, has fewer impurities, and has a shorter reaction cycle time.

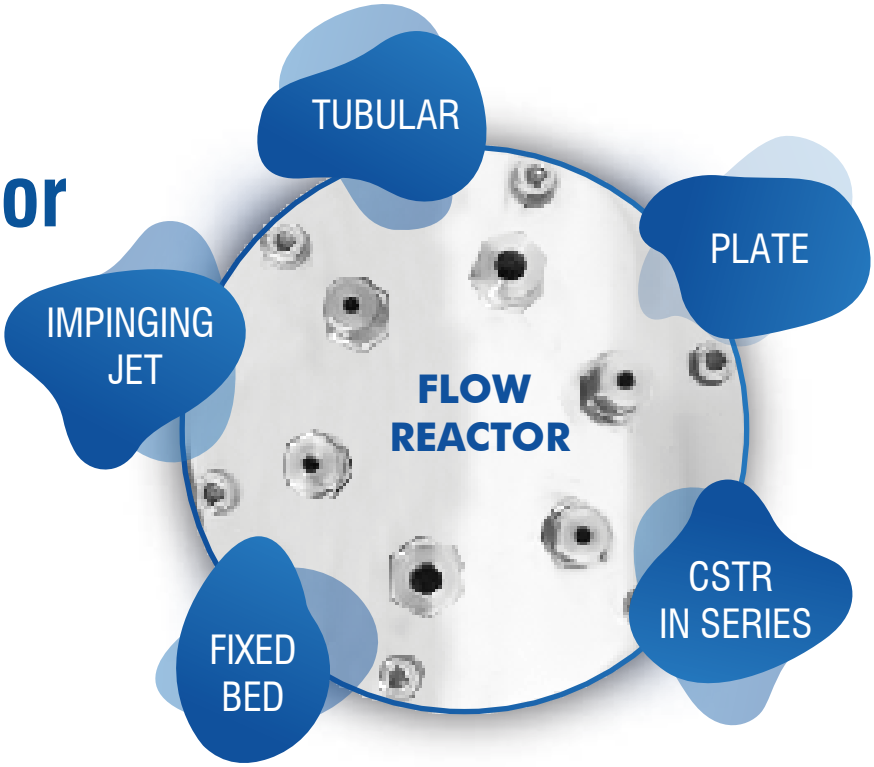
Technology Collaboration

Chemdist and CSIR-NCL signed MoU for Process Intensification through Micro Reactor Technology.

Key Highlights

1. Convert the lab-scale proof of concept into a pilot plant
2. Design, Installation and Operation of multipurpose continuous pilot plant
3. Engineering and Scale up
4. Converting traditional batch process to low opex and low foot print continuous processes

Types of Flow Reactor



Tubular Reactor

Tubular reactors are steady-state continuous flow vessels that can be used to mix various types of chemicals. To complete the chemical reactions, it is dependent on the location of the reactants ratherthan the position of time.

- Pinch Tube
- Spiral reactor

Plate Reactor

- Scale the length and breadth linearly.
- Transfer of heat Area remains fixed regardless of scale.
- With scale, hydrodynamics changes
- A narrow range of pressure and temperature

CSTR Reactor

- Continuous Stirred Tank Reactors in series
- Modular construction
- Intensity Mixing is required.
- Transfer Issues
- High pressure is not recommended

Advantages

01 Improved reaction control and reproducibility

02 A broader variety of reaction variables is available

03 Workflow that is modular and customizable

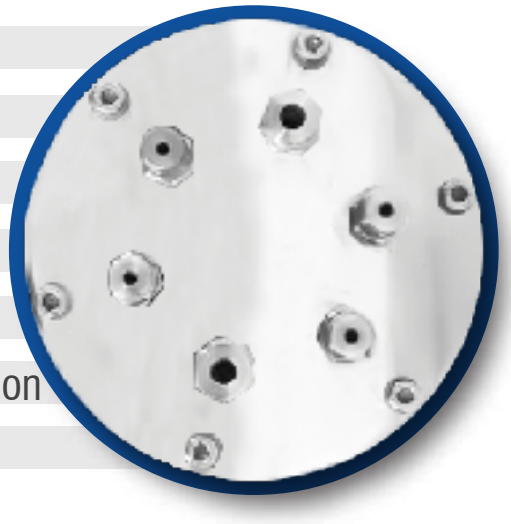
04 Increase product production as well as quality

05 Rapid chemical reaction analysis, optimization, and scaling-up

06 Process safety has been improved.

Key Applications Areas

- Reactions Of Hydrogenation
- Oxidations
- Halogenations
- Nitrations
- Diazotizations
- Mechanisms Of Grignard Reaction
- Reactions Involving Poisonous Gases



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