

Co-operation profile details from Enterprise Europe East of England

09 GB 41n8 3FQZ - Affordable "off the shelf" laboratory scale continuous flow reactors Technology collaboration OFFER

Abstract

Emergence of continuous flow chemistry on laboratory scale has been hampered by cost and availability of equipment. A UK company proposes a flexible range of reactor systems with off the shelf designs, based on several years of development in the field and feedback from many customers. Now the value added from switching to continuous chemistry greatly outweighs the cost. Chemical research laboratories are sought for commercial agreements with technical assistance and adaptation to specific needs

Description

Continuous flow chemistry is a well-established technique when manufacturing large quantities of a given material. However, it is not yet established in the laboratory environment.

A UK company has many man-years of experience in developing continuous reactor systems. As more and more users have defined the features of choice in terms of mixing and heat transfer, an off the shelf system has emerged that is proven, robust and affordable.

Up to 4 reactors can be connected (see Picture 1) with excellent (and individually controlled) temperature and pressure capability. A preheat mixing station allows reactants to be brought to the desired temperature. A cooling and pressure control station allows regulation of the upstream pressure and cooling prior to depressurisation to avoid solvent boiling. The outlet stream can be collected as a final product or be used as an intermediate in a subsequent reaction.

The reactors can be configured to run batch chemistry in parallel. This can be used for instance to run identical reactions to measure the reproducibility of a developed process.

The control is flexible to support a statistically designed approach (DoE - Design of Experiment). Online analytical tools can be plugged into the system. Not only can the reactor volume be adjusted but also the contacting patterns for various combinations of high and low concentrations of reactant.

A simpler tubular reactor design is also available for continuous flow chemistry, see Picture 2. Again the design is flexible, to accommodate a range of residence volumes.

In both systems, the materials used (stainless steel, superalloys) guarantee the parts to remain free of corrosion and contamination.

In addition to the current designs, bespoke systems can be produced with short lead times thanks to the long experience within the company. Training can be done in a day, either at the customer site or in the UK. Technical support is available globally.

Innovative Aspects:

The design of the flow reactor system is based on extensive secret know-how and feedback from a large number of customers.

Advantages include:

- " Mixed reactor design easily adapts to continuous or batch chemistry
- " Suitable for liquid and gas-liquid chemistries
- " Excellent temperature and pressure capability
- " Accommodates on-line analysis tools
- " Compact and easy to install

Target partner expertise sought:

- Type of partner sought: industry and academia
- Specific area of activity of the partner: chemical research labs
- Task to be performed by the partner sought: integration of existing designs or together with the UK company, adaptation of the system to specific needs.

Country of origin: United Kingdom

Listed under: Physical and Exact Sciences \ Medicine and Health \ Chemistry & Chemical Engineering

Key dates:

Profile created on: 13/01/2010

Closing date: 01/12/2010

To find out more, contact Enterprise Europe East of England on 08457 1716 15 (select option 4) or email us at enterprise.europe@businesslinkeast.org.uk quoting ref 09 GB 41n8 3FQZ