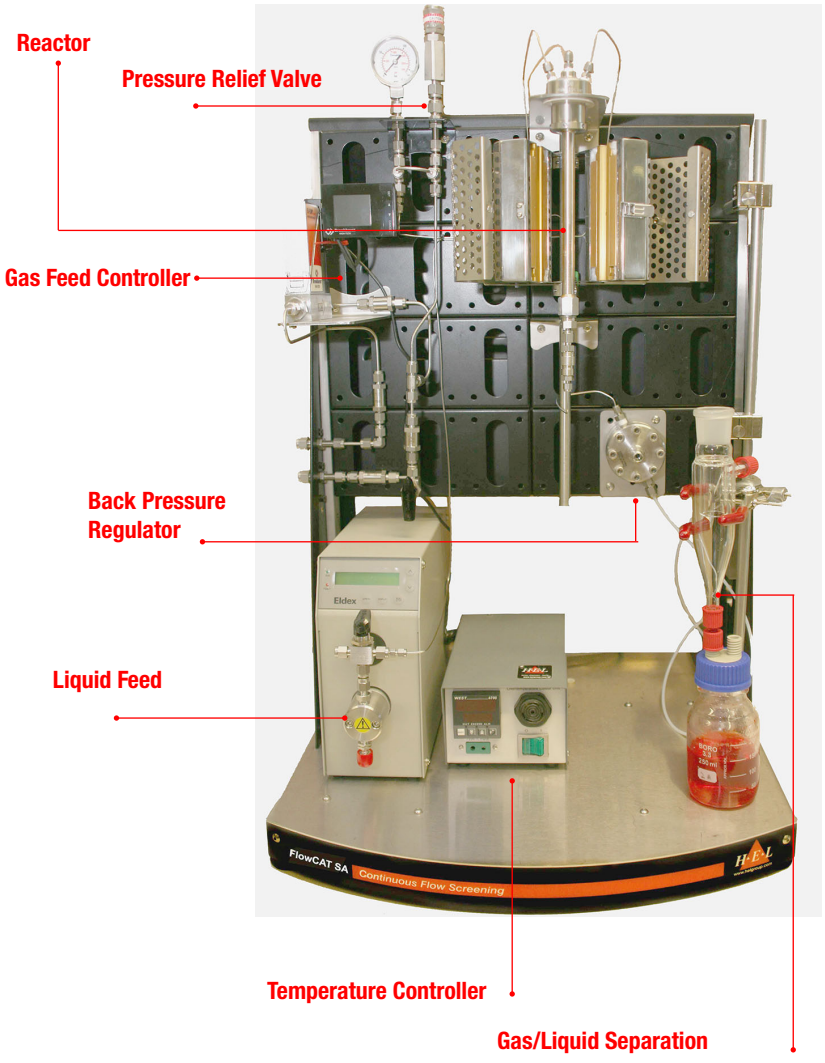
Catalysis Tools

FlowCAT SA

Semi-Automated (SA) bench top reactor fo continuous flow heterogenous catalysis



The HEL FlowCAT SA is a low cost, high performance reactor for continuous flow heterogeneous catalysis for use in applications including hydrogenation, carbonylation, oxidation and is widely used in the pharmaceutical and fine chemical industries.

Reactor Choice - Fixed Bed/Plug Flow/Trickle Flow

Tubular reactors in the form of pipes with flanges are used in the FlowCAT SA
These are available in a range of sizes with standard diameters.
The most common application of flow reactors is in heterogeneous catalysis, where the gas/liquid mixtures are passed over a solid catalystcbed, typically at elevated temperature and pressures. The reactor diametersvary between 6, 12, 18 and 24mm with volumes ranging from ~4 to 60 ml.

Gas/Liquid Separation

A custom designed miniature “cyclone” efficiently separates the gas and liquid phases. This can be heat-traced or cooled according to process needs. The off-gas can be further treated as required and the flow rate can also be recorded

Automation Process

The FlowCAT SA parameters for working pressure and temperature is defined using local digital controllers (instead of through software).

Maximum Reaction Ranges

- Temperature 300 ^{0}C
- Pressure 100 bar

Liquid & Gas Dosing

A variety of liquids can be used, ranging from high volatility to virtually solid at room temperature, by using suitable feed vessels, combined with the correct pump type and sometimes, heat tracing of lines. Multiple feeds are possible.
Highly volatile liquids (e.g. ethylene and CO2) as well as gases can be dosed using special mass flow controllers, including gas blending before feeding.

Feed Preparation

- Mixing is achieved by passing reagents through an inert packing material
- Pre-heating to the reactor temperature is achieved by heating the top section of the reactor, also filled with the inert packing material
- Heated feed vessels and heat traced pipes allow high viscosity liquids and solids to be pumped efficiently