

Chem-SCAN

HIGH PRESSURE

A POWERFUL TOOL FOR PROCESS DEVELOPMENT CHEMISTS

The HP Chem-SCAN is a parallel reaction system designed for the rapid screening of high pressure reactions and heterogeneous catalysis systems.



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HIGH PRESSURE Chem-SCAN

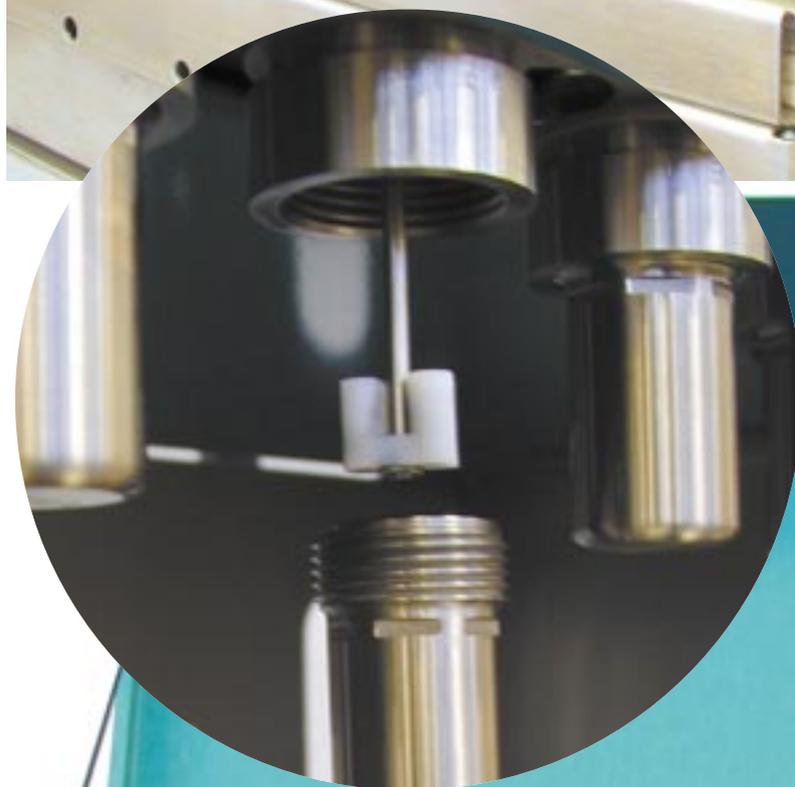
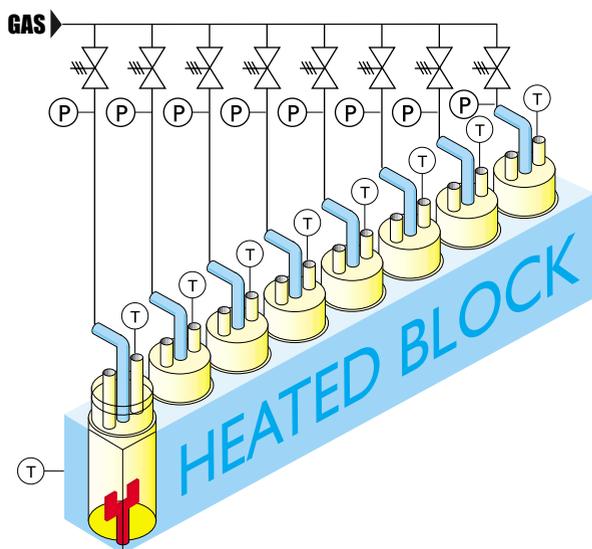
The High Pressure Chem-SCAN is a parallel reactor system designed for the rapid screening of high pressure reactions and catalysts.

The system consists of a block with eight high pressure reactors, all aggressively stirred. These are connected to a gas dosing manifold that allows independent controlled addition of gas to a pre-set pressure.

Capabilities

The system allows simultaneous study of several high pressure reactions with reactor volumes of 10 or 15ml.

The unit is capable of operating up to 100 bar (1500psi), with a standard temperature range of ambient to 200°C and there are also both low and high temperature options. The system is equipped with aggressive high torque magnetically coupled agitation of up to 1500 rpm.

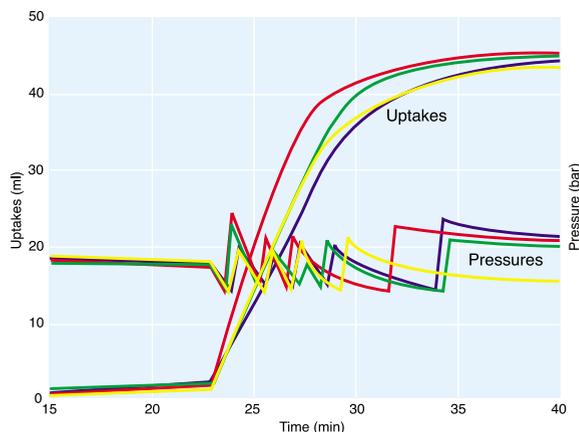


- ▲ Hastelloy reactor versions for corrosive gases/liquids.
- ▲ Dual-temperature jacket for investigating the effect of temperature.
- ▲ Range of pressures investigated in a simple run.
- ▲ Fully software controlled with complete data logging.
- ▲ Experimental recipes available for user editing.
- ▲ Remote liquid addition for thermally sensitive catalyst; air sensitive chemicals also handled.
- ▲ Operation up to 100 bar (1500psi)
- ▲ Live display of gas uptake

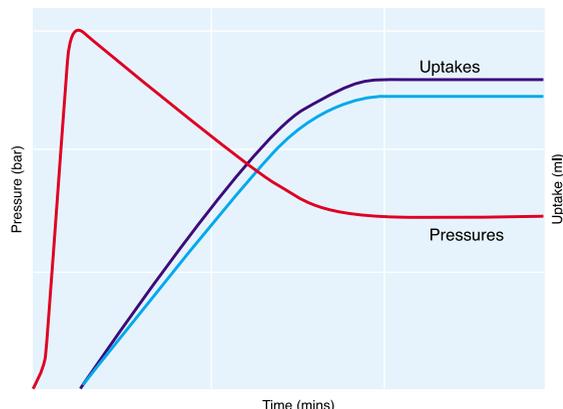


Applications: Hydrogenation catalyst screening

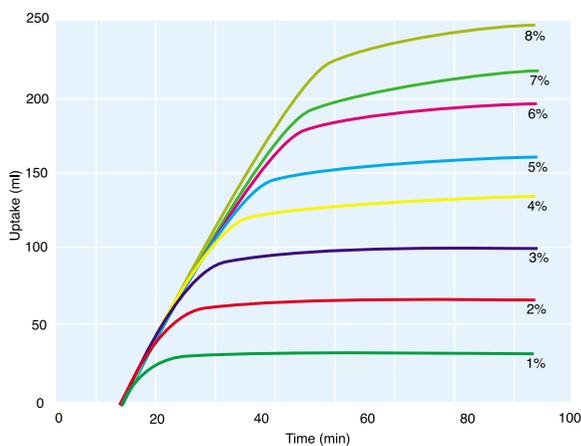
This is a typical trace of the data during a run. The pressure in each reactor falls as gas is consumed and this information is used to calculate the consumption. At a predetermined pressure, the reactor is "topped up" with fresh gas and this cycling continues until the pressure remains constant.



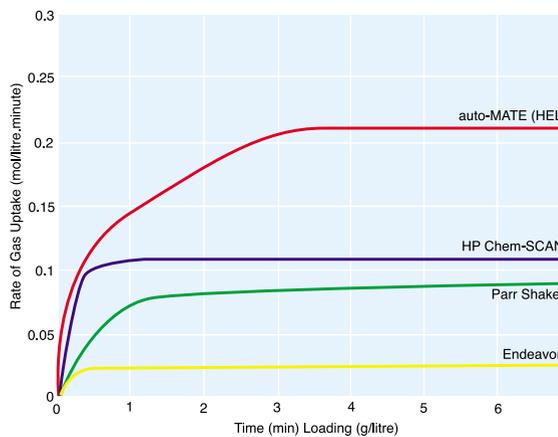
This is a very simple way to run the experiment. The reactors are charged to a pre-set pressure and the agitation is then turned on, to begin the reaction. Ideally suited to very fast reactions and it can highlight subtle differences very easily.



A set of 8 reactions, using different amounts of the same reagent at a fixed pressure. This is a good check for consistency and reproducibility. The plot shows data reported live at the end of a run.



This is a plot of data from many experiments showing the rate of initial hydrogen uptake as a function of catalyst loading. As can be seen, by data generated by Pfizer Inc (AIChE symposium 2002), the HP Chem-SCAN performs much better than competing devices in terms of the mass transfer limit.



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