

APPLICATION NOTES

Adapting Catalytic Platforms For Greener Chemistry

HEL FlowCAT

HEL ChemSCAN



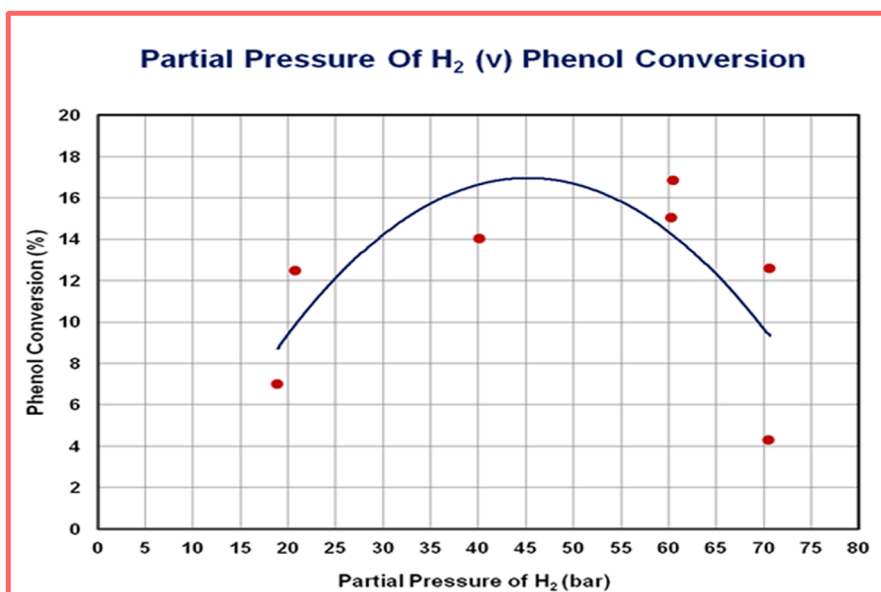
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Among the other potential benefits of moving to fixed bed flow reactors, is the ease with which benefits of supercritical CO₂ (scCO₂) can be investigated. HEL has been looking at the hydrogenation of phenol, both on stirred batch platforms (such as HP ChemSCAN) and FlowCAT. Starting with a process documented in the literature, we were able to replicate and extend this easily and quickly using the 8-reactor, 200bar parallel stirred reactor system.

Where the chemistry is more challenging and cannot be easily resolved with conventional solvents, scCO₂ is a common alternate and HEL's reactor systems can be adapted to this, with suitable pumps for boosting CO₂ pressure being included.

Also, scCO₂ can be used in place of conventional solvents for environmental reasons as it can be readily separated from the product and recycled.

The switch from organic solvents to scCO₂ was explored in both the HP ChemSCAN and FlowCAT for the catalytic reduction of phenol.



*The graph shows some of the preliminary results for phenol hydrogenation in scCO₂ at a total working pressure of 80bar.