



Slurry Hydrocracking Pilot Plant

The slurry hydrocracking pilot plant at Energy Technology Center is an open research infrastructure where academia and innovative businesses can carry out research and pre-commercial projects.

Description of the pilot plant

The plant can operate unattended (>100 h) and is equipped with a PLC-system and PC-supervision software. A 2 dm³ stainless steel CSTR reactor constitutes the heart of the

plant. Associated equipment upstream of the reactor are two vessels for catalyst preparation and activation, one slurry/feedstock storage vessel (30 dm³), one vacuum residue storage vessel (30 dm³), two feeding pumps (for catalyst slurry/feedstock and vacuum residue, respectively) and hydrogen supply (200 bar) from a hydrogen compressor. The three inlet streams, vacuum residue, catalyst slurry/feedstock and hydrogen, are mixed in the feeding-line just upstream of the reactor inlet.

Operating conditions

The reactor operating pressure and temperature are limited to 180 bar and 500 °C, respectively, with a LHSV of 0.5-2 (h⁻¹). A heavy unconverted oil/catalyst slurry fraction, a water fraction, the wanted light oil (diesel) fraction and a gas fraction are separated using two

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different separators, one operating at high pressure and temperature followed by a second separator operating at lower pressure and temperature.

Example of research topics

- Co-refining of different bio-oils with VGO/vacuum residue
- Slurry catalyst development
- Reactor modeling

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