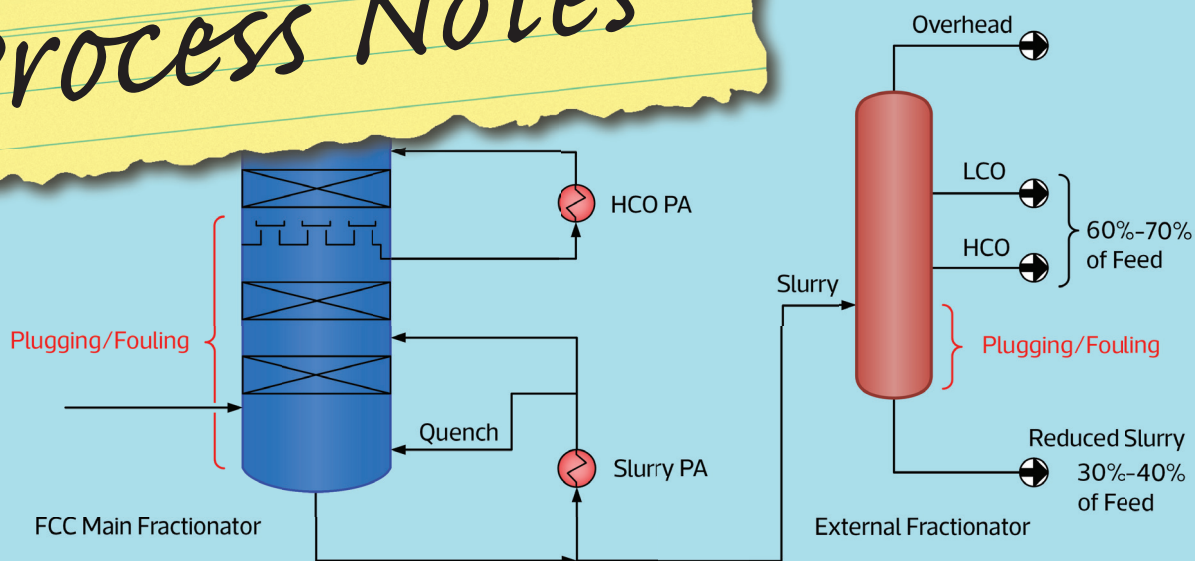


Process Notes



Process to minimize FCC slurry product

Equipment Design Matters

Many attractive projects fail to meet expectations at startup. Disappointing performance often results from bad simulation practices and/or poor equipment design rather than faulty execution. Refineries are currently considering FCC revamps to increase olefins for more alky unit feed, maximize LCO product recovery, and minimize slurry product by producing HCO for hydrocracker feed. These changes raise fractionator operating temperature. Higher temperatures require better process and equipment designs to avoid fouling and coke formation, which lead to poor reliability and potentially to an unscheduled shutdown.

While getting the simulation right is important, process equipment design is equally critical to a project's success. Consider a project to minimize FCC main fractionator bottoms product (Slurry, DCO, CSO, etc.). As outlined in the top figure, an external fractionator can recover substantial quantities of LCO and HCO from the FCC slurry product, reducing slurry volume by 60% - 70%.

Upgrading a significant quantity of low-value slurry to LCO and HCO provides a powerful economic incentive to execute a recovery project, but poor reliability can destroy project value. Good process design is important. For example, proper quench and pumparound system control is essential. However, ultimate results are driven by equipment design rather than the theory of a process model.

In both the main and external fractionators, liquid distributors must be designed for practical flow rates and to handle solids. Unsophisticated distributor design creates uneven liquid distribution that reduces fractionation efficiency and LCO recovery against the endpoint specification. The main fractionator slurry pumparound and quench distributors must eliminate hot spots in the grid and bottoms liquid pool, respectively, to prevent coke formation. The picture below illustrates the result when equipment design is left to low-cost vendor solutions.

Finally, the bottom product from the external fractionator (reduced slurry) will be nasty. Stripping trays must be specially designed to work in this extremely fouling service, and bottoms pumps must be compatible with very low API material containing solids.

Equipment design matters. Don't miss performance goals by applying generic equipment design to specialized problems.



PROCESS
CONSULTING
SERVICES, INC.

3400 Bissonnet St.
Suite 130
Houston, TX 77005, USA

+1 (713) 665-7046
info@revamps.com
www.revamps.com