FCC-SIM™ Technical Datasheet

A Yokogawa Company

Benefits

Optimise unit performance

- Set unit targets based on integrated optimiser results
- Use in an online optimisation application

Maintain the refinery LP

- Generate a consistent set of LP vectors with accurate product yields and qualities and unit constraints for various feedstocks and operating severities
- Incorporate swing cut schemes
- Regenerate data when the model or LP structure changes

Evaluate catalyst and additive effects

- Change catalyst composition (rare earth, alumina, zeolite)
- Determine effects of ZSM-5 addition
- Simulate effects of nickel passivation
- Use lab data for catalyst comparison and evaluation
- Create a Catalyst Database to evaluate effects of different catalyst compositions on operation

Understand unit behaviour

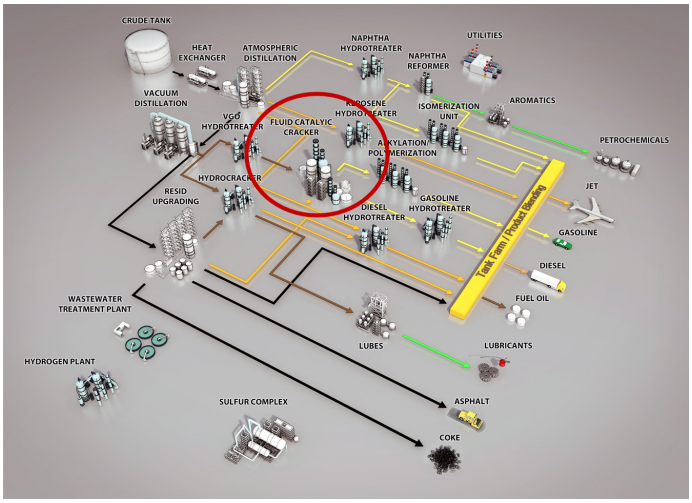
- Examine FCC cause and effect relationships
- Investigate effects of wide variety of feed types
- Train unit personnel

Monitor unit performance

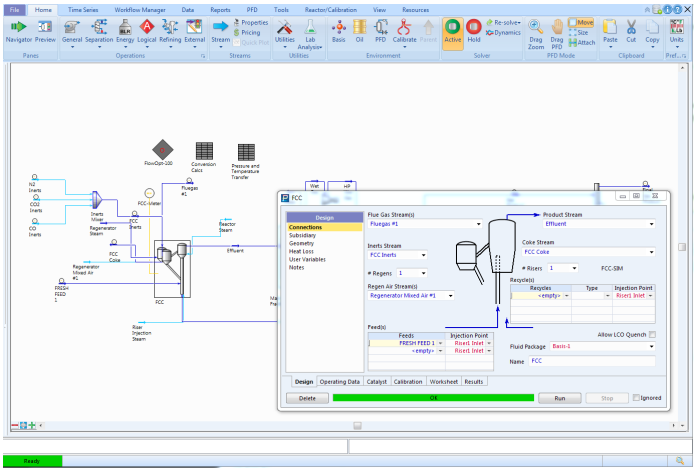
- Track mass balance, heat balance closure, catalyst circulation rate and other key process indicators
- Compare actual yields versus predicted

Overview Summary

FCC unit operation is a key economic driver in many refineries. Do you need to evaluate feed alternatives for your unit? Are you air blower or regenerator constrained? Do you need to decide whether to push feed rate or conversion? FCC-SIM can help determine the answers to these important questions. It is based on a first-principles engineering framework and is an accurate, easy-to-use tool with over twenty years of application in refineries worldwide.



FCC-SIM is a valuable tool that can be used to analyse your FCC and predict results for a wide range of feedstocks and operating conditions. You can use FCC-SIM to answer “what if” questions, develop LP model coefficients, make catalyst decisions, monitor key processing parameters, and train personnel.



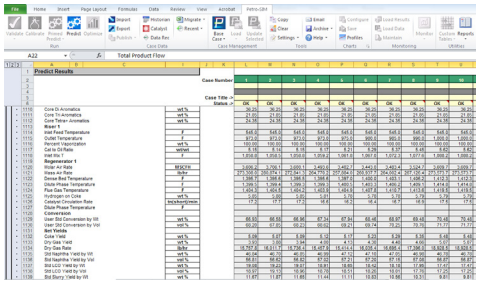
FCC-SIM is licensed for use on over 180 commercial FCC units by leading refining, catalyst, and engineering companies, making it the industry’s tool of choice.

FCC-SIM™ Technical Datasheet

A Yokogawa Company

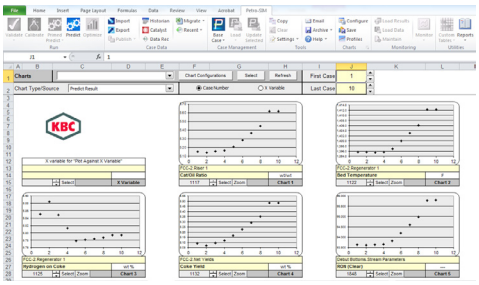
Features

- A detailed kinetic model of the riser and reactor vessel, integrating cracking conversion from riser bottom to reactor outlet
- A detailed kinetic model of coke burning in the regenerator for either partial or full-burn operations
- Detailed characterisation for feeds and products by carbon number (C1–C80), allowing accurate representation for naphtha and distillate products, and gas oil and residual feeds
- Detailed feed characterisation including core aromatic ring distribution
- Flexible configuration – units with multiple risers or regenerators can be modelled, as well as catalyst coolers
- A detailed catalyst activity model to account for fresh catalyst properties, feedstock contaminants, hydrothermal and coke deactivations and catalyst makeup
- Reaction section scaling for reconfiguration studies
- A built-in data reconciliation tool for reconciling mass and elemental balances
- Automatic data validation support to assess the quality of input data to the model
- A built-in optimiser allows you to identify the most profitable operation given feed/product pricing, catalyst costs, and unit constraints
- Direct access to process data historians
- Convenient and efficient platform for developing and maintaining LP vectors

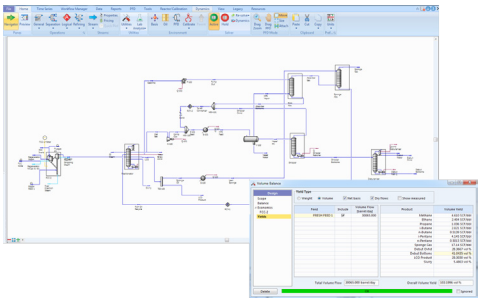


Interface Options

FCC-SIM is available through a graphical user interface with the same user-friendly look and feel as other unit operations within the Petro-SIM family of process simulators. Make configuration changes through simple drag and drop techniques on a process flowsheet diagram, compare plant data results in a meter view, and perform case studies and optimisations all within a single environment.



FCC-SIM supports a real integration with Microsoft Excel® allowing you to readily create a customisable Excel application workbook for driving calibration, prediction, and even optimisation case runs. Analyse the results of several cases directly from within this Excel environment. Multiple charting options allow easy analysis of data and model predictions, and concise summary sheets provide relevant data at a glance. Excel interfaces are automatically generated and can be customised to your specific needs.



FCC-SIM™ and Petro-SIM™

FCC-SIM is available within the Petro-SIM environment, because users with a Petro-SIM license can build very detailed process unit models that take advantage of Petro-SIM's sophisticated analysis tools, such as the popular LP Utility for easy generation and maintenance of LP submodels. Generate detailed models using downstream separation and auxiliary unit operations, link with assay and feed libraries and crude units to investigate feedstock effects, or use FCC-SIM as part of a complete refinery wide model, at a level of detail unsurpassed by any other process simulation package.