



VIS-SIM™ Technical Datasheet

A Yokogawa Company

Benefits

Optimise unit performance

- Determine most profitable operation of the visbreaker for a particular feed, given heater, fuel oil specifications, and fractionation capacity constraints, as well as cutter stocks for blending
- Evaluate furnace flux rates and coil outlet temperature need to be increased in order to achieve a target increase in conversion
- Find the optimum crude slate selection to generate a consistent set of visbreaker yields

Maintain the refinery

- Generate LP vectors that accurately reflect product yields and qualities to enable better crude selection
- Regenerate data when the model or LP structure changes

Understand unit behaviour

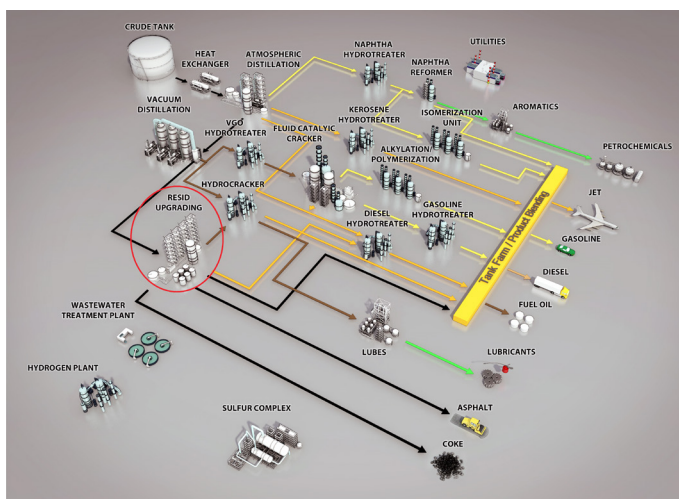
- Understand the impact of operating and design changes on furnace tube skin and oil film temperatures and pressure drop
- Train engineers and operators new to visbreaking operations through a series of simulation runs to evaluate cause-and-effect results

Monitor unit performance

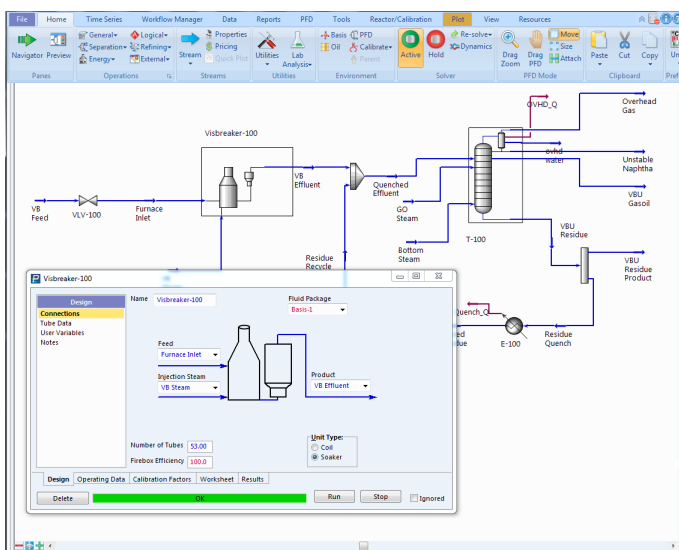
- Track mass balance and other key process indicators
- Compare actual yields versus predicted versus normalised

Overview Summary

Visbreakers turn low-value heavy end streams into saleable products. The key for operating these units is to find the best conversion level while still making a stable fuel oil product within feasible furnace operation. VIS-SIM can help you select the best operation taking into account these different trade-offs.



VIS-SIM, proven over decades of use with refineries worldwide, predicts yield and product properties based on the feed quality, furnace outlet temperature or severity, and unit geometry. The model predicts the key properties of the visbroken tar such as viscosity and stability. Detailed fractionation can be added upstream or downstream of the unit.



VIS-SIM is a valuable tool to evaluate different visbreaking operations and the resulting products.

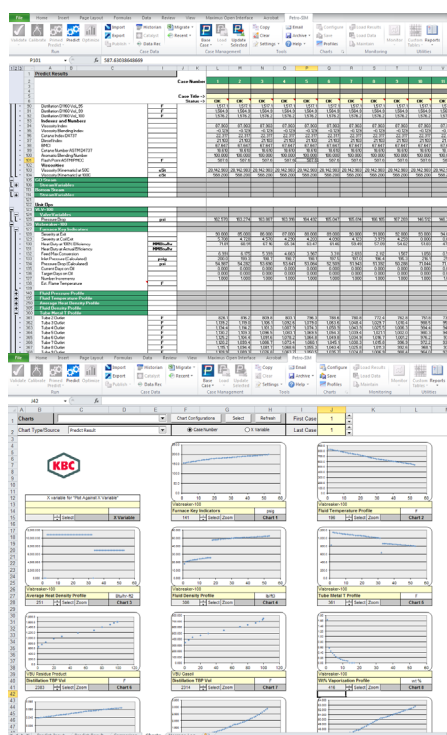


VIS-SIM™ Technical Datasheet

A Yokogawa Company

Features

- A tube-by-tube simulation of the furnace, allowing estimations of skin and bulk flow temperatures, as well as pressure drop and key parameters affecting coke laydown, like oil film temperature and tube residence time
- Detailed, rigorous unit models of distillation column and auxiliary equipment, including pumps, valves and exchangers
- A first-principles kinetic approach in modelling the key thermal cracking reactions and the resulting conversions to gas, naphtha, and gas oil
- Detailed yields and product property estimates, including densities, sulphurs, and distillations; key fuel oil properties include fuel oil stability, asphaltene content, Conradson carbon content, and viscosity
- A built-in data reconciliation tool for reconciling mass and elemental balances
- A built-in optimiser allows you to identify the most profitable operation given feed/product pricing, operating costs, and unit constraints
- Direct access to process data historians
- Convenient and efficient platform for developing LP vectors to ensure accuracy of the LP



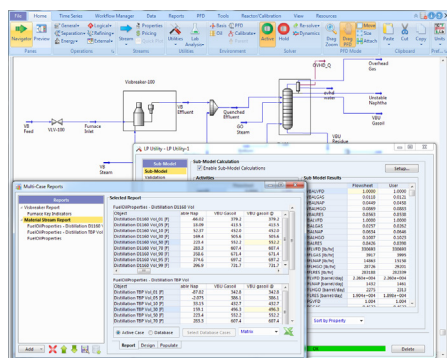
Interface Options

VIS-SIM is a module that can be added on to an existing Petro-SIM simulation model, 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 with results in a meter view, and perform case studies and optimisations all within a single environment.

VIS-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. Excel interfaces are automatically generated and can be customised to your specific needs.

VIS-SIM™ and Petro-SIM™

Because VIS-SIM is available within the Petro-SIM environment, users 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 VIS-SIM as part of a complete refinery wide model, at a level of detail unsurpassed by any other process simulation package.



KBC ADVANCED TECHNOLOGIES

www.kbcat.com