



ISOM-SIM™ Technical Datasheet

A Yokogawa Company

Benefits

Optimise unit performance

- Quantify the economic effects of recovering and recycling additional paraffins, the value of increasing fractionation effectiveness, and establish the best way to increase the isomerate octane
- Define the optimum cut point on the naphtha splitter to optimise the performance of a combined reformer/ isomerisation operation

Maintain the refinery LP

- Determine and generate vectors needed in the linear program (LP) to model the incremental yields for different feeds and operating conditions
- Regenerate data when the model or LP structure changes

Understand unit behaviour

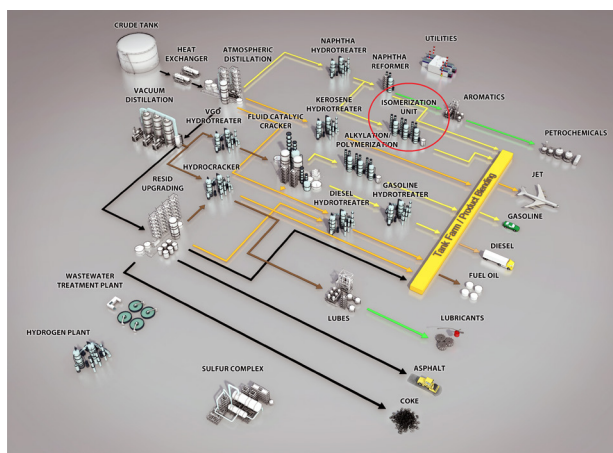
- Determine the effects of processing different crudes on the isomerisation unit and the effect of changing cutpoints on the crude unit
- Determine the effects on the yield and separation facilities with changing reactor operating conditions as well as the effects of isomerate on the gasoline blending pool
- Bring engineers and operators up to speed through a series of simulation runs to evaluate cause-and-effect results

Monitor unit performance

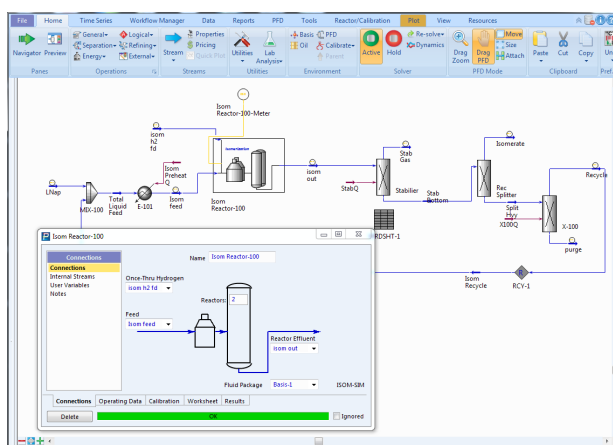
- Track mass balance and other key process indicators
- Compare actual yields versus predicted versus normalised

Overview Summary

Are you trying to optimise the gasoline production facilities of your refinery? Are you trying to balance benzene and sulfur in final product blends while still meeting octane and vapour pressure specifications? Isomerisation units can affect this key balance. KBC's ISOM-SIM models the key isomerisation processes used today. Isomerisation of nC4 to iC4 for alkylation feedstock and C5/C6 light naphtha for octane improvement are both simulated by this tool. Units with either highly active acidic catalysts or higher temperature less active catalysts can be modelled.



ISOM-SIM is available within a full-featured simulation environment, so all product separation, heat integration, recycles as well as upstream and downstream units can be modelled as needed. For specified feeds, operating conditions, and constraints, the program determines resulting product flows, compositions and properties as well as overall unit operating economics.



ISOM-SIM is a valuable tool to evaluate different feed compositions and their resulting yields and operation costs.

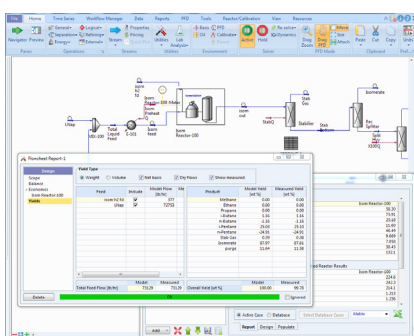
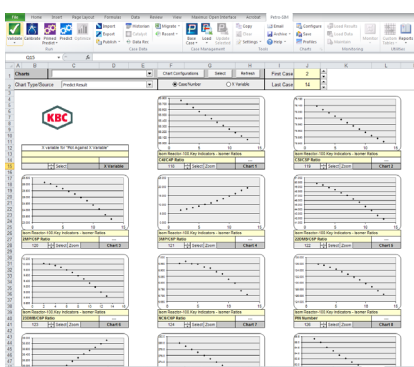
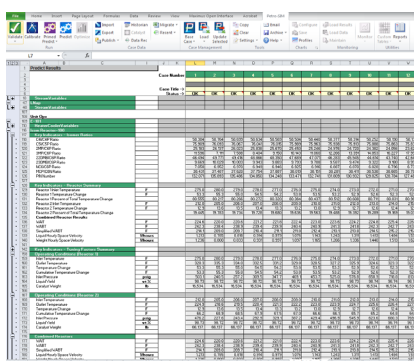


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Features

- A rigorous kinetic unit operation with pre-built reactions, both reversible and irreversible, running concurrently with rigorous thermodynamics. Reactions include normal-paraffin to iso-paraffin isomerisation reactions for the C4 through C6 components, and also cracking, aromatic saturation, and naphthenic isomerisation that may also occur
- Detailed compositional output with calculation of key properties
- Easy evaluation of feedstock changes
- Interaction of downstream separation operating changes and recycle effects
- Detailed, rigorous unit models of distillation column and auxiliary equipment, including pumps, valves and exchangers
- 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 and maintaining LP vectors



Interface Options

ISOM-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.

ISOM-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.

ISOM-SIM™ and Petro-SIM™

Because ISOM-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 ISOM-SIM as part of a complete refinery wide model, at a level of detail unsurpassed by any other process simulation package.

KBC ADVANCED TECHNOLOGIES

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