



# AROM-SIM™ Technical Datasheet

A Yokogawa Company

## Benefits

### *Optimise unit performance*

- Select operating targets by determining how to maximise the amount of paraxylene and the effect of ethylbenzene conversion on xylene isomerisation
- Determine how to best control the amount and quality of recycle
- Calculate the economic effects of increasing the hydrogen to hydrocarbon ratio and the effects of changing reactor pressures or conversion levels

### *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 LP data when the model or LP structure changes

### *Understand unit behaviour*

- Understand the effects of a new feed on product qualities and yields, such as how a change in feed naphthenes may affect the process, or determine the best feedstocks to the transalkylation unit
- 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

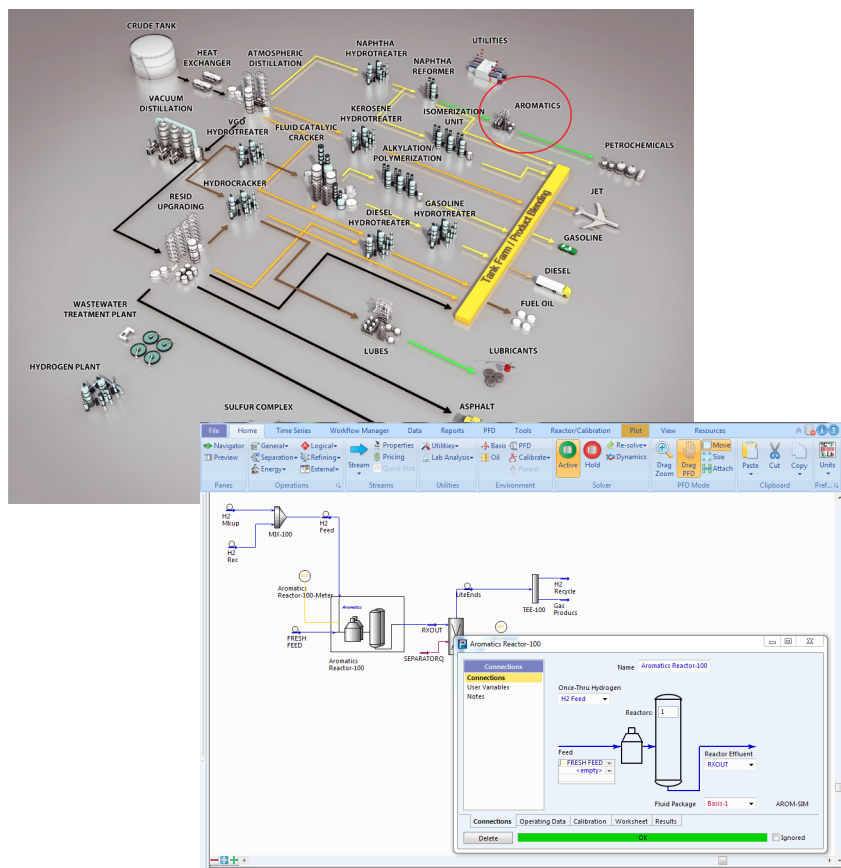
### *Establish the best configuration for a new facility*

## Overview Summary

At the heart of aromatics plants are reactors that are governed by complex kinetics. Modelling these units requires sophisticated software, that is still easy to use. KBC's AROM-SIM combines the key aromatics reaction systems of xylene isomerisation and transalkylation in a single software modelling application. Along with the Petro-SIM™ process simulation modelling platform, AROM-SIM provides you with a comprehensive model of aromatics processing facilities for optimisation, planning, monitoring, or design.

The isomerisation of C8 aromatics into paraxylene is performed using the AROM-SIM Xylene Isomerisation reactor model. It can model technologies such as XyMax™ and Oparis™ among other licensor technologies. The model includes both mechanisms for transalkylation of ethylbenzene (EB) to xylenes and dealkylation of EB to benzene.

Transalkylation processes are modelled with the Aromatics Transalkylation reactor model. This model is capable of emulating all commercial transalkylation processes such as TransPlus™ and PxMax™ among other licensor technologies. The model includes kinetic reactions for dealkylation, toluene disproportionation and C9/C10 aromatics transalkylation, plus the many additional reactions that take place.



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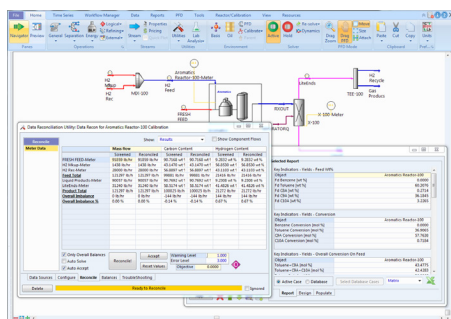
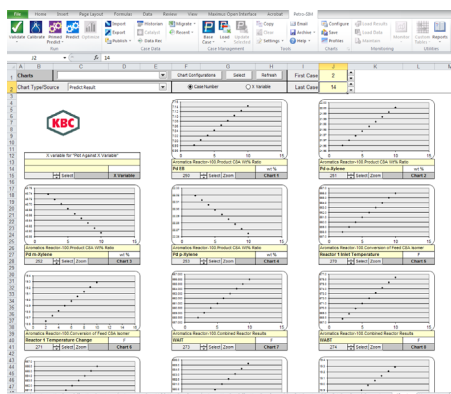
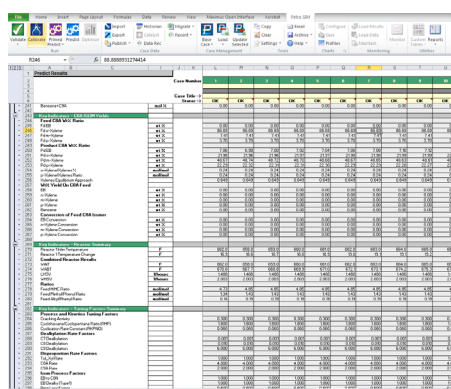


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## Features

- Kinetic model consisting of primary and side reaction equations for isomerisation and transalkylation
- Detailed compositional model output with stream properties
- Predicted product flows and compositions and operating economics for specified feeds, operating conditions, and unit constraints
- Auto-tuning or manual tuning capability
- 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

AROM-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.

AROM-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.

## AROM-SIM™ and Petro-SIM™

Because AROM-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 operating, link with assay and feed libraries and crude units to investigate feedstock effects, or use AROM-SIM as part of a complete refinery wide model, at a level of detail unsurpassed by any other process simulation package.

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