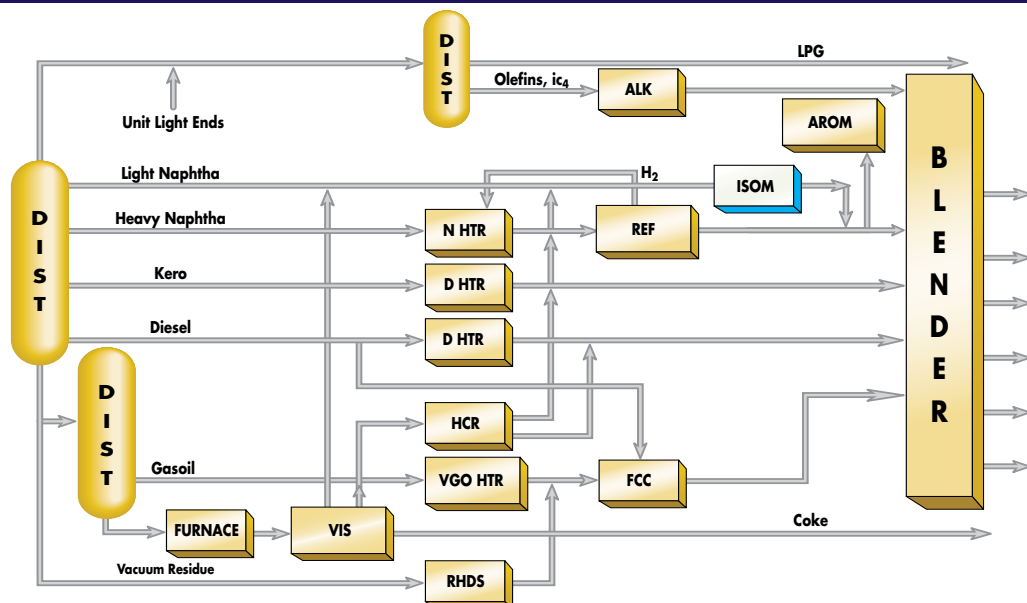


# ISOM-SIM™

C<sub>5</sub>-C<sub>6</sub> Isomerisation

a KBC SIM Model

ISOM-SIM is the KBC reactor model for C<sub>5</sub> and C<sub>6</sub> Isomerisation. It can model Butamer™, Penex™, TIP™, and all other C<sub>4</sub>-C<sub>6</sub> paraffin isomerisation processes. Units with either highly active acidic catalysts or higher temperature less active catalysts can be modelled. The reactor model is available with 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.*

## FEATURES

ISOM-SIM contains the following key features:

- A rigorous plug-flow kinetic unit operation has pre-built reactions, both reversible and irreversible, running concurrently with rigorous thermodynamics. Reactions include normal-paraffin to iso-paraffin isomerisation reactions for the C<sub>4</sub> through C<sub>6</sub> components, but also cracking, aromatic saturation, and naphthenic isomerisation that may also occur.
- The option to have the model calculate the temperature profile or to input a fixed temperature profile.
- Auto-tune or manual calibration options.
- Detailed compositional output with calculation of key properties.
- Easy evaluation of multiple feeds.

- Interaction of downstream separation operating changes and recycle effects.
- Case study and optimisation capabilities.

## Petro-SIM FLOWSHEET

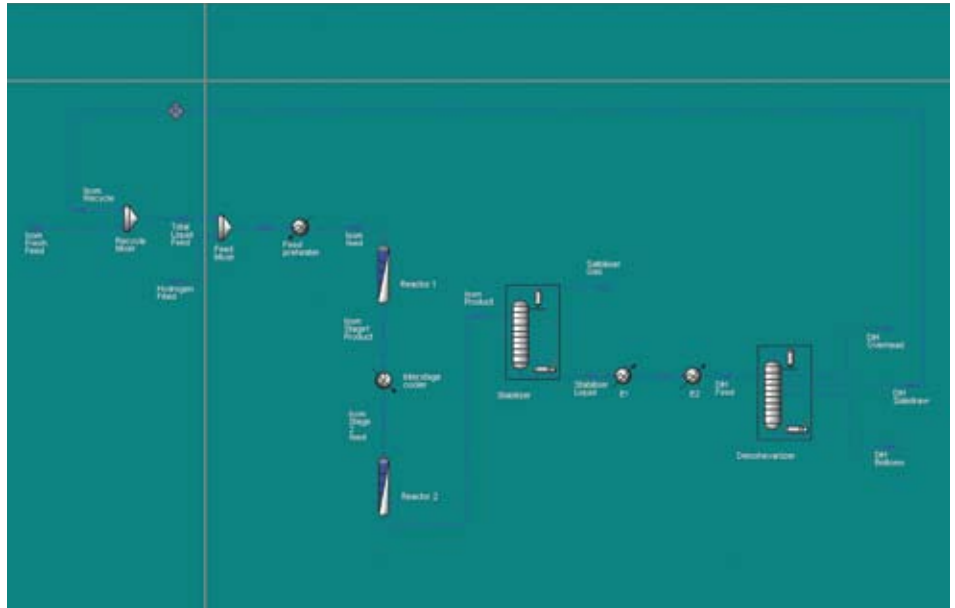
ISOM-SIM is available within Petro-SIM and Petro-SIM Express, the full-featured KBC process flowsheet simulators. You can model the reactor as an individual unit, or within a larger flowsheet to examine interactions between key units or over the entire facility.

*(Continued)*

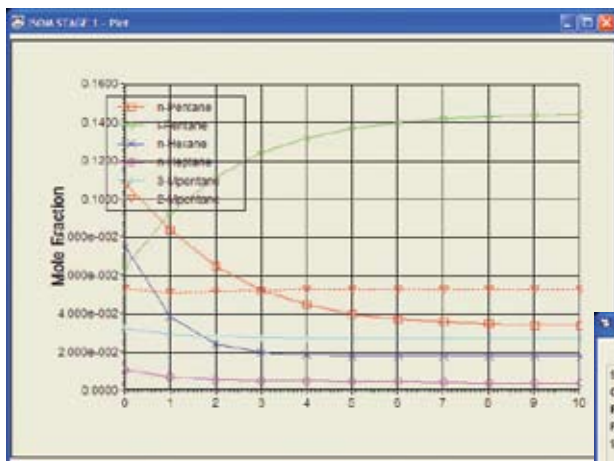
## BENEFITS

ISOM-SIM can help you operate your unit effectively, answering the following questions:

- **Selection of Operating Targets** – What are the effects on the yield and separation facilities with changing reactor operating conditions? What are the effects of isomerate on the gasoline blending pool? What is the optimum cut point on the naphtha splitter to optimise the performance of a combined reformer/isomerisation operation?
- **Evaluation of New Feeds** – What are the effects of processing different crudes on the isomerisation unit? What is the effect of changing cutpoints on the crude unit?



ISOM-SIM PFD



ISOM Temperature Plot

Rating	Reaction	ID	Active	Component 1	Component 2	Component 3	Component 4
Strong	n-Butane <=> i-Butane	930	<input type="checkbox"/>	n-Butane	i-Butane		
Component	Cyclohexane <=> Methylcyclopentane	929	<input type="checkbox"/>	Cyclohexane	Methylcyclopentane		
Reaction	Benzene + 3 H2 <=> Cyclohexane	928	<input type="checkbox"/>	Benzene	Hydrogen		Cyclohexane
	n-Pentane <=> i-Pentane	923	<input type="checkbox"/>	n-Pentane	i-Pentane		
Profile	n-Hexane <=> 2-Methylpentane	924	<input type="checkbox"/>	n-Hexane	2-Methylpentane		
Strong	2-Methylpentane <=> 2,2-Dimethylbutane	925	<input type="checkbox"/>	2-Methylpentane	2,2-Dimethylbutane		
Profile	n-Hexane <=> 3-Methylpentane	926	<input type="checkbox"/>	n-Hexane	3-Methylpentane		
Strong	3-Methylpentane <=> 2,3-Dimethylbutane	927	<input type="checkbox"/>	3-Methylpentane	2,3-Dimethylbutane		
	n-Heptane + H2 <=> n-Hexane + Methane	928	<input type="checkbox"/>	n-Heptane	Hydrogen	n-Hexane	Methane
	n-Heptane + H2 <=> n-Pentane + Ethane	929	<input type="checkbox"/>	n-Heptane	Hydrogen	n-Pentane	Ethane
	n-Heptane + H2 <=> n-Butane + Propane	930	<input type="checkbox"/>	n-Heptane	Hydrogen	n-Butane	Propane
	n-Hexane + H2 <=> n-Pentane + Methane	931	<input type="checkbox"/>	n-Hexane	Hydrogen	n-Pentane	Methane
	n-Hexane + H2 <=> n-Butane + Ethane	932	<input type="checkbox"/>	n-Hexane	Hydrogen	n-Butane	Ethane
	n-Hexane + H2 <=> 2-Propane	933	<input type="checkbox"/>	n-Hexane	Hydrogen	Propane	
	n-Pentane + H2 <=> n-Butane + Methane	934	<input type="checkbox"/>	n-Pentane	Hydrogen	n-Butane	Methane
	n-Pentane + H2 <=> Propane + Ethane	935	<input type="checkbox"/>	n-Pentane	Hydrogen	Propane	Ethane
	n-Butane + H2 <=> Propane + Methane	936	<input type="checkbox"/>	n-Butane	Hydrogen	Propane	Methane

ISOM Reaction List

## PREDICTIVE TECHNOLOGY FOR PROFIT IMPROVEMENT

- Petro-SIM™ for Process Simulation
- Petro-SIM Express™ for Process Simulation
- KBC SIM Suite:
  - FCC-SIM™ for Fluid Catalytic Cracking
  - REF-SIM™ for Catalytic Reforming
  - HCR-SIM™ for Hydrocracking
  - N HTR-SIM™, D HTR-SIM™ and VGO HTR-SIM™ for Hydrotreating
  - DC-SIM™ for Delayed Coking
- VIS-SIM™ for Visbreaking and Thermal Cracking
- ALK-SIM™ for Alkylation
- RHDS-SIM™ for Residue Hydrotreating
- AROM-SIM™ for Aromatics
- ISOM-SIM™ for Isomerisation
- Olefin-SIM™ for Pyrolysis



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