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Petro-SIM[®]

FOR DYNAMIC PROCESS SIMULATION

TECHNICAL DATASHEET

Petro-SIM Dynamics is a high fidelity, equation-oriented process simulation tool specifically designed for the Energy and Chemical industry. It is capable of modeling transient behaviors given a consistent set of boundary conditions, unit parameters and initial state values. It boasts a rich library of pure components, thermodynamic packages, and unit operations to support modeling of the relevant processes for these industries. Its intuitive, graphical interface ensures that users can quickly configure and run simulation cases to drive value creation and delivery through excellence in operations, improved process safety, and risk management and mitigation.

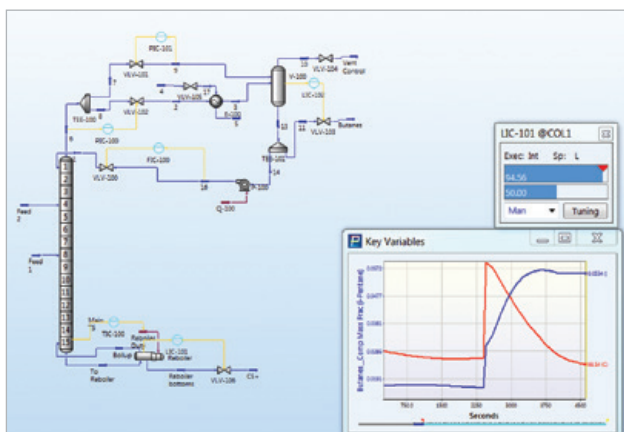
Typical applications are focused on the following industries:

- Oil production and gas processing
- Refining
- Petrochemicals

Petro-SIM Dynamics models complex transient behaviors of a process in relation to changes in temperatures and pressures. The simulation models reproduce the actual behavior of a process plant over time through an interactive interface. This helps engineers more effectively understand the real process behavior in order to analyze the overall impact of different operating scenarios on plant performance, reliability, and safety.

The lifecycle simulation aim of Petro-SIM ensures that process models can be effectively used throughout the development and operational phases of a project to maximize value to an organization from the initial investment in simulation. The comprehensive use of steady state and, especially, dynamics simulation throughout the life of a project helps to ensure optimal equipment capacitance, deliver properly tuned process controllers, perform de-bottlenecking exercises, prepare for hazardous upset scenarios and provide a means of continuous assessment of the operability of the proposed design.

KBC is a recognized leader in process simulation software and consulting services for the Energy and Chemical industry. Petro-SIM Dynamics is licensed with KBC services that can range from model setup and training, to process evaluation and improvement, to capital project screening and design and more.



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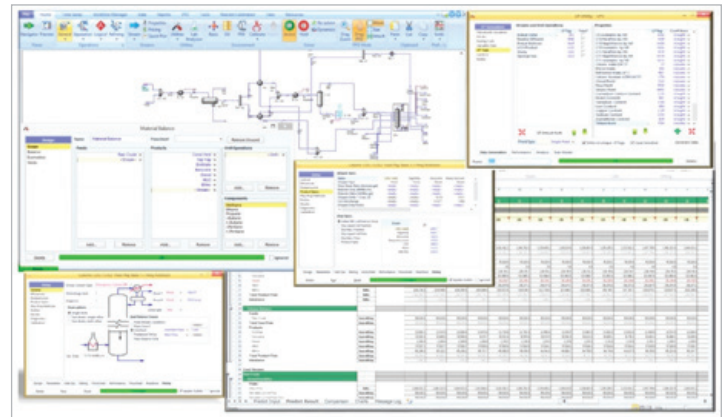


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A standard for rigor, robustness and ease of use

Petro-SIM Dynamics is an extension of Petro-SIM thereby including all the standard process simulation capabilities such as:

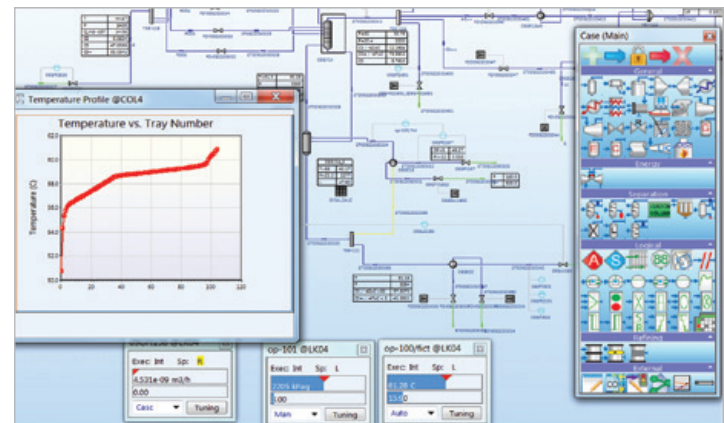
- An extensive unit operations library
- Over 1200 components and 25 thermodynamic models
- Support for user-defined unit operations and properties
- Spreadsheet and process data tables with enhanced features
- A rigorous column model
- Case comparison tools
- Flexible GUI
- Database import/export
- Real Excel integration



XML, OLE and CAPE-OPEN are also supported for interoperability with other systems.

Features:

- First principles equipment models ensure accuracy and robustness
- Dynamics Assistant for streamlined case setup
- Interactive solver
- Event scheduler
- Historical data loggers and charts
- Flexible user interface
- Cause and effect matrix
- Control manager
- Ability to integrate with various OTS systems
- OPC interface support



A winning combination – Petro-SIM Dynamics and OmegaLand

KBC's Petro-SIM Dynamics integrated with OmegaLand is a one stop solution for operator training. This solution enables the creation of a virtual plant experience. OmegaLand supports a comprehensive set of functional modules to address the majority of desired situations. User friendly interfaces allow efficient presentation and interpretation of results that allow instructors to actively control and monitor the operator training system and the performance of the operators being trained.

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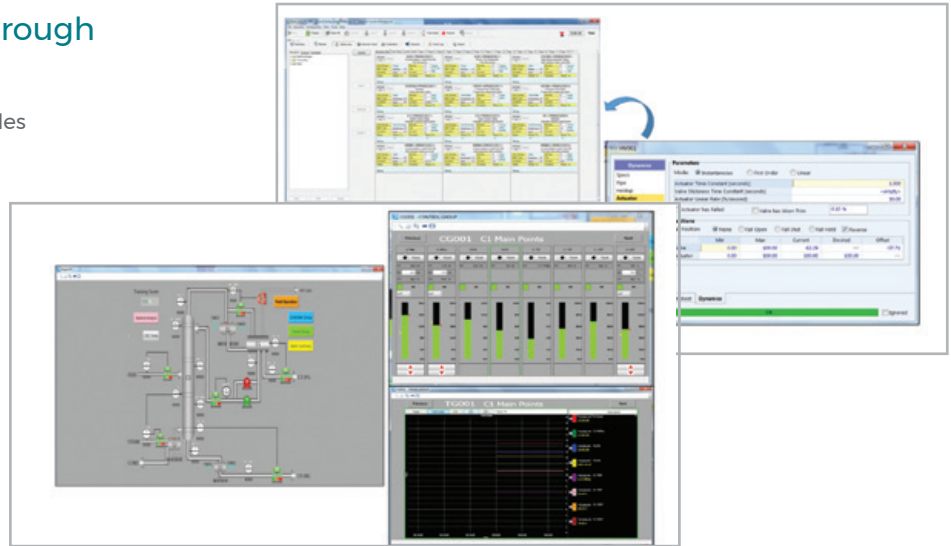
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Instructor features supported through OmegaLand integration:

- Engineer, instructor and operator access modes
- Integrated model building graphic builder
- Snapshots for initial conditions
- Scenarios, trends and profile plots
- Standard and custom malfunctions
- Field operated devices
- Trainee performance evaluation



Dynamic simulation as part of a lifecycle simulation approach

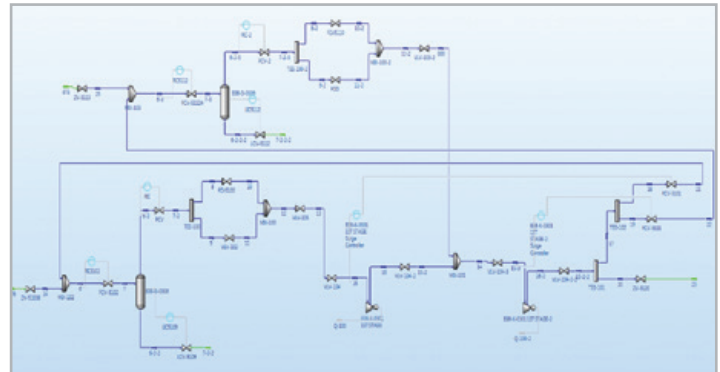
With its wide range of applications, Petro-SIM Dynamics is a single tool that supports process simulation studies from design to training. Petro-SIM dynamics enables users to use a given process model for all simulation requirements across the asset lifecycle.

- Process design
- Engineering studies
- Operator training simulators
- Safety analysis
- Development of operational practices: start-up, ongoing operation and shutdown.

Petro-SIM Dynamics models help users to develop and understand process interactions and transient process behavior, verify process design and equipment requirements, and perform debottlenecking studies all as part of the lifecycle approach to process simulation.

Petro-SIM dynamics delivers value through lifecycle simulation

- Develop and verify basic control and advanced control strategies
- Test process behavior during an upset scenario
- Pre-tune controllers before startup and for different rates
- Verify operating procedures
- Train operators for unit startup, improved process understanding, and emergency response handling
- Support operations to increase production rates and optimize the process performance



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