PRODUCT DATASHEET

PIPEPHASE Pipeline Network Design

A PIPEPHASE™ Pipeline Network Design simulation software rigorously models steady-state multiphase flow in oil and gas networks and pipeline systems with the power and flexibility to model applications ranging from the sensitivity analysis of key parameters in a single well, to multi-year facilities planning studies for an entire field. PIPEPHASE Pipeline Network Design covers the complete range of fluids encountered in the petroleum industry, including single phase, black oil, and compositional mixtures. The program may also be applied to single component stream or CO_2 injection networks.

Features

Summary

PIPEPHASE Pipeline Network Design is the simulator of choice for the world's leading oil and gas producing companies. The software combines proven solution algorithms with modern production methods and software analysis techniques to create a robust and efficient oil field design and planning tool with an extensive physical property data bank.

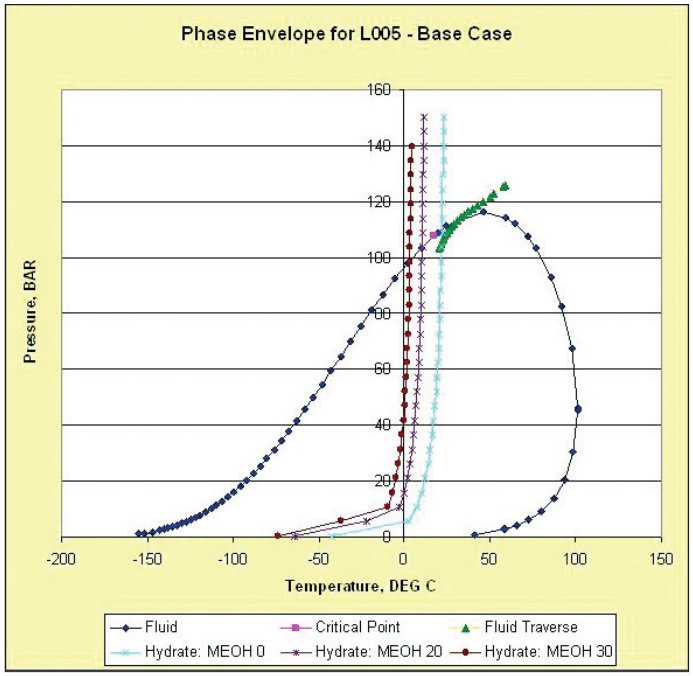
Business Value

- Increased overall assetwide production
- Improved well & flow line performance
- Improved pipeline & facilities design
- Integrated field development & planning
- Reduced operating costs
- Reduced capital costs
- Increased engineering productivity

Applications

The combination of multiphase flow analysis coupled with extensive thermodynamic property prediction capabilities makes PIPEPHASE Pipeline Network Design suitable for a wide range of applications and industries, from single link to complex networks, including:

- Oil and gas gathering networks
- Natural gas transmission and distribution pipelines
- Sensitivity analysis
- Line sizing
- Field planning & asset management studies
- Steam injection networks
- CO_2 pipelines
- Gaslift analysis
- Heat transfer analysis for heavy oil pipelines
- Hydrate prediction
- Aviation fuel systems



Industries Served

- Petroleum exploration and production
- Natural gas transmission
- Utility networks
- Complex downstream hydraulics

Pipeline Flow Analysis

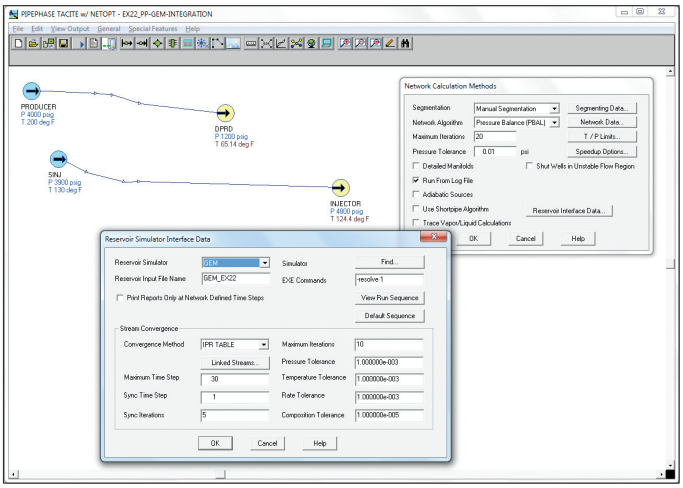
PIPEPHASE Pipeline Network Design provides a comprehensive set of industry-standard empirical and mechanistic methods for analyzing multiphase flow phenomena in pipes. Coupled with extensive fluid models and a rigorous energy balance incorporating detailed heat transfer analysis capability, PIPEPHASE Pipeline Network Design is a flexible tool for evaluating the complete range of fluid flow phenomena encountered in single-phase and multi-phase pipelines.

Integration With Reservoir Simulation Software

Oil producers have a real, quantifiable problem managing and modeling their reservoirs and linking them to the surface. PIPEPHASE Pipeline Network Design has the modeling capabilities needed to accurately manage and model reservoirs by developing an interface with reservoir simulators and enhancing PIPEPHASE Pipeline Network Design technology.

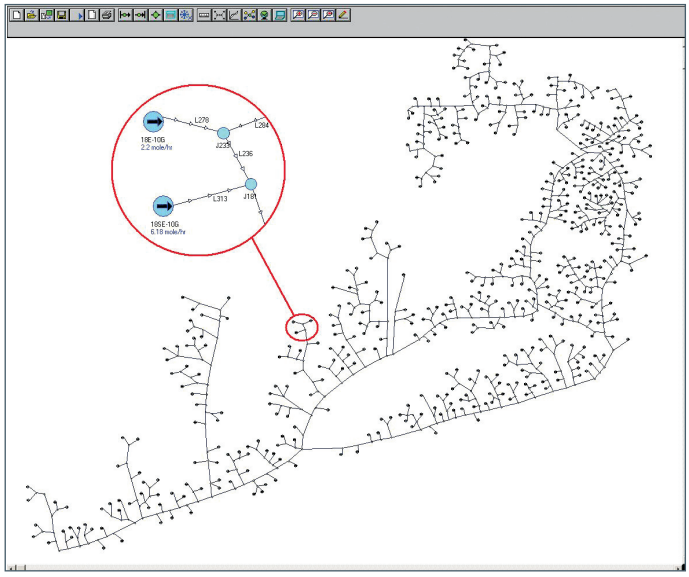
Integration with reservoir simulation software also allows the simulation of the following:

- CO_2 Sequestration
- Enhanced Oil Recovery of Depleted Fields
- Steam Assisted Gravity Drainage (SAGD)



Production Planning

The timestepping feature in PIPEPHASE Pipeline Network Design makes it a flexible field planning tool. Reservoir depletion can be simulated with decline curves or by using a reservoir simulator to reflect actual field development strategy. Once a fieldwide network model has been built, the planning tool is created by setting up scenarios for future facilities' expansion along with reservoir decline characteristics. The completed model provides a unique look-ahead capability for the entire asset, incorporating the longterm effects of both reservoir decline and investment in new facilities.



Field-Wide Network Modeling

The robust, fieldproven network simulation capability in PIPEPHASE Pipeline Network Design enables the user to model large networks of connected wells, pipes, and associated facilities. The detailed well bore model and extensive inflow performance (IPR) library, combined with a complete set of surface equipment modules, allows the user to configure the necessary details of a fieldwide oil and gas gathering (or injection) system, incorporating all of the interdependent components from the sandface to the downstream separation facilities.

Compatability

PIPEPHASE Pipeline Network Design Graphical User Interface (GUI) is designed for intuitive data input, and is coupled with a Results Access System (RAS) for the graphical representation of calculation results. PIPEPHASE Pipeline Network Design contains a robust API (application programming interface) that allows access to calculated data, to change input data, control of the execution sequence, and custom report generation. Tools within PIPEPHASE Pipeline Network Design such as case study, time stepping, and optimization use the API to interact with simulation data. The PIPEPHASE Pipeline Network Design API can also link to CMG reservoir simulators, the PRO/II process simulator and the ROMeo online simulator.

SIM4ME Portal

The SIM4ME™ Portal can easily link PIPEPHASE Pipeline Network Design simulations with Microsoft Excel®, and provides an Excel interface to PIPEPHASE Pipeline Network Design. It enables Excel users to interact with a PIPEPHASE Pipeline Network Design simulation model without requiring knowledge of coding or simulation techniques.

SIM4ME Portal increases the return on investment (ROI) in a simulation model by extending the usage of a model. The simulation can be used by anyone who can use Microsoft Excel.

SIM4ME Portal allows the user to:

- Open a PIPEPHASE Pipeline Network Design simulation using Excel
- Change defined attributes
- Run the simulation
- View results in Excel
- View the "Solution History"
- Create automated case studies in Excel
- Link data across multiple simulations

PRO/II Process Engineering Integration

PRO/II™ allows for the integration of PIPEPHASE Pipeline Network Design simulations within the product. The PIPEPHASE Pipeline Network Design unit operation in PRO/II Process Engineering allows PRO/II users to embed and save complex hydraulic models. Since it is a native PRO/II Process Engineering unit operation, it can be included or excluded from the calculation sequence, included in recycles, and PRO/II Process Engineering can manipulate PIPEPHASE Pipeline Network Design variables.

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