



+ PSI Gas Grids and Pipelines

PSIganesi Studio

Usage

The PSIganesi Studio is a powerful tool that enables transient and steady-state gas grid simulations to be carried out for planning purposes. The advantages of PSIganesi include:

- calculating the pressure and flow patterns in an existing or future pipeline network
- sizing new pipelines and stations in existing networks
- planning and checking the implementation of work programmes in the grid
- taking gas composition and gas temperature curves into account
- verifying the design of new procurement, supply, transport and storage contracts in the existing grid

- determining the utilization levels for different supply situations
- simulating leaks and pipe bursts and calculating the potentially leaked quantity of gas.

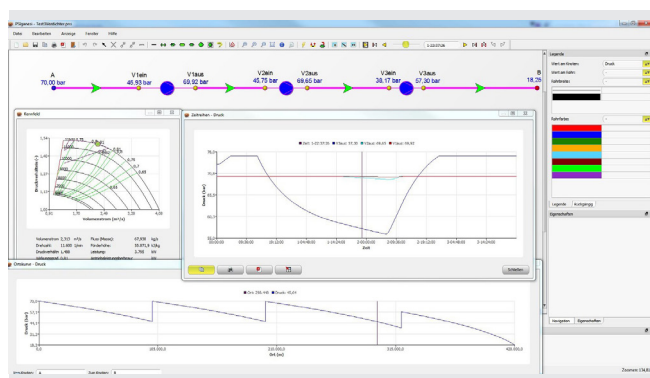
Advantages

Topology modifications as well as planning data set points can be effectively carried out.

The execution of simulation calculations is highly performant and therefore suitable for large networks (> 10 000 elements).

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Methodology

The equations used for calculating the dynamic pipe flow of compressible fluids are solved numerically using an implicit difference method. Non-pipe elements are handled using algebraic equations. The resulting nonlinear set of equations is linearized using the Newton-Raphson method and is solved with an algorithm for weak linear set of equations.

The thermal behaviour of real gases (natural gases) is represented by state equations according to ISO 12213 (SGERG-88 and AGA8-DC92 method). Further state equations can be added upon request.

PSIGanesi Studio benefits

For effective processing of the tasks described above, the extensively revised PSIGanesi Studio offers

- a user-friendly, fully graphical user interface with which integrated network topologies can be created / modified, planning data entered and calculation results displayed
- extensive control functions to support the user in designing network topologies as well as parameterizing network elements

- easy analysis of different scenario calculations by simply modifying network topology procedures
- simplified input of planning data (e.g. quantities) with automatic balancing of sales and purchases at the overall and subnetwork level (also using MS Excel data)
- stored network volumes are taken into account by balancing.

Results are presented directly in the network topology.

The following result displays are available:

- Single value display in the topology
- Topology colouring according to simulation results (pressure, flow, gas properties)
- graphical and tabular time (horizon) display
- Compressor model with performance map or curve limits.

The PSIGanesi Studio is designed as an office application and can be run on hardware platforms under Windows.

The PSIGanesi Studio is a sub-functional module our product PSIGanesi/Simulation and Reconstruction. The exchange of network topologies and data between the different applications is supported.

PSI Software SE

Dircksenstraße 42–44 · 10178 Berlin (Mitte) · Germany

Phone: +49 30 2801-0 · Fax: +49 30 2801-1000 · info@psi.de · www.psi.de

PSI Gas Grids and Pipelines

Phone: +49 30 2801-1504 · gasandpipelines@psi.de · www.psigasandpipelines.com

