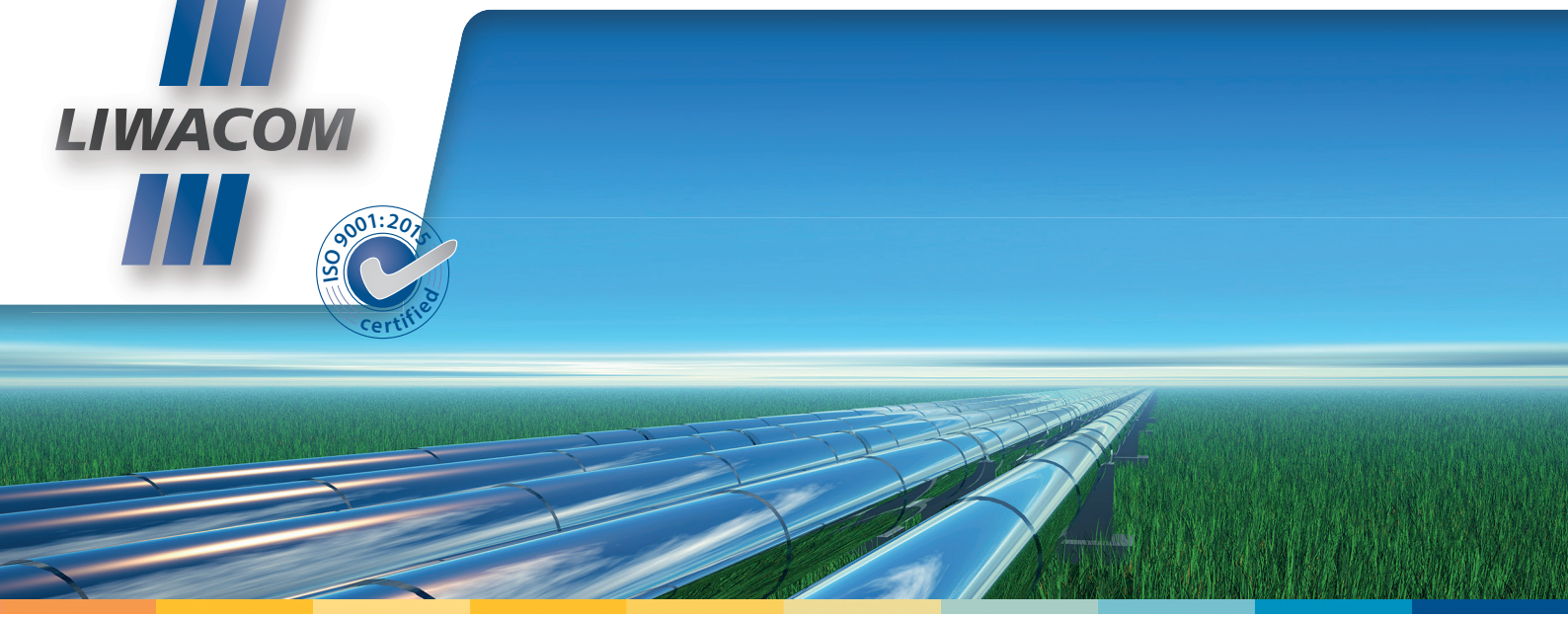
LIWACOM

ISO 9001:2015 certified



Pipeline Application Software

LIWACOM is a leading global supplier of pipeline application software. Customer satisfaction and value are outcome of LIWACOM's distinguished product and service quality. Three decades of focal commitment to the pipeline industry results in the unmatched SIMONE standard software product. SIMONE is a joint product of LIWACOM and of SIMONE Research Group. Product standardization is unique and covers all applications, computer platforms and customized installations. Outstanding ease of product installation and configuration considerably cuts down system implementation and maintenance cost.

Value Features

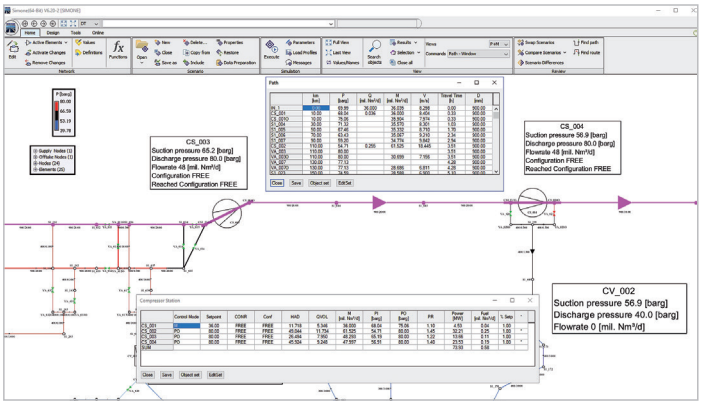
- fully integrated package over all applications.
- common database and common user interface.
- compatible transient and steady-state simulation engines.
- industry-leading GUI.
- WEB Interface.
- robust, accurate, stable and fast real-time model.
- field proven on more than 200,000 km gas pipelines.
- statutory approval for energy billing use.
- highest fidelity of compressor modeling and optimization.
- excellent scalability.
- metric and imperial units.

Gas Tracking and Thermal Billing

SIMONE tracks gas compositions en route through the pipeline system, as well as physical gas properties, user defined gas attributes (e.g. ownership, receipt location), pig runs, transportation costs, hydration, and water vaporization. SIMONE gas tracking is so accurate and reliable that it has received statutory approval for use in commercial energy billing.

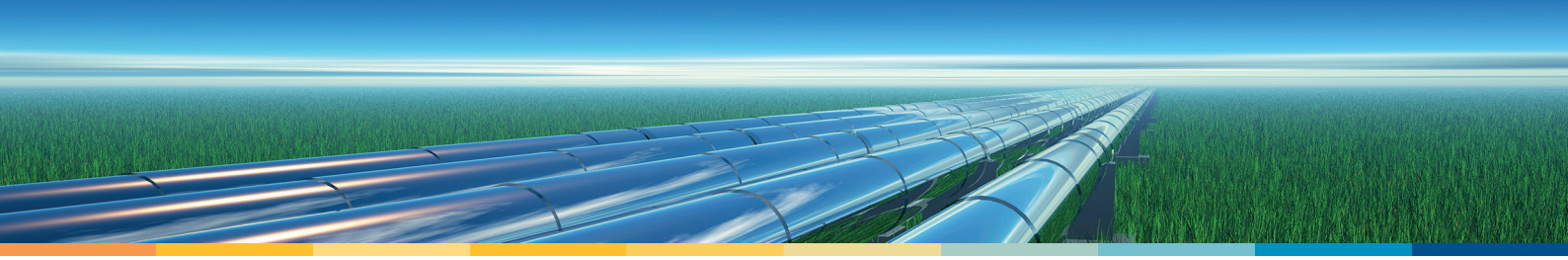
Real-Time Model

The SIMONE real-time model is an advanced transient state estimator. It is extremely robust (fault-tolerant), hydraulically accurate, numerically stable and fast. By using all available meter readings SIMONE exploits meter redundancy to optimize solution fidelity, and to reveal wrong meter readings and incorrect model parameters. The estimated pressures and flows match the meter readings within their respective accuracies. SIMONE keeps on running, if a meter should be grossly erroneous or temporarily unavailable, or if the model description should be corrupted (e.g. by an incorrectly transmitted valve status); SIMONE facilitates trouble-shooting by pinpointing the affected network section.



Simulation

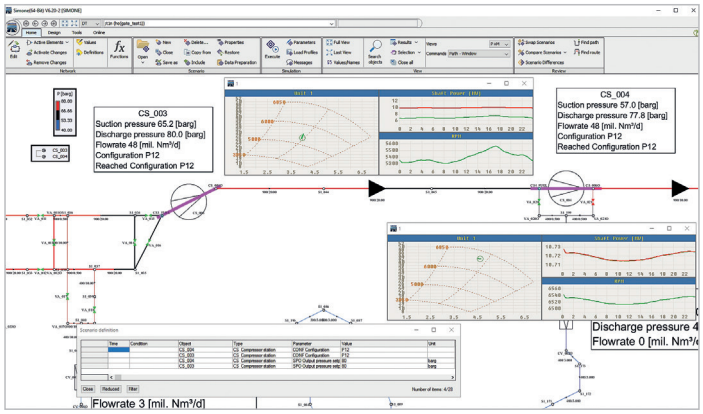
Forecasts of pressure, flow, gas composition and line pack (e.g. to predict survival times), are provided by look-ahead, predictive, what-if, and training simulations. Predicted receipts and deliveries, scheduled system controls, and unexpected events are simulated. Simulations are executed in an automatic cycle, or on user request, or are triggered by an external application.



Dedicated computation engines for transient and steady-state analysis are at hand. Arbitrary networks can be simulated, with up to 120,000 elements and 120,000 nodes, ranging from low pressure distribution up to highest pressure transmission systems. A look-ahead simulation can be started from an arbitrary initial state, including a state which has been computed by the real-time model. A script language allows solving complex event driven tasks. SIMONE supports various implementations of training simulation, including trainerstudent interaction and simulation-driven Scada screens.

Leak Detection and Location

SIMONE leak detection uses several field proven techniques. These are transient model compensated mass balance error method, statistical data analysis, and parallel imbalance analysis over various time intervals. Use of several techniques insures fast response, high sensitivity, and minimum false alarms under all operational conditions: flowing, shut-in, steady state, transient. Hypothesis testing provides location possibility even in case of a smaller leak. The performance of leak detection and location can be evaluated a priori in a leak sensitivity study.



Compressor Modeling and Optimization

Various compressor models are at hand, ranging from a basic model up to SIMONE's unique high-fidelity model of compressor characteristics. The latter is used to optimize compressor operation; i.e. the compressor units to be on-line, and their operating set points are determined in order to minimize fuel cost, or to maximize throughput. The Optimizer fulfills the transport requirements, hydraulic equations, and operational constraints (e.g. limits on pressures and flows; compressor, prime mover and gas cooler constraints).

Graphic User Interface

SIMONE's unique object-oriented user interaction concept does not require customization, nor configuration. It is centered on a pipeline system's schematic world picture, which provides dynamic network coloring, user defined object sets (arbitrary object clusters or network paths), object search, and graphic layers. The world picture allows to access any object's simulation results, e.g. as trend or profile display, compressor wheel map, or spread-sheet. Likewise, simulation parameters are defined, or the external data transfer (e.g. Scada import / export) is controlled. SIMONE includes a graphic network editor for creating and maintaining a network. The editor is integrated in the run-time user interface.

Software Technology

SIMONE is a single source software for Windows, Unix and Linux systems. It supports multi-user applications, local languages, and metric and imperial units. The SIMONE application programming interface (API) allows to read from, and to write to, external systems (e.g. Scada) or databases (e.g. GIS), and to control program execution. Network descriptions including graphic coordinates and arbitrary object attributes can be imported from, and exported to, external systems.

Product Support and Services

LIWACOM and qualified local partners offer global product support. It includes first-level support, user helpdesk, training seminars, and ongoing software upgrade service.

Contact and Product Support

SIMONE
SOFTWARE

LIWACOM

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