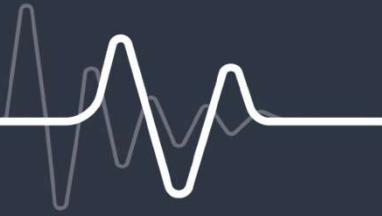


simulation
software limited



MENA Oil & Gas Industry

varisim

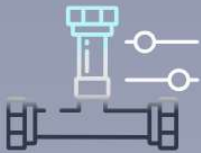
pipeline simulation



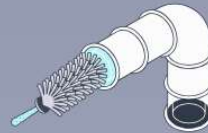
WHAT IS **varisim** ?

a high-performance transient pipeline hydraulic simulation platform used globally across the oil, gas, water, district heating/cooling, power, and mining sectors. VariSim is the first fully transient pipeline hydraulic simulator, built on the Method of Characteristics, enabling high-fidelity modelling of every hydraulic component across complex networks.

Our software's vast potential is revealed through the ability to operate in a real time and a desktop environment. It can provide a pipeline operator with unprecedented tools that can substantially improve safety, operational flexibility and profitability all whilst ensuring compliance with environmental requirements.



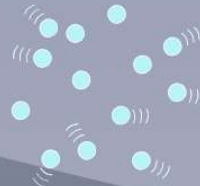
**Pipeline Integrity
(Monitoring)**



**Pig/Scraper
Tracking**



**Energy &
Operational
Optimisation**



**Capacity
Management
(Gas line Pack)**



**Leak Detection &
Location**



**Terminal Loading
Management**



**Drag Reducing
Agent Tracking**



**Optimised Custody
Transfer Hydraulics**



**Batch Management
Applications**

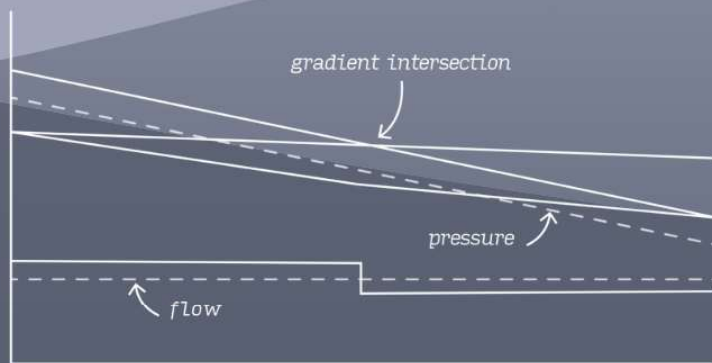


**Operator Training
Simulator**

LEAK DETECTION

Accurate, powerful leak detection on single phase pipelines across the globe are achieved using our sophisticated e-RTTM and pattern recognition technology. Any detected leaks are quickly sized and located on a GIS map for clear presentation to the control room operator.

The pattern recognition method is based on machine learning principles, using VariSim to calculate and store the signature for every possible leak situation arising in advance. Regional identification is now possible on complex distribution networks. This novel approach is demonstrating impressive accuracy wherever installed.



Our e-RTTM (extended real time transient modelling) method ensures accurate and capable leak detection on water pipelines supported by adequate instrumentation, and conforms to the requirements of API 1130.

The simulation engine in VariSim can detect leaks on pipelines with transient conditions, variable product properties or changing flow regimes.

varisim AT WORK:

ADNOC WEP, UAE, 2024



- Real-time monitoring at any point on pipeline (Pressure, Flow, Velocity, Temperature Data)
- Leak Detection & Location
- Product/Composition Tracking
- DRA Tracking
- Pig/Scraper Tracking
- Dual Redundancy

CHINA, 2009-2020



Leak Detection, Optimisation, and Batch Management deployed on:

- Caofeidian,
- Nanjiang,
- Rizhao,
- Yizheng,
- Zhenjiang, and
- Eran–Cang gas pipelines

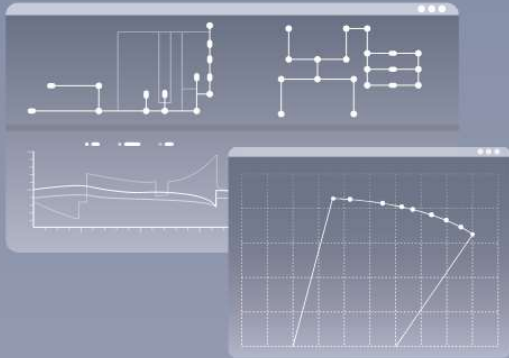
KARBALA, IRAQ, 2024



The Iraqi Ministry of Oil's State Company for Oil Projects (SCOP) has implemented VariSim across multiple oil pipelines, enabling:

- Advanced Leak Detection,
- Product Tracking,
- Pipeline Integrity Monitoring, and
- Inventory Management.

OPERATOR TRAINING

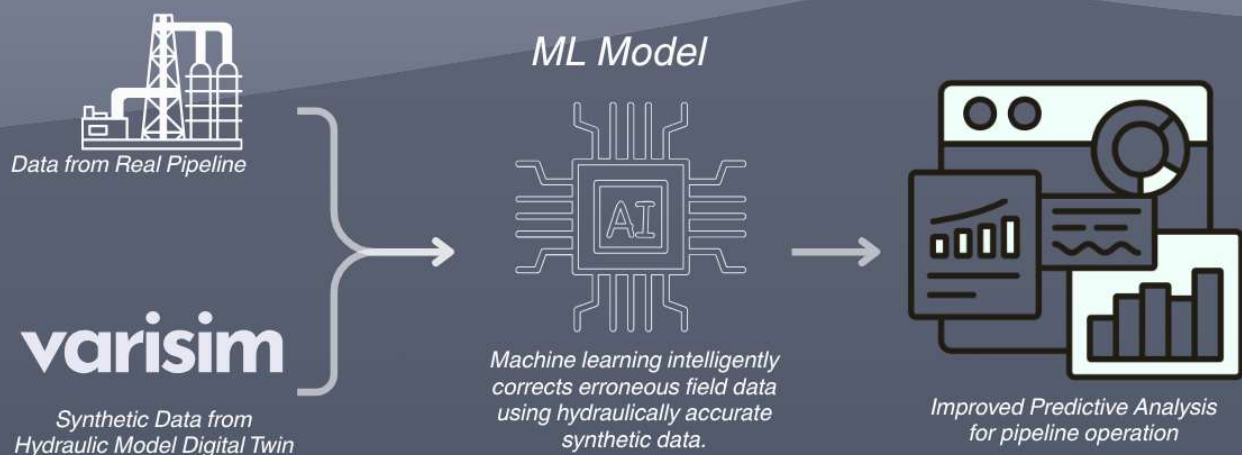


VariSim provides dynamic operator training using either a replica of the live control system screens or its own intuitive graphical interface. Operators interact with the simulator in the same environment used to control the real pipeline, with realistic telemetry feedback reflecting actual pipeline behaviour.

Both training approaches are supported by an instructor interface for scenario creation, simulation control, and performance assessment, enabling operators to safely understand and evaluate the impact of their control actions

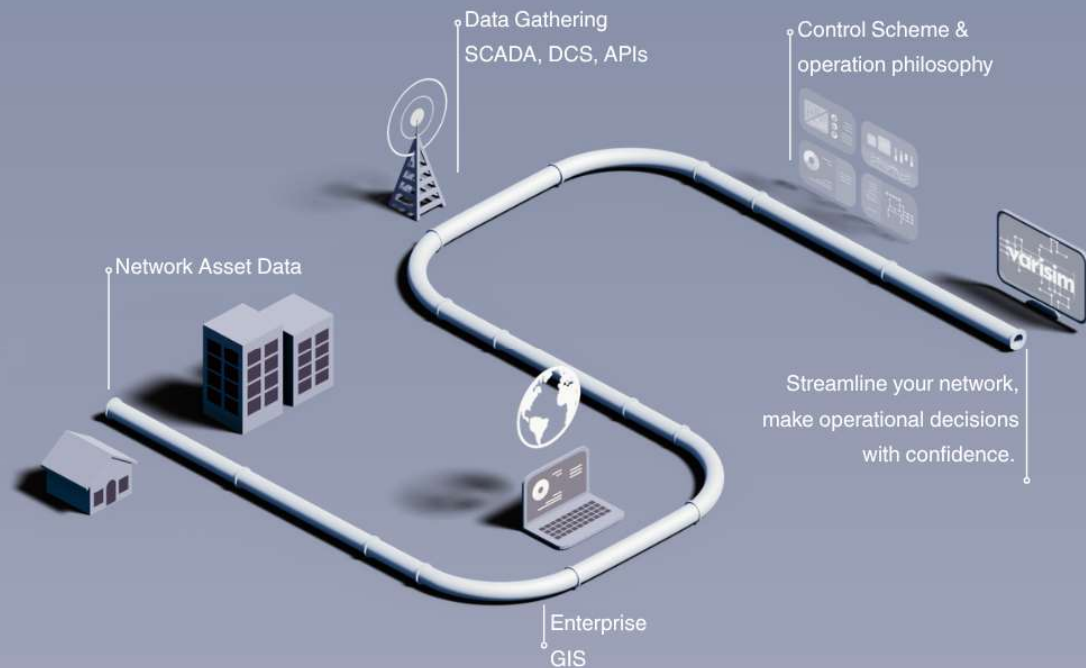
ARTIFICIAL INTELLIGENCE

VariSim enables pipeline operators to generate large volumes of high-quality synthetic operational datasets, overcoming limitations of historical data. These datasets strengthen predictive analytics and support AI models where real-world data is sparse, unavailable, or unsafe to capture.



With hundreds of pipeline models deployed in control rooms across the globe, SSL delivers industry-leading digital twin performance with accuracy levels reaching up to 99%. Because VariSim's physics engine is so well-established and validated, it becomes a highly reliable foundation for digital twins, predictive maintenance workflows, and AI-driven operational optimisation.

WHY varisim?



VariSim maintains its reputation as one of the most accurate and proven real-time pipeline network simulators available to the oil and gas industry. Trusted for decades, VariSim can be deployed on dedicated hardware within secure operational environments or as a cloud-enabled solution, delivering live, actionable pipeline data directly to users through a secure web interface.

Designed for real-time oil and gas pipeline operations, VariSim provides advanced leak detection, batch and inventory management, job tracking, automated alerts, and data enrichment from external systems as standard. The software continually demonstrates its reliability in operational environments, serving as a powerful decision-support tool for transmission and distribution pipeline networks.

Supported by SSL's professional engineering services and model development expertise, VariSim enables operators to gain deep insight into their pipeline assets. This enhanced visibility delivers greater confidence in critical operational decisions, helping organisations maximise network performance, safety, and efficiency while unlocking the full potential of their pipeline infrastructure.

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**simulation
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