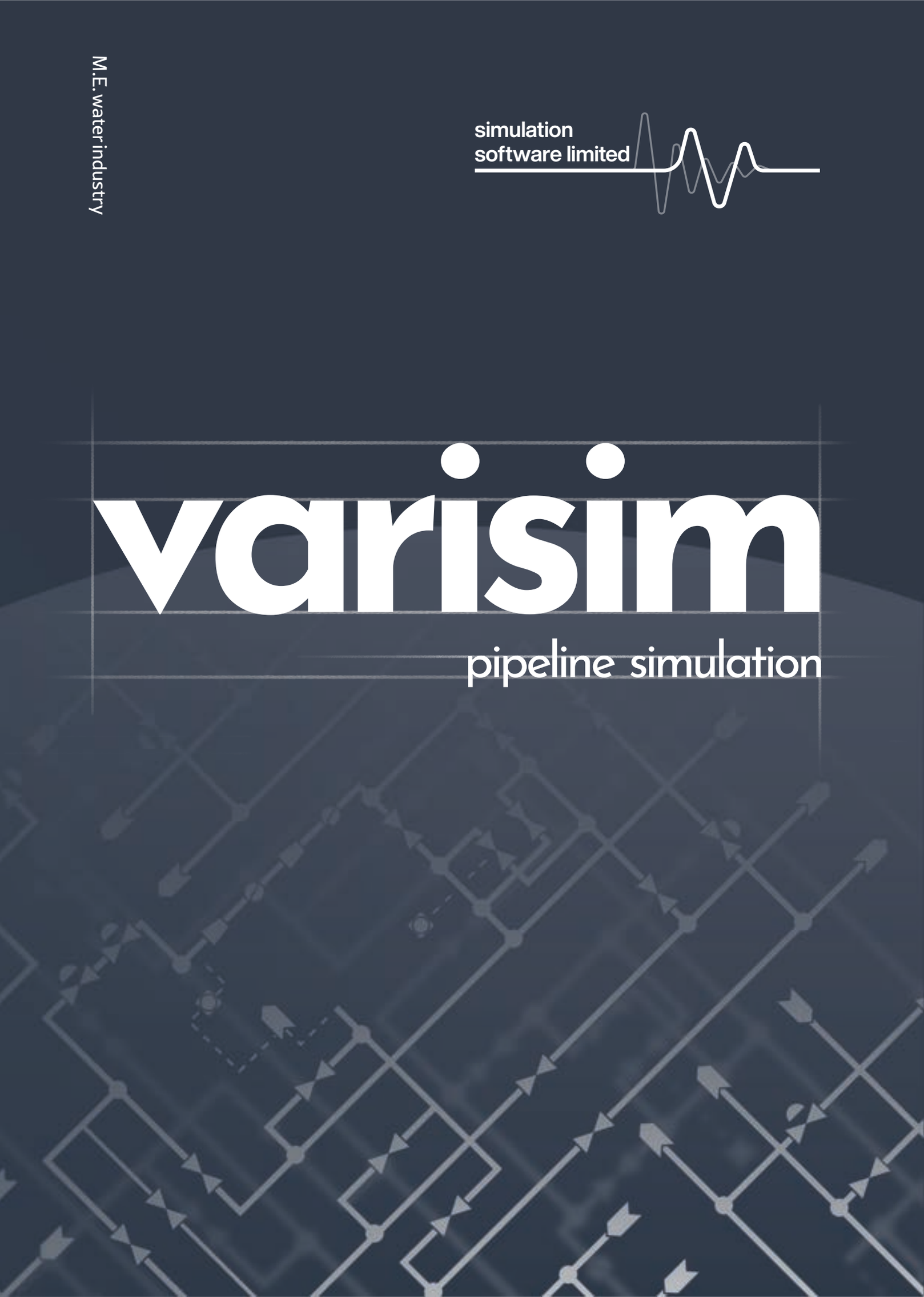
M.E. water industry

simulation
software limited

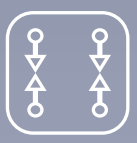
varisim

pipeline simulation



know your network

VariSim simulates the transient hydraulic behaviour of pipelines within the water, gas, oil, heat and power industries. 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.



simulation

Robust, accurate, proven real-time transient simulator with variable wave-speed and sophisticated air valve and control scheme modelling.

network modelling

Our network modelling approach includes water balancing, AI forecasting/allocation, minimum nightly flow, leak detection and optimal zonal isolation. Track water sources and water age in real-time throughout the entire network.

leak detection

VariSim allows you to protect high risk assets and reduce response time by pinpointing pipeline anomalies using our advanced detection techniques. This can reduce failures in your network and prevent future leakages.

optimisation

Optimise pump operation to minimise energy usage and the network's carbon footprint. Lower cost, improve delivery routes, maximise storage capacity and ensure security of supply.

operator training

VariSim's immersive training simulator integrates with your own control system. The simulator behaves as the real network and interacts with your operator control screens to provide unprecedented realism.

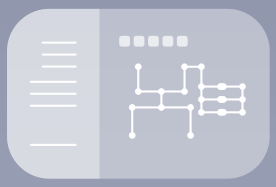
engineer support

The Hydraulic Analysis Group is a unique family of companies with a wealth of pipeline hydraulic experience who are able to offer comprehensive support to the users of VariSim.

Based in the UK and now an industry standard worldwide, VariSim has been developed over 5 decades and is the largest global deployment of digital twins in the water industry, with over 10,000 pipeline studies completed in over 50 countries. We're driven to collect, analyse and provide highly accurate data analysis for your pipeline assets, to ensure critical decisions can be made with confidence.

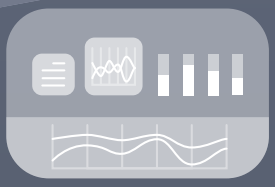
consolidate your data

Business statistics



Fixed asset data

Live hydraulic behaviour



Asset & supplier data

Automatic data acquisition

Enhanced data quality

Fast simulated outputs

All data gathered and presented efficiently to operators

Consolidate all your network management data into one application that includes fixed asset data, business related information and live hydraulic behaviour. The data hub gathers and historises asset and supplier data and compares it to the simulated output. Any discrepancies are raised as points of interest which can be managed on the platform or fed directly into your asset management system.

VariSim is unique in providing full live hydraulic information anywhere in your network, calculated by its fully transient engine. The information is brought directly to your desktop browser in a convenient geographical format alongside any other relevant asset information of your choice.

varisim

VariSim provides robust, accurate real-time transient network modelling that has proven itself time and again the world over.

Use machine learning to forecast demand and network response from historical data, weather, holidays, network information with our demand forecaster.

Network optimisation is a key requirement for today's networks. VariSim can optimise your network using it's pump optimiser to minimise energy usage and maximise performance. Since the real time system is fully aware of current tank levels and equipment statuses, the optimiser can quickly determine more optimal pumping configurations in real time whilst ensuring security of supply.

Dubai E&W authority - 2015:

- Real time water management
- Water balance module
- Operator training centre
- Dual redundancy
- Source tracking & quality monitoring

Yorkshire Water - 2023:

- Web based display & dashboard overview
- Real time simulation of critical DMAs
- Auto-determined points of interest
- Burst detection, acoustic analysis
- Fixed asset & measurement data in one location

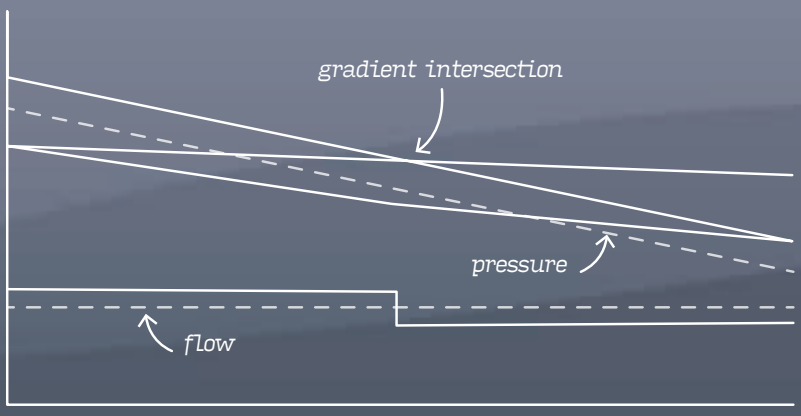
at work:

water industry

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.

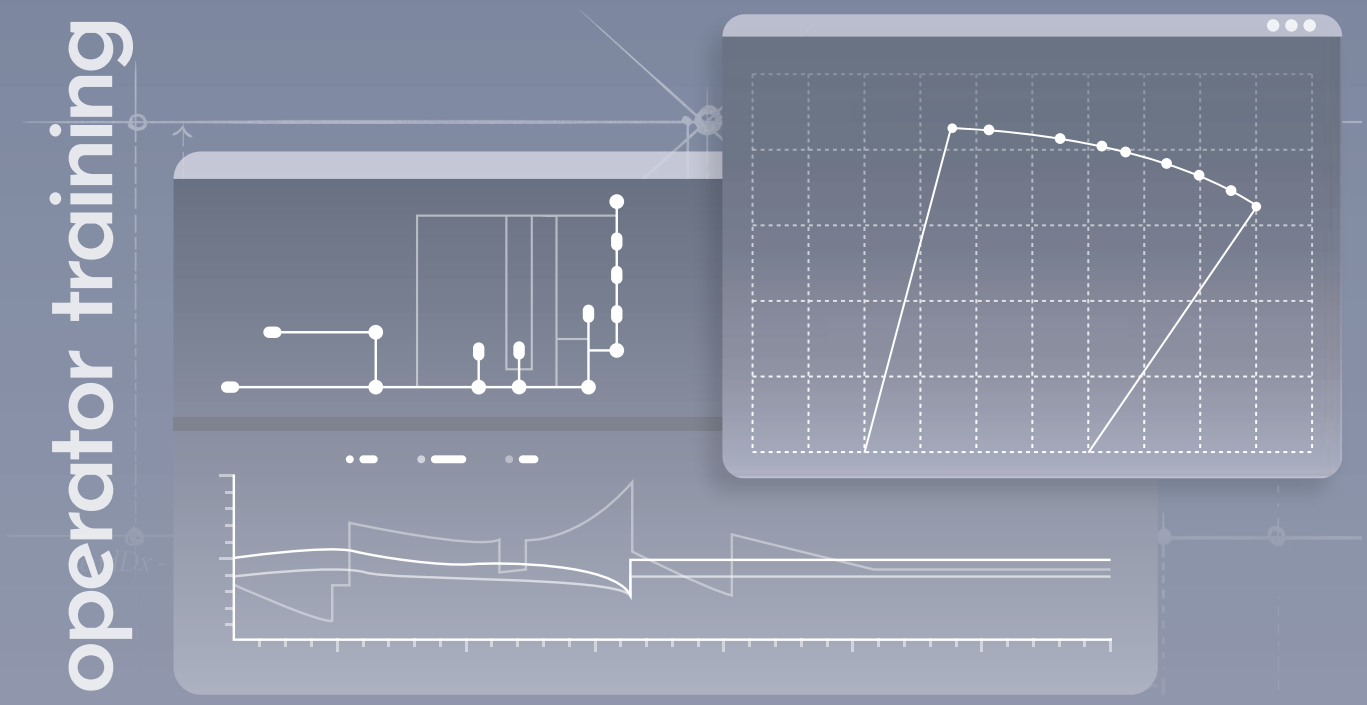
The **pattern recognition** method is based on machine learning principles, using VariSim to calculate and store the signature for every possible leak situation arising in advance. Regional identification is now possible on complex distribution networks. This novel approach is demonstrating impressive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

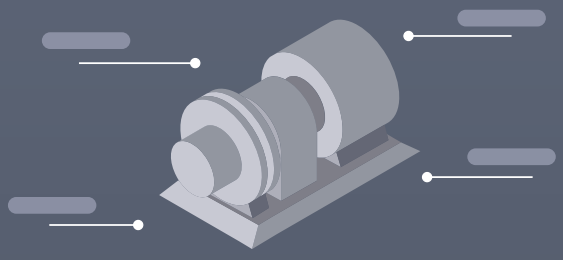
The simulation engine in VariSim can detect leaks on pipelines with transient conditions, variable product properties or changing flow regimes.

operator training



Provide operators with dynamic operator training using a copy of your control system operator screens. The operator can control the simulation with the exact same environment used to control the real pipeline, and the simulator output provides the feedback that would be obtained from the telemetry system.

VariSim offers desk based simulator training with it's own graphical user interface. Operators and users can analyse and understand a pipeline's reaction to their equipment and control scheme operation. Both options are supplemented with an instructor's interface for creating scenarios and initiating assessment criteria.

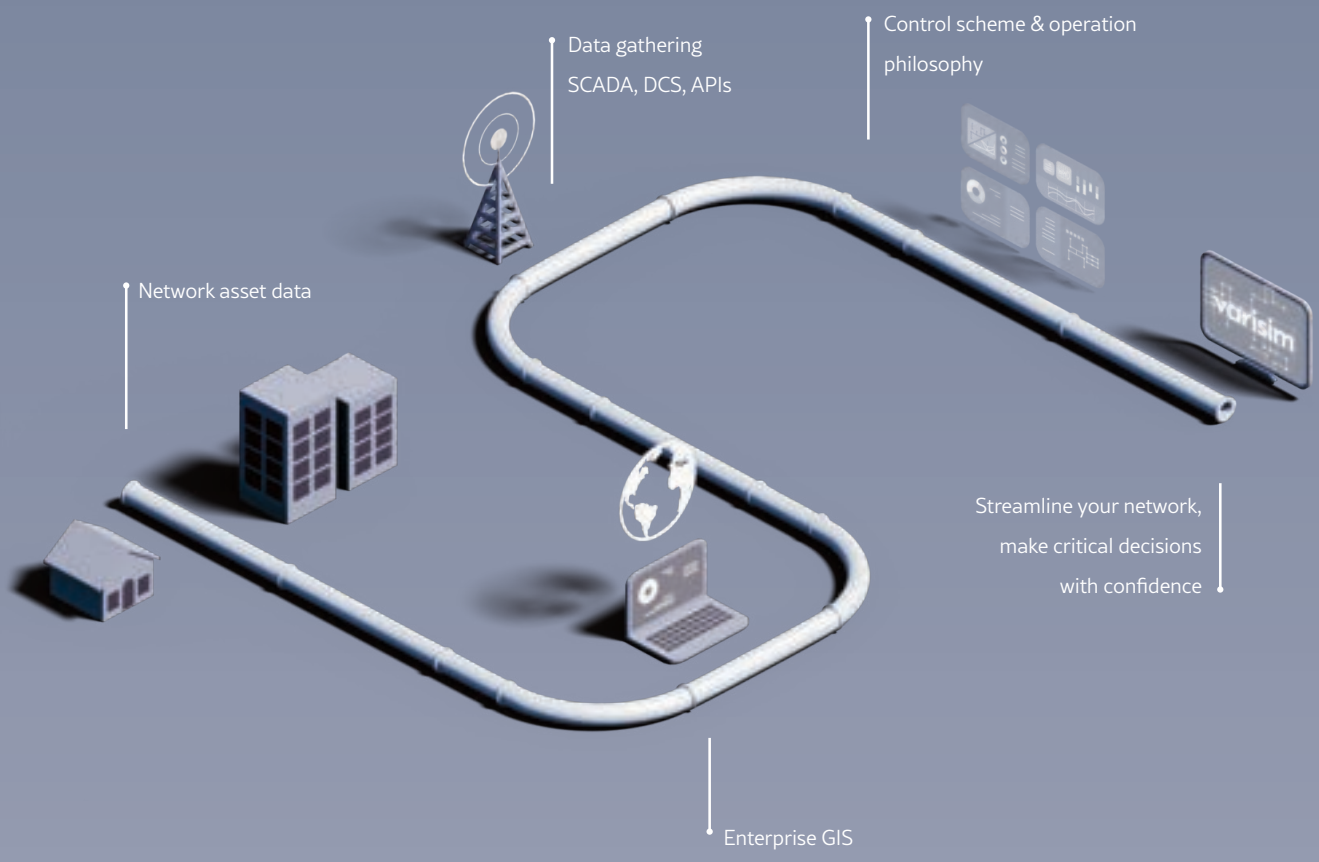


Operators can learn to handle a variety of real pipeline events:

- Normal and safe pipeline operation
- Handle leaks and hazardous operations
- Demonstrate the effects of misuse and troubleshoot with confidence
- Optimise performance by improving throughput and efficiency

The instructor can:

- Create specific training scenarios tailored to your system
- Use starting conditions taken from the real-time system
- Record training sessions to provide trainee assessment
- Select one-to-one or one-to-many training environment



why varisim?

VariSim upholds its reputation as the most accurate, tried and tested real-time network simulator on the market. It has been in use for decades in major water companies, operates in the cloud and supplies all of your current network information to the user's web browser. Sophisticated leak detection, job tracking information, email alerts and information enrichment from external sources are all available out of the box.

Our software is continually proving itself in the real-time environment; providing a practical decision-support tool for water pipeline networks, with professional engineering support and model generation capability available from the Hydraulic Analysis Group. VariSim shows how valuable an in depth knowledge of your network can be, and can provide you with a higher level of assurance when making critical decisions, allowing you to achieve the full potential of your network.

Energy optimisation

Economical operation

Digital twin

Know your network

find out more - contact us ⟶

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