simulation
software limited

varisim™

Leak Detection

Leak Detection

varisim™ helps you detect leaks and burst 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.

varisim™ simulation engine can detect leaks on pipelines with transient conditions, variable product properties or changing flow regimes.

varisim™ Leak Detection technology provides high accuracy, high capability leak detection on all single-phase pipelines.

Simulation Software Limited has significant experience in the pipeline leak detection environment, and this has been fully exploited within varisim™ to create some of the best leak detection approaches for water, oil and gas systems. Our systems expand the capabilities of the two principal software-based methodologies that analyse the physical reaction to a leak in the pipeline.

Combined techniques for leak detection

varisim™ uses balancing techniques to detect seeping leaks over extended timeframes, while pressure monitoring techniques detect large leaks very quickly. It makes sense to combine these effects to ensure the full range of leak detection capability. Although the physical reaction to a leak will never change, the way that the physical reaction is interrogated can always be improved.

Simulator recommended

A simulator should always be used on pipelines in order to accommodate the incompressible or compressible nature of the fluid. Regardless, if the instrumentation permits, we would always recommend the inclusion of the simulator model to increase accuracy and reduce the false alarm rate. A simulator also improves capability on pipelines with transient conditions, variable product properties and changing flow regimes which are commonly found on many pipelines worldwide.

Volume or mass balance and Pattern Recognition monitoring both provide a response that can be analysed to detect the presence of a leak. The simulator-based balance methods produce imbalance responses in addition to important divergences between measured and calculated values of pressure and flow at key locations on the pipeline or network.

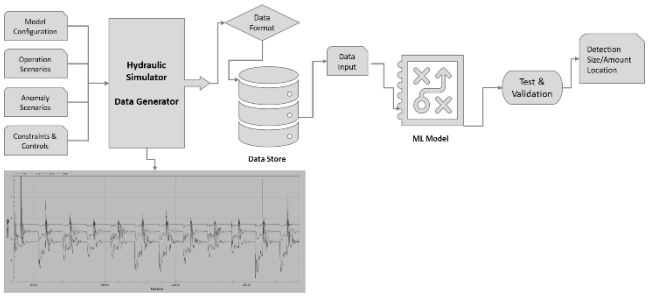
The pattern recognition method is based on machine learning principles, using **varisim™** to calculate and store the signature for every possible leak situation arising in advance. Street-Level identification is now possible on complex distribution networks. This novel approach is demonstrating impressive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

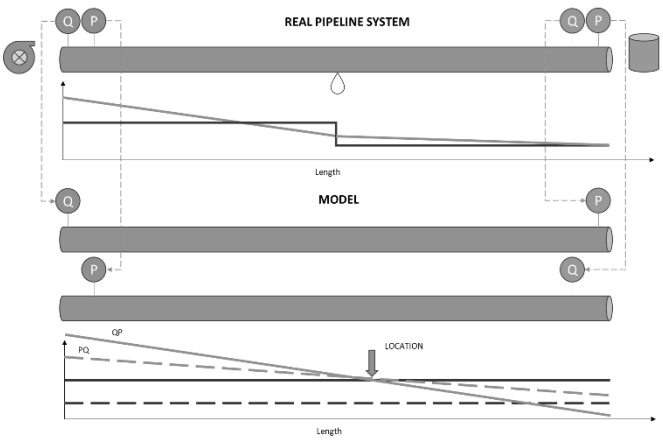
Raising true alarms

The presence of responses indicates an unexpected disturbance in the pipeline or an inconsistency in the systems' calculations. Advanced methodologies are employed by the leak detection process to detect the presence of a true leak without raising false leak alarms. The methodologies include traditional filter and threshold comparison methods, advanced statistical analysis methods and more recently, the application of artificial intelligence processes that self-learn the pipelines' behaviour.

varisim™ also offers comprehensive applications for:

- **Pipeline Management**
- **Optimisation**
- **Flow Assurance and Surge Analysis**
- **Training Simulation**
- **Monitoring Functions**
- **Product & Quality Tracking**





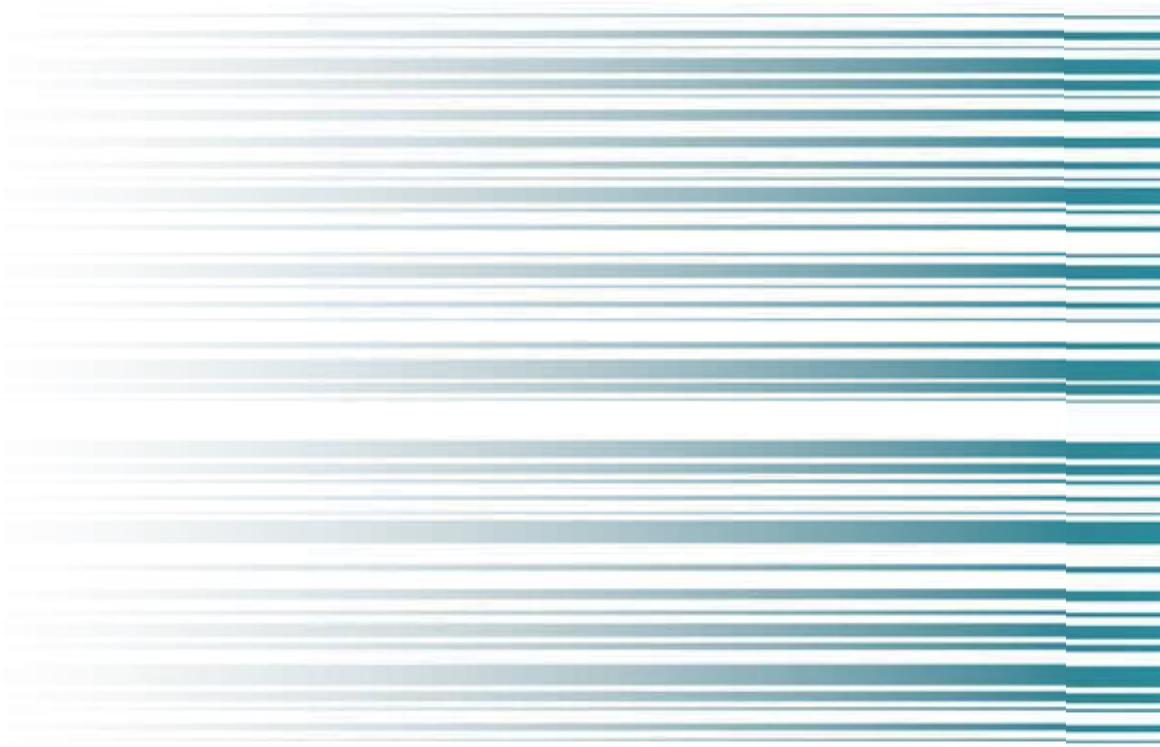
Exceptional customer support

As a globally significant supplier of pipeline management solutions, we supply quality, robust, repeatable software. Alongside these exceptional products you can expect the customer service you need to get the best from our software at all times, stay up to date with innovation and excellence, and maximise the return on your investment.

Simulation Software Limited

varisim™ has been developed by Simulation Software Ltd. As part of the Hydraulic Analysis Group, SSL is dedicated to the development and supply of modern high performance pipeline simulators and pipeline management software.

We employ technical specialists and industry experts with a wealth of background experience in running, installing and developing advanced simulator and pipeline management applications. This ensures that every delivery performs to its maximum capability delivered by staff who really do know their industry.



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varisim™
pipeline simulation software

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