simulation
software limited

varisim™
Monitoring

Monitoring

varisim™ helps you model and manage every component of a pipeline system with complete accuracy.

varisim™ provides an unprecedented level of control for liquid and gas systems of any size, including Flow Assurance studies, Pipeline Management, Leak Detection, Optimisation, Monitoring and Training Simulation.

varisim™ Monitoring functions not only provide flow, pressure and temperature variance at all locations, they track fluid parameters and (physical / virtual) components anywhere on your pipeline.

Fluid Tracking

Fluid Tracking is an inherent component of the simulator model. It is essential if the fluid from one or more sources is variable or different to other sources and the fluid is later mixed at pipeline junctions. The fluid property variation is tracked throughout the pipeline / network, mixed at pipeline junctions and used to calculate accurate, flow, pressure and temperature profiles.

varisim™ tracks all fluid variations with product interfaces launched through a number of mechanisms. It tracks the position of the changes in fluid property variance based upon the locally calculated velocity. Product advancement is not just calculated on the amount of volume that has entered the pipeline, product compression / expansion is fully taken into account.

As standard, each packet holds the following information:

- Fluid type (for liquids) or composition (for gases)
- The volume of the packet at standard conditions
- The location of the downstream interface of the packet
- The base properties of the packet contents including density, viscosity and thermal data
- The age of the product (how long the product has existed in the pipeline)

Physical Tracking

Physical Tracking includes the tracking of any physical component of the system not directly related to the fluid. This includes pigs / scrapers, chemical dosages or inhibitors, drag reducing agents (DRA) and batch separators.

The pig-tracking module continually tracks the progress of a pig that has been inserted into a pipeline section. It then accurately calculates the expected time of arrival at any pre-defined location on the pipeline section based on the product velocity, the characteristics of the pig and the pig slippage factors. Pig slippage factors are calculated and updated with each successive pig run.

DRA tracking tracks the concentration of DRA from its injection point and determines its effectiveness based upon distance travelled, time, pipeline turbulence and the type of equipment through which it passes. The effectiveness of the DRA is linked to the simulation model to reflect the effect of the DRA on the pipeline hydraulics.

Virtual Tracking

Virtual Tracking is the tracking of any non-physical 'virtual' component of a product and includes:

- Batch management information
- Quality indicators (e.g. wobbe values and ICF for gas pipelines)
- Ownership (indicating the source of the product and the ratio of product from this source to other sources)
- Injection volumes needed (e.g. N2 injection requirements)
- Operator marked products, any component of the product can be displayed (such as a marked low quality Crude or high H2S content etc.)

Pipeline Efficiency

The pipeline efficiency function monitors the deterioration in the pipelines condition. This may occur as a result of pipe wall deterioration, detritus build up, waxing, hydrate formation etc. Efficiency alarms can be raised to signify the need to pig the pipeline.

Maintenance Scheduling

The maintenance scheduler monitors the instrumentation installed on the pipeline / network. In its simplest form, it provides clear output to the operator advising of the date that instrumentation was last maintained. It raises events for the operator advising of the next scheduled maintenance date and alarms if the due date expires. It is entirely configurable by the operator and can be updated as and when required. In its more advanced form, the instrumentation can be monitored for drift by comparing its calculated output against other instrumentation data or calculated data provided by **varisim™**.

varisim™ also offers comprehensive applications for:

- **Pipeline Management**
- **Leak Detection**
- **Optimisation**
- **Flow Assurance and Surge Analysis**
- **Training Simulation**

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.

simulation software limited

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pipeline simulation software

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