

simulation
software limited



varisimTM
Optimisation

Optimisation

varisim™ helps you simulate 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.

The varisim™ Optimisation functionality is a function unique in its capability. It will rapidly optimise any parameter within a set of specified constraints.

The varisim™ optimiser provides the user with optimised equipment configuration for desired objectives. Common optimisation processes include determination of the lowest fuel usage, fastest delivery routes, maximised storage capacity, timely delivery of batch schedules and minimised DRA usage. Almost any parameter can be optimised. The following are some of the more common optimisation processes which can be combined if required.

Pump and Compressor Optimisation

This function optimises pumps or compressors within individual stations or all stations on a pipeline / network. It optimises the pump or compressor configurations so that minimal fuel is used and the most efficient operation is achieved. The user specifies the required operating conditions, the equipment availability and any constraints on the system (such as maximum / minimum allowable pressures). The optimiser rapidly establishes all possible configurations for the pumps / compressors and valve set-points that will achieve the requested operating conditions. It then ranks these possibilities according to the minimal fuel usage.

Heater Optimisation

Heater Optimisation assists the operator in determining the most efficient heater configuration in a station or combinations of stations on a pipeline or network. The user specifies the required operating conditions, the equipment availability and any constraints on the system (such as heater set points and maximum /

minimum allowable pressures / temperatures). The optimiser rapidly establishes all possible configurations for the heaters and the heater power requirements that will achieve the requested operating conditions. It then ranks these possibilities according to the minimal fuel usage. Heater optimisation is often installed in conjunction with Pump / Compressor Optimisation.

Sump Optimisation

The Sump Optimisation function is used within the water industry to optimise pump start and stop cycles. Pumps are frequently set to start and stop at the highest and lowest possible water levels in the sump in the belief that minimising the number of pump starts and stops results in minimised power usage. In certain cases, altering the start and stop levels will improve efficiency of operation and reduce operating costs. By connecting the optimiser to a load forecaster, future expected conditions can be taken into account further improving the efficiency of performance.

Throughput Optimisation

Throughput Optimisation determines the most efficient route for your product such that it is delivered in the fastest possible time. The optimiser optimises valve states to determine the fastest delivery of product from one location on the pipeline network to another. The user specifies the available valves and the required flowrates and the optimiser outputs a ranked list of valve settings.

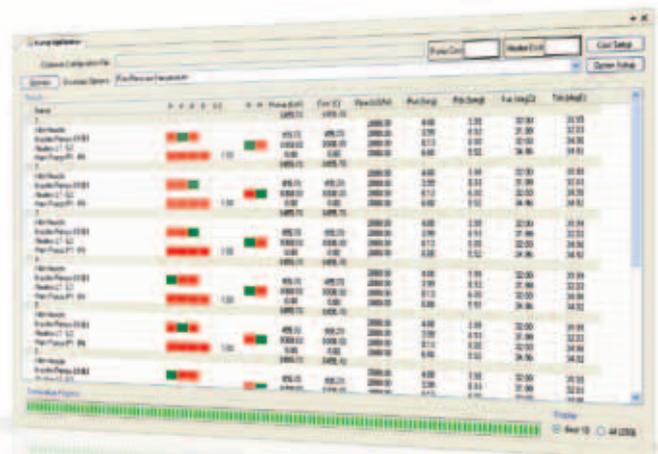
Nominations and Storage Optimisation

This function is mainly used for gas applications but can equally apply to liquid. The optimiser is a rapid steady state solver that has the unique ability to consider different initial storage capabilities, valve positions and whether flow is taken from one section of a network or another. In its solution, it can also check that pressure, inventory levels and storage flows are not too high / low meaning that entire – different network considerations can be made. The optimiser provides a series of ranked recommendations (according to the operators requirements) that can be reviewed and used to adjust the operation of the pipeline.

With this optimisation process, nominations, operating conditions and valve positions are allowed to vary with time but all other equipment (compressors etc.) are set to operate at unchangeable speeds. The optimiser will then calculate a very rapid sequence of steady states using a range of valve positions for the current position in the nomination process. This process is ideal for optimising valve routings and for producing optimised storage timeseries.

Batch Schedule Optimisation

The Batch Scheduling Optimisation process allows the operator to specify the intended future delivery of batches to customers and the batch optimiser will define the best possible batch schedule to achieve these requirements. The user must define (or obtain from an alternative source) the demand flowrate, the supply flowrate and the volumes within supply and terminal tanks to allow the optimiser to determine the batch schedule. Batch Schedule Optimisation is often combined with Pump Optimisation.



varisim™ also offers comprehensive applications for:

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

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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