

HYDRAULIC ANALYSIS LIMITED

Real-Time (Live) Hydraulic Model and Network Simulation, Surge Analysis and Optimisation



Partner to



HEATNET
GLOBAL

Decarbonising
Heating. In Practice.

Contact

Key Representatives:

- Glyn Addicott – Operations Director
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Key Partners

- Pipeguard - Håkan Klarin
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Web

www.hydraulic-analysis.com

Markets

Key Market(s) - UK, Sweden and Switzerland

Other Markets – China and SE Asia

Value Proposition

Application Areas (Conserve, Connect, Convert)
Hydraulic Design, Leak Detection, System Performance Improvements, Hydraulic Balancing, Debottlenecking, Operator Training, Energy Saving, Digital Twin

Product & Services

*Hydraulic Modelling
Leak Detection
Surge Analysis
Transient Hydraulic Modelling Software Licensing
Real-Time Hydraulic Model (Pipeline Management System)
Trouble Shooting*

Benefits

Key factors

Asset Failure Prevention / Design Assurance, Optimisation, Leak Detection, Energy Saving, Training Simulator, Thermal Store Modelling and Live Control System Tuning.

Delivery

*Implementation
Software Licensing
On-Site Training
Digital Twin OPC Connection to SCADA
Desktop Hydraulic Modelling
Consultancy Services*

Clients

*SIG, Geneva – Provision of VariSim™ Software License and Training
Stockholm Exergi – Digital Twin of Stockholm District Heating Network
University of St. Andrews – District Heating Network Hydraulic Model
BuroHappold – Surge Analysis of Shawfair District Heating Network
E.On – Scotswood Heat Network Thermal Store Optimisation
SSE – Stoke-on-Trent Heat Network Pipe Sizing
WSP – ESAP (Ottawa) District Heating & Cooling Networks Surge Analysis*

Heatnet Kits

Involved in the following kits

- ...

Heat Academy

Delivering training in the following areas

- ...



Reference Cases

Case 1 – Geneva Genilac Cooling Network

Application

- Provide VariSim™ Software Licenses
- On-Site VariSim™ Training Course
- Network Design and Operation

Solution

- Optimise network design and future proof design
- Optioneering
- Control system design and optimisation

Result

- Confidence that Genilac Network will Achieve Targets
- Sensitivity Assessment through 'What-If' Analysis
- Install Model Connected to SCADA in Fully Live Environment for Leak Detection

Case 2 – University of St. Andrews Heat Network

Application

- Build Hydraulic and Control System Model
- Run model with SCADA data
- Identify cause of load shedding and poor performance

Solution

- Close numerous bypasses which model found
- Adjust key building TCV settings
- Optimise system during morning ramp up

Result

- Reduction in Load Shedding
- Continue Monitoring Network and Limit Peak Flows to Certain Buildings

Further Details (on product, partners, services. etc.)

We have partnered with Pipeguard to connect their flow and pressure loggers to our hydraulic models to run in a live environment. Starting in Stockholm, a pilot project was established in 2025 to digitise part of the Stockholm Exergi District Heating Network to the West of the City Centre by creating a VariSim™ live hydraulic model of the piping network. The model is accessed by a Web Browser and shows the pressure, flow, velocity and temperature throughout the network, even if pressure and flow loggers are not present in this area. Pressure, flow and temperature data is ingested into the model via an API link to the Pipeguard loggers installed across the network.

The purpose of the pilot project is to provide an accurate and continually updating picture of the operation of the district heating network driven by live pressure and flow data. As accurate Pipeguard Ultrasonic flowmeters are installed on both the supply and return mains to the area, the model will be able to identify areas of leakage by comparing the expected (model) pressures to the actual (measured) pressures. Where the pressures are lower than expected, this is likely to be due to leakage. In addition to this, the Digital Twin will provide valuable additional information, including the supply and return flowrates in every street, areas of unexpected temperature loss and any bottlenecks. The Digital Twin is available to Stockholm Exergi through the Web Browser to help improve the system operation and performance. This pilot will shortly be duplicated in Beijing.