

Benefits of Pipeline Analysis Solution in the Utility Industry

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SPH History

2009 SPH Founded

2011 Google Maps Partner

- Selected as Best Global Partner for Maps in 2012, became Google Maps Premier Partner in 2013

2013 SuperMap Distributor

- Signed Korea Exclusive distributorship

2015 CARTO Partner

- Partnership with CARTO, a location intelligence platform headquartered in Madrid and New York

2018 Maxar Partner (American commercial vendor of space imagery and geospatial content)

2019 monday.com (Official partnership with Global collaboration platform company)

What is Pipeline Analysis?

- Analyze pipeline flow models using numerical techniques such as Newton-Raphson method. Calculate flow rate, flow velocity, and pressure at each node for each complex pipeline
- Flow equation







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Current Concerns about pipeline analysis solution

Market

- Few specialized companies
- Expensive solution introduction cost
- Difficult feature improvement and maintenance

Feature

- Inconvenient data conversion
- Limited input factor (distance, pressure, etc.)
- On-site mobile device is not supported
- Slow display and heavy buffering
- UI/UX in need of improvement

Reliability of pipeline analysis results

Performance and speed improvements



Core direction

Solution cost down

User convenience and usability

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Synergi GAS of DNVGL

- DNV.GL was founded in 1864 in Oslo, Norway.
- Risk assessment, classification maritime is the main business
- Digital solutions aim to provide the right solution for the industry.
- Synergi Gas Advanced hydraulic modeling

Difference between Synergi GAS and Solver

- Solver-based Synergi Gas
- Key Features-Modeling & Simulation of Synergi Gas

Synergi Gas is Solver's

'Killer App'

• GUI based Synergi Gas



What is Solver?

- Solver works with user's application (desktop, web, cloud)
- The solver loads, saves, and calculates Synergi models, and indirectly modifies the model data.
- Direct access to Synergi's calculation functions (SSM, USM, OPT....)
- Solver uses Synergi model concepts (Node, Pipe, Compressor, Facility ..)
- Provide program interface to use Solver properly
- Solver is a modeling and simulation engine, so we get same results as Synergi does.
- Solver does not offer model building capabilities.

New Application Development (PLAS)

Pipeline Analysis Model Engine

Solver (DNV.GL)

Pipe flow rate, flow velocity and pressure analysis

Proper pressure analysis of Gas governors

Prediction of new piping inputs, flow rates and diameter values

Gas flow analysis

GIS engine

Supermap iObjects

Facility data management and error correction

Display flow rate, flow velocity and pressure analysis values in the pipe

Inquiry of gas facilities / internet map of pipe network

Isolation analysis



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Pipeline analysis work procedure ('A' city gas company)



PLAS configuration



Pipeline Analysis *: PLAS is Pipeline Analysis solution of SPH, and GIS engine of PLAS is the same as the GIS engine used for drawing editing. Only Supermap-based pipeline analysis resources utilize the Solver.

Issue Type: From GIS Data to Model Data - Connectivity





Issue Type: Tolerance Error

Possible error due to Tolerance correction of analysis software



Selection tolerance



Snapping



Splitting

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P13

Core functions of PLAS

- Data modelling
- Pipe pressure, flow rate and flow velocity analysis
- Data error checking and analysis
- Emergency analysis
- Gas governor influence analysis
- Prediction of new pipe pressure, flow rate, flow velocity values

- Charts
- Simulation (pipe diameter etc.)
- Construction cost, ROI
- Statistics
- Optimization
- Custom UI



Case study - JB Corp



Pipe pressure, flow rate and flow velocity analysis



Emergency analysis



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Thank You!

- Geo-intelligence, Connecting the Future

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