

# See Subsea with real-time DYNAMIC Simulation



## Why Real-Time SIMULATION?

- Know key operating parameters you can't measure – see inside your asset and minimise uncertainty.
- Operating procedures are usually based on worst-case scenarios with no credit for upside conditions. Extend your operating envelope & increase uptime & barrels.
- Simplify operations with "on-the-day" information – make smarter, faster decisions more easily.
- Investment in simulation model is a powerful flow assurance tool – enables quick studies, what-if evaluation, debottlenecking, etc.
- Maximised/Optimised asset performance.



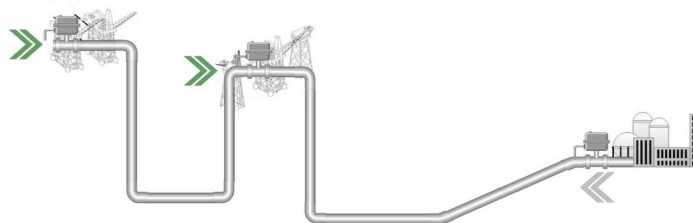
**DYNAMIC FLOW MODEL**



- Pressure
- Temperature
- Velocity
- Liquid holdup
- Flow regime
- Hydrate margin
- Inhibitor distribution

## RTM What-If Mode

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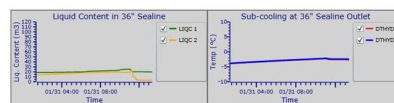
## Simulation Control

Time Stamp	Time	Temp	Rate	Temp	Rate
(DDMMYY)	(HH:MM)	(°C)	(MMSc/d)	(°C)	(MMSc/d)
01/31/2014	13:22:57	24.6	35	120	35

Insert new values for temperature as required.

Control Commands	TRIP	TRIP	TRIP	SPEED
True/false/speed value	1	0	0	1000

Enter '1' or '0' or 'SPEED VALUE' to control the 'Steady State' simulation.  
To trigger action, TRIP = 1, FALSE = 0.  
Home: SPEED VALUE = 0.



## Applications:

- Liquid Management
- Wax Management
- Leak Detection
- Virtual meter
- Slug prediction/Management
- Hydrate Management
- and more...

## What We Mean by Real-Time Simulation

Refers to a dynamic flow model of your production system that executes at the same rate as actual "clock" time. In other words, the model runs at the same rate as the actual physical system driven by inputs taken from your instrument measurements.

- Technology based on well established data connectivity and management systems (OPC, PI, ODBC, MYSQL), fully dynamic and benchmarked model of asset.
- Simple customisable Web, Windows application and Excel user interfaces.
- Model can be run in "WHAT-IF" mode to evaluate impact of future events & changes in production variables on oil and gas operations onshore, offshore and subsea.
- Triggers alarms based on user-set values. Sounds, colour changes or blinking symbols could be used to alert the user.

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**Real-time Simulation & Flow Assurance Experts**