

Pipeline Simulation Flow Loop

for research on flow assurance chemicals, wax deposition, pipeline rheology, asphaltenes

Optional zero slip pump system
for full flow rate under all pressure/viscosity conditions



- For wax inhibition and flow improver agent testing
- Wax deposition and pipeline restart tests
- HP Version (200 bar / 3,000 psi) available, for pressurizing oil with SNG and with **live crude oil inlet**
- Differential pressure and temperature monitoring
- Absolutely **slip-free pump** available optionally
- Test loops easily exchangeable
- Modular design, adaptable to customer requirements

Deposition of organic compounds, which exist in petroleum crude and heavy oil, can cause a number of severe problems.

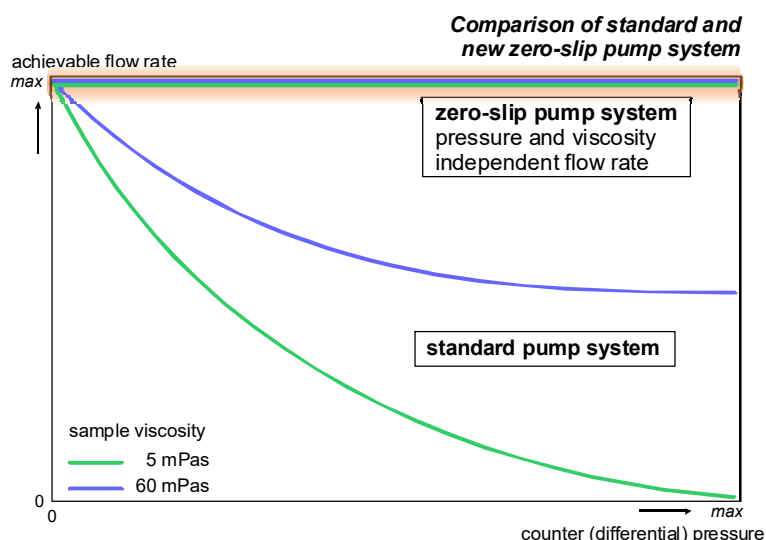
The Flow Loop by F5 Technologie is the tool to solve these problems. The instrument offers a variety of test routines dealing with paraffin deposition and flow assurance:

- Pipeline simulation / restart / yield strength
- Wax deposition and wax inhibitor testing
- Wax appearance temperature (WAT)
- Flow improver testing and rheological tests

The test pipelines are exchangeable for highest flexibility in simulating real pipelines regarding temperature profile, pressure and shear rate. They have a defined inner roughness, which is highly important to assure reproducible test results.

The optional zero-slip pump system provides full flow rate across the complete viscosity and counter pressure range. Extremely low flow rates are possible for pipeline restart / yield strength tests.

All data is stored and exported in an Excel readable format. Test programs are stored and can be reloaded at any time.



Applications:

- Wax inhibitor effectivity testing
- Pipeline simulation
- Yield stress and pipeline restart
- Wax appearance temperature (WAT)

Options/Accessories:

- Full automation with automated cleaning procedure
- Test pipelines with several pressure sensors for pressure profiles / creep test
- High pressure and live crude oil injection

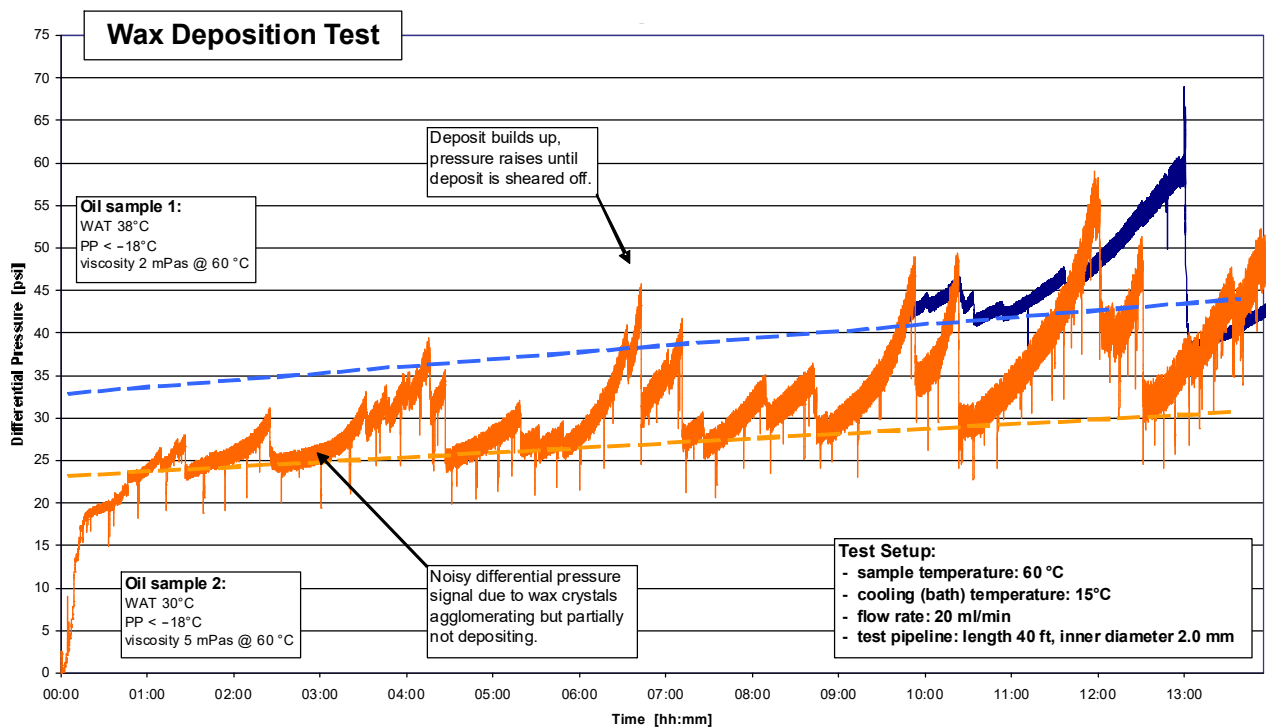


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Pump for high and low-viscous oils.
Heated pump head, pulsation free flow, no slip.



Bright colour touch-screen display



High pressure sample cells

Technical Data:

Differential pressure range	5, 10 or 20 bar (72.5, 145 or 290 psi) accuracy: 0.5, 1 or 2 mbar (7.25, 14.5 or 29 mpsi)
Absolute pressure range (alternatives available)	60 bar (870 psi), 100 bar (1,450 psi), more on request HP version with live crude oil inlet: 200 bar (3,000 psi)
Temperature range (alternatives available)	of sample: ambient to +80 °C of test loop: -30 °C to +90 °C (depending on cooling/heating devices)
Display	PC for measurement programs and colour touch screen on the wax flow loop for manual stand-alone operation
Data Storage	On PC or directly on a USB stick via the front-side USB port on the wax flow loop

Pump System	Standard	Zero-Slip Pump System
Flow rate	2 .. 90 ml/min	0.02 .. 100 ml/min
Differential pressure	100 bar max	100 bar max
System pressure	200 bar max	200 bar max
Pipeline restart	API Gravity < 20	all API Gravities 1 .. 2000 mPas



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