

Examine Scale Deposition and Blocking

with the

inline Differential Scale Loop

Characteristics

- Portable tube blocking system for inline measurements in production
- Semi automated use
- Up to +250 °C (482 °F) up to 172 bar (2,500 psi)
- Transport case

The inline Differential Scale Loop (iDSL) is a tube blocking system designed to measure scale deposition in the laboratory and directly at production site.

The iDSL can be taken to the plant or into the field and connected directly to the production line. No prior sampling is required to determine the inhibitor performance and brine stability with the live samples.



Mode of operation

The iDSL is equipped with a direct inlet for the production feed and includes two dosing pumps: One for inhibitor and one for brine stabilization/destabilization. The brine is driven through the system by process pressure and the flow is continuously measured and regulated.

Monitoring the pressure drop over a test capillary the very early onset of scale deposition can be detected.

A scale inhibitor can be dosed into the sample stream to determine the Minimum Inhibitor Concentration (MIC).

Heating cartridge - test capillary

The iDSL uses a specially designed heating system for the test capillary. Instead of a conventional tube coil, the capillary is grinded in a pressure-tight cartridge system. This cartridge design allows the capillary section to be opened easily, providing access to the precipitated scale and enabling mechanical cleaning when required.

Operation procedures

Different procedures can be used dependent on the scale type and the plant conditions.

For **carbonate** scale, the temperature of the test capillary can be increased to induce the scale formation. For **sulfate & silica** scale, the test capillary can be cooled.

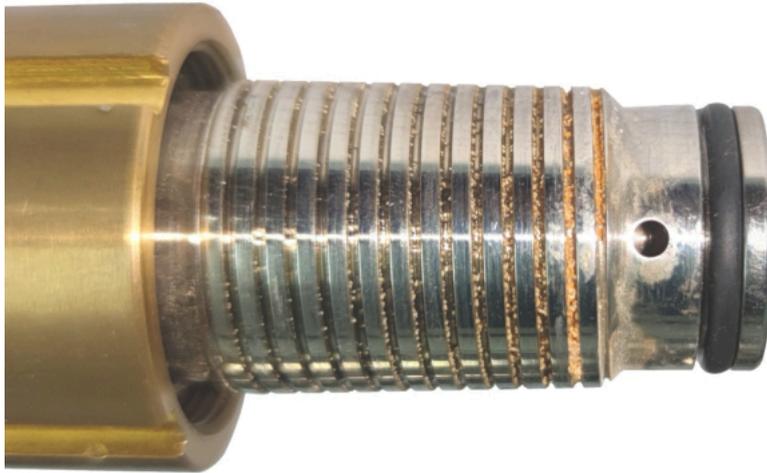
Two pumps are available to modify the test parameters. One can be used for inhibition and one can be used to stabilize or destabilize the brine by adding acid or alkaline solution.

Process monitoring

In long-term operation, the iDSL can be used for continuous online monitoring of scaling tendencies during production, providing an early warning for first scale onset.

Software control

Our software *WinDSL* permits to control all parameters for the experiments, records all data and automatically stops the scaling test when scale formation is detected to ensure the capillary is not blocked.



Test capillary with precipitated scale

Specifications:

Temperature range:	+10x ... +180 (+ 50 ... 356 °F), inlet up to +250 °C (482 °F)
Working pressure range:	172 bar (2,500 psi)
Flow rate:	single pump: 0,1 .. 5 ml/min overall flow, max. 10 ml/min
Test cartridge:	length: 1 m, effective ID: 0.35 mm, material: stainless steel
Filter:	integrated, mesh size 2 µm
Power consumption:	max. 2,500 W
Voltage input:	110 .. 230 V~, 50/60 Hz wide-range
Weight:	21 kg (30 kg in transport case)
Dimensions (WxDxH):	37 x 45 x 25 cm (main unit)