

# Dynamic Scale Loop

For evaluation of scaling tendency and inhibitor performance

**NEW** additional  
automated  
test method:  
Scale Equilibrium  
Test (SET)



- Adjustable system pressure up to **1,000 bar (15,000 psi)**
- High-precision differential pressure measurement
- Max. temperature 270 °C
- Cooling option available
- In-line filter for scale retrieval
- In-line sheet & core holders
- In-line pH probe
- Mass flow meter
- Automated testing / cleaning
- PC software for test planning
- Standalone operation, data storage on a USB stick
- Color touch screen display
- Small footprint

Production engineers who are responsible for the design, operation and efficiency of water handling systems are familiar with the fact that thermal, pressure or chemical changes lead to scale deposition.

The dynamic scale loop by F5 Technologie provides automated, accurate and reproducible methods for selecting and quantifying the most effective means of controlling scale deposition under dynamic conditions: The well-known Tube Blocking Test (TBT) and the new **Scale Equilibrium Test (SET)**.

The instrument is suitable to simulate process or reservoir temperatures of up to **270 °C** (cooling is possible) and pressures up to **1000 bar / 15,000 psi**. Higher ratings can be provided if required. An **integrated pH probe** and **flow-through cells** for test strips are available. The system is very recommended where effects of pressure on scaling tendency are to be studied, and especially for examining the deposition of anhydride under dynamic conditions.

The system is equipped with an adjustable back pressure valve which keeps the absolute pressure in the system constant. The 3 high pressure, high precision HPLC pumps can have PEEK or stainless steel heads. Each pump delivers just one fluid - anionic brine, cationic brine, inhibitor -, which provides maximum accuracy. The 3 fluids are mixed automatically and flow through the exchangeable test pipeline.

The test pipeline is installed in a PC controlled oven with glass window for full control of the setup during the test.

High-precision pressure transducers monitor the absolute pressure and the pressure drop across the test pipeline. Exceeding the set differential pressure limit indicates scale formation. If this limit is not exceeded within a set time, the system switches dynamically to the next lower inhibitor concentration. After the test, the system cleans itself automatically with selectable cleaning fluids.



3 HP pumps with optional PEEK heads



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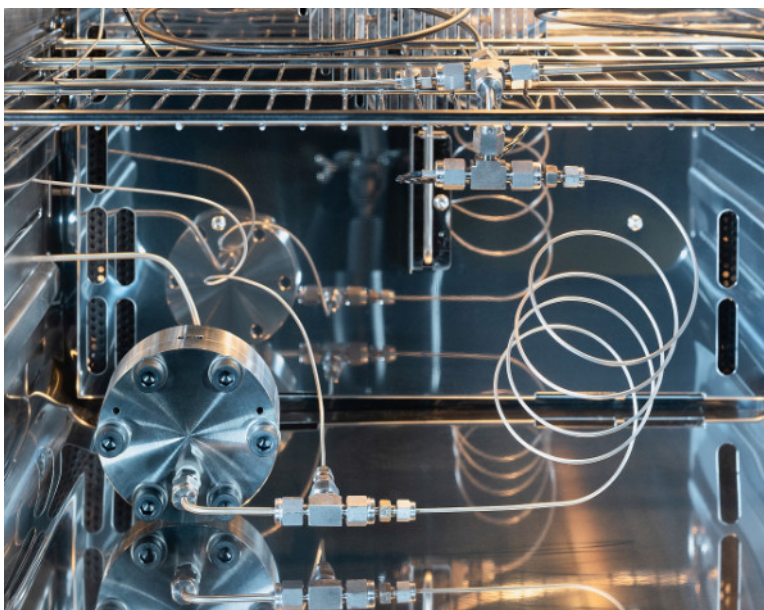
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## We design your Scale Loop according to Your Requirements



Cooling options: by liquid bath or by cooled air inside the oven



Oven with fan for forced air circulation  
Filter for scale retrieval  
Sheet and core holders available



pH and conductivity probe

### Options

- Pump heads made of Monel or Hastelloy (or Peek at pressures up to 200 bar)
- Fittings and lines made of Monel or Hastelloy
- In-line filter for scale retrieval
- Sheet (and rod) holders for corrosion tests
- Core holder for permeability tests
- In-line pH and conductivity probe
- Mass flow meter(s)



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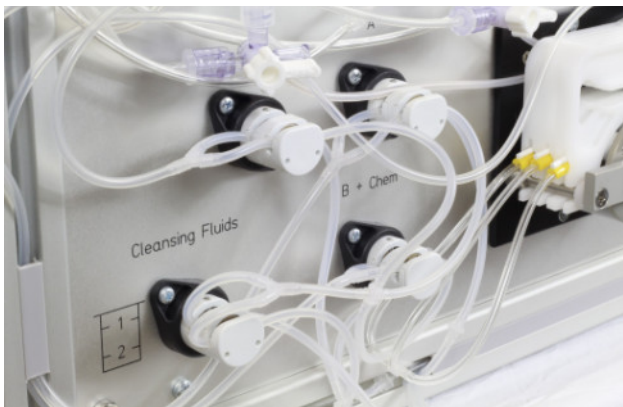




Glass door for permanent visual control of heating and test coils



PLC with colour touch screen and big data display



Fluid distribution system with non-wetted valves



HP versions with separated high/low back-pressure regulators for maximum accuracy

## Technical Data

Data interface:	USB
Data acquisition:	Temperatures, absolute and differential pressure
Flow rate:	5, 10 or 20 ml/min max (per pump), resolution 10 µl/min
Temperature:	Ambient to 270 °C -25 °C with cooling option (liquid bath or by cooled air inside the oven)
Absolute pressure:	1000 bar max pump heads made of stainless steel, model or hastelloy PEEK available up to 200 bar
Differential pressure:	5 bar (73 psi) max, high accuracy 10 and 20 bar available (200 bar for the HP versions)
PC:	Standard PC with Windows 10 manual
Standalone operation:	Possible with data storage on a USB memory stick possible
Software:	WinDSL 1.42, test planning and data visualisation/storage
Power supply:	240 VAC @ 50/60 Hz, 120 VAC @ 60 Hz alternatives available
Power consumption:	2000 W max 3500 W max with cooling option



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