

High Pressure Foam Analyzer HPFA



Increase the yield with our solution for foam analysis under oil reservoir conditions

The High Pressure Foam Analyzer – HPFA is the world's only measuring instrument for simultaneously analyzing the amount and structure of liquid foams under high pressure. The instrument provides various options for investigating foam behavior under the real process conditions of foam-assisted flooding methods in EOR as well as hydraulic fracturing.

Tasks and applications

- Foam-assisted gas flooding
- Foam as fracking and stimulation liquid

Measuring methods and options

- Measurement of foamability and foam stability based on the foam height and volume with respect to time
- Analysis of foam structure and its variation with respect to time based on the number, size, and statistical size distribution of the foam bubbles
- Measurements at pressures up to 350 bar and temperatures up to 120 °C
- Foaming with a diverse range of gases such as air, N₂, or CO₂
- Option of adding liquids during the measurement

Simultaneous foam height and structure analysis

During and after foaming-up by means of gas flow, two high-resolution cameras operating in parallel record the foam height and images of the foam lamellae. Supported by the real-time image evaluation of our ADVANCE software, the HPFA determines the foamability and the foam decay. Within one and the same measurement, it also captures the change in bubble count per area and the absolute bubble size as well as its statistical distribution.



Camera recording foam structure



Mini Dosing System for adding liquids during measurements

Simulation of oil reservoir and production conditions

The measuring cell works at pressures up to 350 bar and temperatures up to 120 °C, thus making it possible to observe the foam behavior under reservoir conditions. Sensors continuously transmit the pressure and the temperature to the ADVANCE software.

Filters with different pore sizes or even drill cores can be used for foaming to enable different lamella dimensions to be investigated. This option can be used to approach foaming conditions inside a particular reservoir with its characteristic rock porosity. Foaming can be carried out with air as well as carbon dioxide or nitrogen, which are frequently used for gas flooding.

Specifications

Measuring technique

Type foam height, foam structure

Camera system

Height camera 5 fps at 1280 × 1024 px
Structure camera 2 fps at 1280 × 1024 px

Pressure measurement

Maximum pressure 350 bar (5000 psi)

Temperature control

Temperature range room temperature up to 120 °C

Mini Dosing System

Dosing manual
Temperature maximum 180 °C

Environment

Temperature operating: 10 to 40 °C