



High-pressure foam analysis: targeted enhancement of foam-aided methods for oil production

- New measuring instrument High Pressure Foam Analyzer – HPFA from KRÜSS for simultaneous analysis of foamability, foam stability, and foam structure under high pressure
- Testing for foam-aided processes in tertiary oil extraction
- Simulation of conditions of oil reservoirs such as pressure and rock porosity as well as contact between foam and oil

Hamburg, July 5, 2017 – With its High Pressure Foam Analyzer – HPFA KRÜSS GmbH is launching the world's first measuring instrument for the simultaneous capture of foam height and foam structure under high pressure. The HPFA is intended primarily for the tertiary oil production sector, where foams boost the efficiency of flooding procedures using gases such as carbon dioxide or nitrogen. The foam improves flow control, so that the oil can be extracted efficiently from the rock. The foams used must remain stable for a long period under the high pressure of the reservoirs and also withstand strong deformations during flows through porous rock. So the structure of the foam lamellae and the decay dynamics at high pressure are extremely relevant for the efficiency of the process.

The HPFA is equipped with high-resolution cameras that capture the foam volume and a video image of the foam lamellae in parallel during and after foaming. With the aid of the ADVANCE software's real-time image evaluation the instrument measures the foamability and foam decay as well as changes in the absolute bubble size and its statistical distribution. The measuring cell of the HPFA operates at pressures up to 350 bar and temperatures up to 120 °C. During the analysis sensors permanently transmit measured values for pressure and temperature to the software.

The repeatability of foam formation is ensured by a filter through which the gas flows into the liquid under pressure. Variable filters with different pore sizes simulate the characteristic porosity of the respective rock and enable the modelling of foams with different bubble sizes.

When using the foam in the recovery process the aqueous foam in the reservoir often comes up against the foam inhibiting oil. This can trigger undesired foam decay. To date it has not been possible to test this effect under reservoir conditions. To make this possible, the HPFA comes equipped with a novel dosing unit that enables the dosing of any kind of liquid under pressure during the ongoing foam analysis.

Photo



High Pressure Foam Analyzer – HPFA for foam analyses under oil reservoir conditions

About KRÜSS

Advancing your Surface Science. As specialists in interfacial chemistry and the world's leading supplier of measuring instruments for surface and interfacial tension, we not only provide high quality product solutions – our offer is a combination of technology and scientific consulting. These include seminars and technical service as well as our Applications & Science Center for trainings and professional measurement services. Our exclusive distribution network and our locations in Hamburg (Germany), China, the US, Great Britain and France allow us to provide fast, flexible support for R&D labs and in quality control throughout the world. Our expertise, precision and passion have already convinced many prestigious companies in countless industries.

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