

Introduction

The Foamscan HP is designed to measure the ability of a liquid to generate foam, by sparging a gas through a liquid at high pressure and high temperature. During the experiment you can measure:

- Foam volume
- Liquid in the foam (Liquid fraction)
- Liquid variation (Consumed and drainage).
- Bubbles size

Instrument



The Foamscan HP consists of:

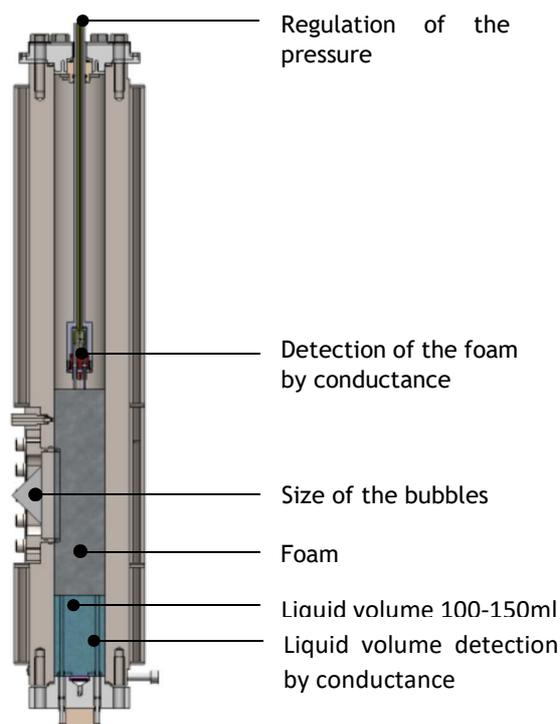
- Pressure cell measurement
- Foam and liquid detection system (By conductance)
- A software that automatically control all instrument operations (data acquisition).
- cooling system and automatic cleaning system

The foam is generated in analysis cell

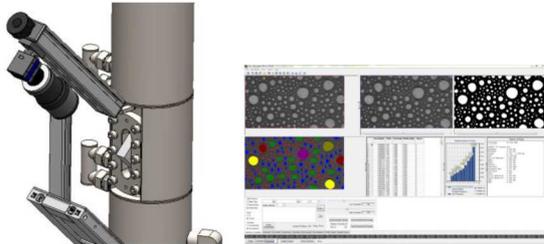
Foam tube encloses the foam probe and the support of the glass frit in an Inconel 718 cell which is mounted into the measurement unit of the Foamscan HP. The glass filter is placed at the bottom of the foam tube. The gas is injected through the glass filter by a flowmeter. A thermocouple measures the temperature inside the cell which is controlled by resistance heaters built into the environmental chamber walls.

Measurement of foam volume by foam probe

The foam probes will follow the foam height, when they are touching the foam, an electrical current will go between the probes and they will go up until the electrical current decreases. This technology allows to make a close loop between probe position and height of the foam and so measure the foam height (or foam volume).



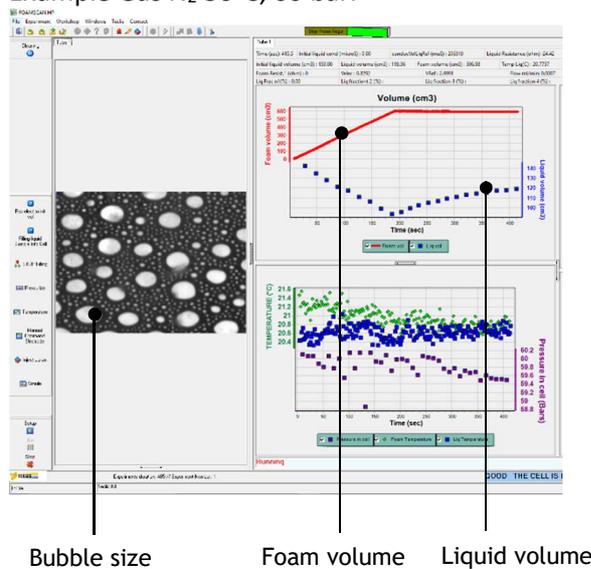
CSA: Cell Size Distribution Measurement



This accessory includes a camera (to focus on a foam tube fitted with two prisms), a separate light source, and a calibration sphere. The camera is positioned near the foam tube and can be moved up or down manually to reach two different positions, corresponding to the location of one of the prisms. The software analyses the cell size and the distribution of the foam that spreads on one of the prisms during foam formation. An area of about 1 cm² is measured. Then, the software is used to acquire and process pictures. Results are presented in a variety of statistical formats. The *cell size analysis* software is included.

Example of experiment

Example Gas N₂ 30°C, 60 bar.



Example with supercritical CO₂ 85°C, 98 bar.

