

# Batch Fouling Apparatus

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## Objective

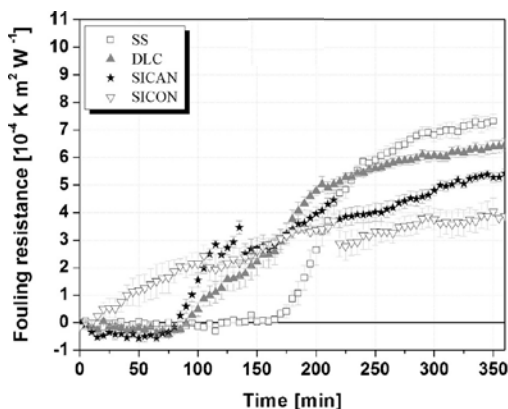
- Experimental investigation of deposit formation on heated surfaces (Fouling)

## Capabilities

- Screening tests
- Fluid temperature: 10°C – 80°C
- pH 4 – pH 10
- Pressure: atm – 5 bar
- Surface temperature: 40°C – 140°C
- Heat transfer surfaces exchangeable

## Measurement parameter

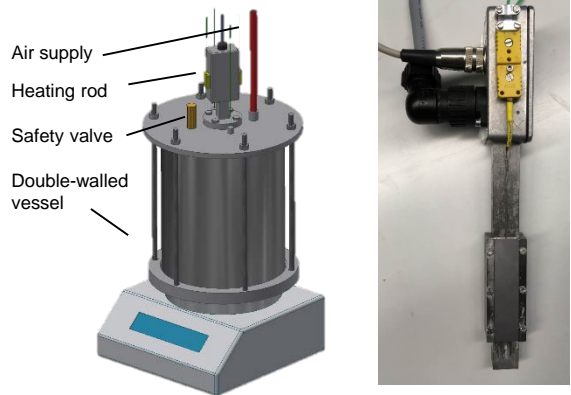
- Fouling resistance
- Fouling mass
- Surface temperature and fluid temperature
- Heat flux



Fouling resistance curves of calcium phosphate at 80°C (Boxler 2013)

## Literature

- Höfling, M., Augustin, W., Bohnet, M.: *Crystallization Fouling Of The Aqueous Two-Component System CaSO<sub>4</sub>/CaCO<sub>3</sub> Fouling Of Salt Mixtures*; I. J. Trans. Phenomena, Vol. 6, 2004, pp. 99 – 109
- Boxler, C., Augustin, W., Scholl, S.: *Fouling of milk components on DLC coated surfaces at pasteurization and UHT temperatures*; Food and Bioproducts Processing 91, 2013, pp. 336-347
- Gottschalk, N., Kuschnerow, J., Föste, H., Augustin, W., Scholl, S.: *Experimentelle Untersuchung zur Foulingneigung einer Polymerdispersion auf modifizierten Oberflächen*; Chemie-Ingenieur-Technik, Vol. 87, 2015



## Measuring channel

- Rectangular heating elements, test plates: 20 mm x 80 mm

## Duration of Measurement

- Depending on foulant and fouling rate
- 3 hours to 2 weeks

## Experience

- Crystallization fouling: aqueous solution of calcium sulfate and calcium carbonate
- Pasteurization and UHT milk fouling: aqueous solution of whey protein isolate and concentrate, milk powder, milk, milk ultra filtrate
- Polymerfouling: aqueous solution of vinyl acetate + ethylene
- Heat transfer surfaces: different materials and coatings

