

Cleaning plant with inline Fluid Dynamic Gauging (iFDG)

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Objective

Investigation of the cleaning behavior of a model food soil in alkaline solution.

Measurement and sampling

- Temperature (ϑ_{bulk} ; $\vartheta_{\text{channel, in}}$; $\vartheta_{\text{channel, out}}$)
- Concentration of removed soil in cleaning solution (automated sampling)
- Layer thickness or area occupancy of soil (optical access of channel in side or top view)
- Layer thickness and layer strength (by FDG)

Plant control

- Volume flow rate control or frequency control
- Mass flow control for iFDG (height adjustment of nozzle via linear stage) or constant distance

Operating range

- Atmospheric pressure
- Fluid temperature 25 ... 60 °C
- NaOH concentration 0 ... 0,5 M
- Volumetric flow 0,8 ... 1,2 L·min⁻¹
- Flow rate 0,095 ... 0,14 m·s⁻¹
- Reynolds number 1000 ... 2000

Facility data

- Double jacket tempered storage tank (B1) for cleaning solution 5 L
- FDG release tank (B2) 5 L
- Soil surface adhered on stainless steel plate 240 x 20 mm
- Soil height up to 3 mm
- Channel cross section 8 x 18 mm

Cleaning Plant



Flow diagram

