Stick on and measure

Foam detection in single-use bioreactors with Liquicap FTZ61

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Endress+Hauser

Liquicap FTZ61

Do you want to detect unwanted foam generation in your single-use bioreactors early and reliably in order to increase productivity? In combination with the self-adhesive single-use sensor FZZ61, the compact, capacitive foam detector Liquicap FTZ61 from Endress+Hauser offers a noninvasive solution for detecting all types of foam in nonconductive containers and disposable bags for cell cultures.

For this purpose, the single-use sensor is simply stuck on from the outside during critical fermentation processes, set to the respective foam and is thrown away with the disposable bag after use. This allows for non-contact measurement without the risk of contamination.

Thanks to Liquicap FTZ61, the dosing of the anti-foaming agent can be controlled, which prevents unwanted foam generation from crossing over or blocking sterile barriers. The device determines the change in capacitance based on how much of the active part of the sensor is covered with foam.

Empty adjustment is usually sufficient for adapting the measurement to the actual process conditions. It stores the capacitance value of the sensor when there is no foam covering the sensor field. The empty adjustment can be performed easily at the push of a button.

Liquicap FTZ61 product website

Single-use sensor FZZ61

Benefits at a glance

Customer needs are at the center of our device development. We put great value on tackling the unique challenges of our customers in order to maximize the benefits for their processes.

The foam detector Liquicap FTZ61 optimizes fermentation processes in single-use bioreactors in combination with the single-use sensor FZZ61. Experience the advantages for yourself:

Increased safety and cost efficiency thanks to non-contact measurement: eliminates the risk of contamination and the amount of cleaning required

More convenience thanks to a self-adhesive single-use sensor: ensures simple installation and removal

Fast implementation and reliability thanks to tried-and-tested capacitive technology: does not require extensive validation

Increased flexibility thanks to the compact design: suitable for use even in applications with limited space

Improved product quality and risk minimization thanks to reliable foam detection: checks the dosage of the anti-foaming agent

Optimized adaptability thanks to versatile foam measurement: ensures foam detection in different applications

Challenges in Life Sciences

Foam generation poses a big challenge in critical fermentation processes. For example, it can lead to a reduction of product and biomass concentration, productivity and product purity or even directly impact the microorganisms.

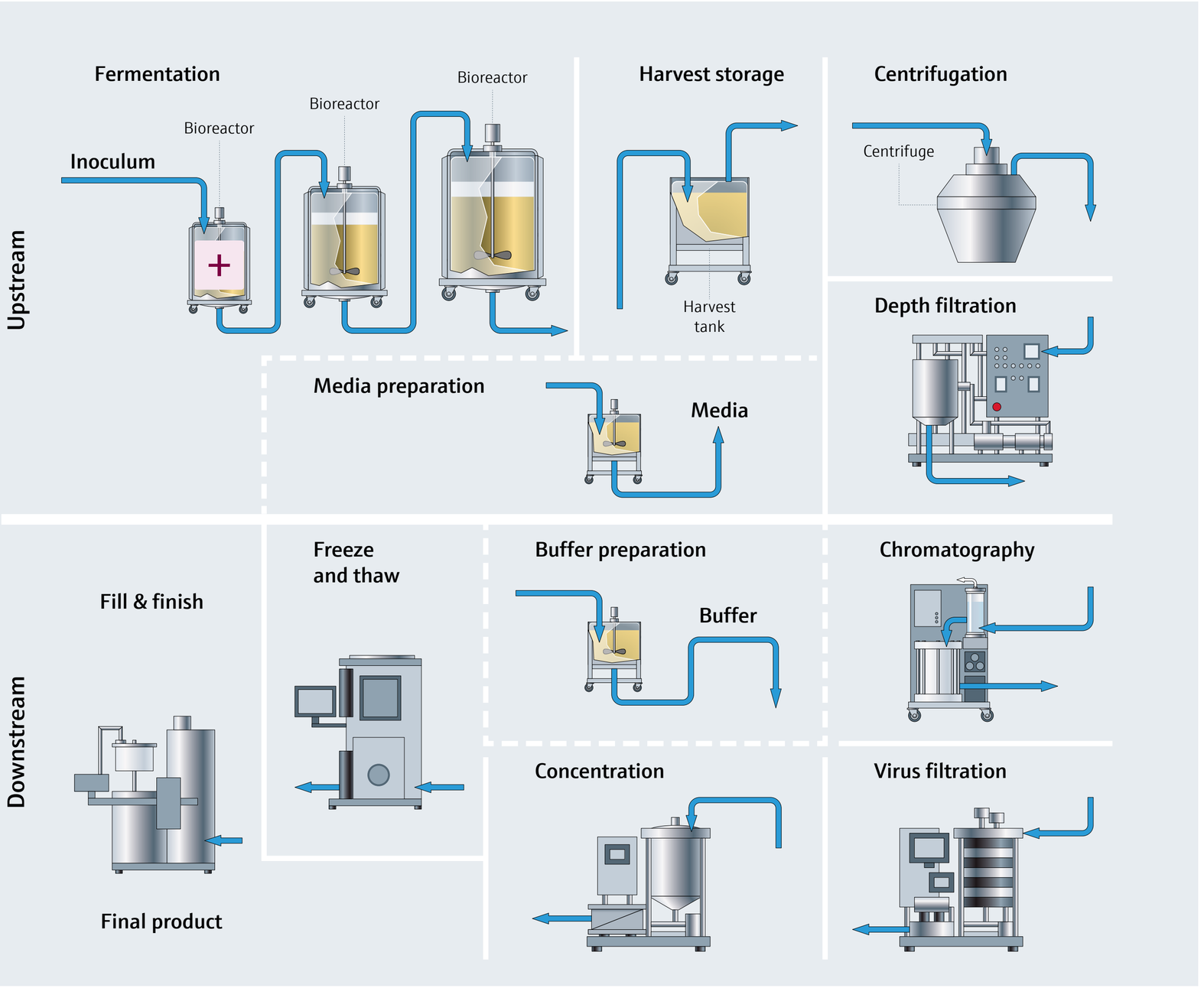
Another consequence can be uncontrolled and spontaneous crossing of the sterile barrier of a reactor system. Foam can clog the sterile filter, compromise the sterility and lead to overpressure in the reactor. Changes to the composition of the fluid are also possible due to the discharge of components adsorbing to the foam.

Countermeasures include mechanical defoaming and the use of anti-foaming agents. For single-use applications, anti-foaming agents are generally the best choice. The foam detector Liquicap FTZ61 is a valuable tool for optimal dosing.

Application in Life Sciences

Liquicap FTZ61 and the single-use sensor FZZ61 are used within the bioprocess upstream during fermentation. The overview shows the marked measuring point (+) for the application example.

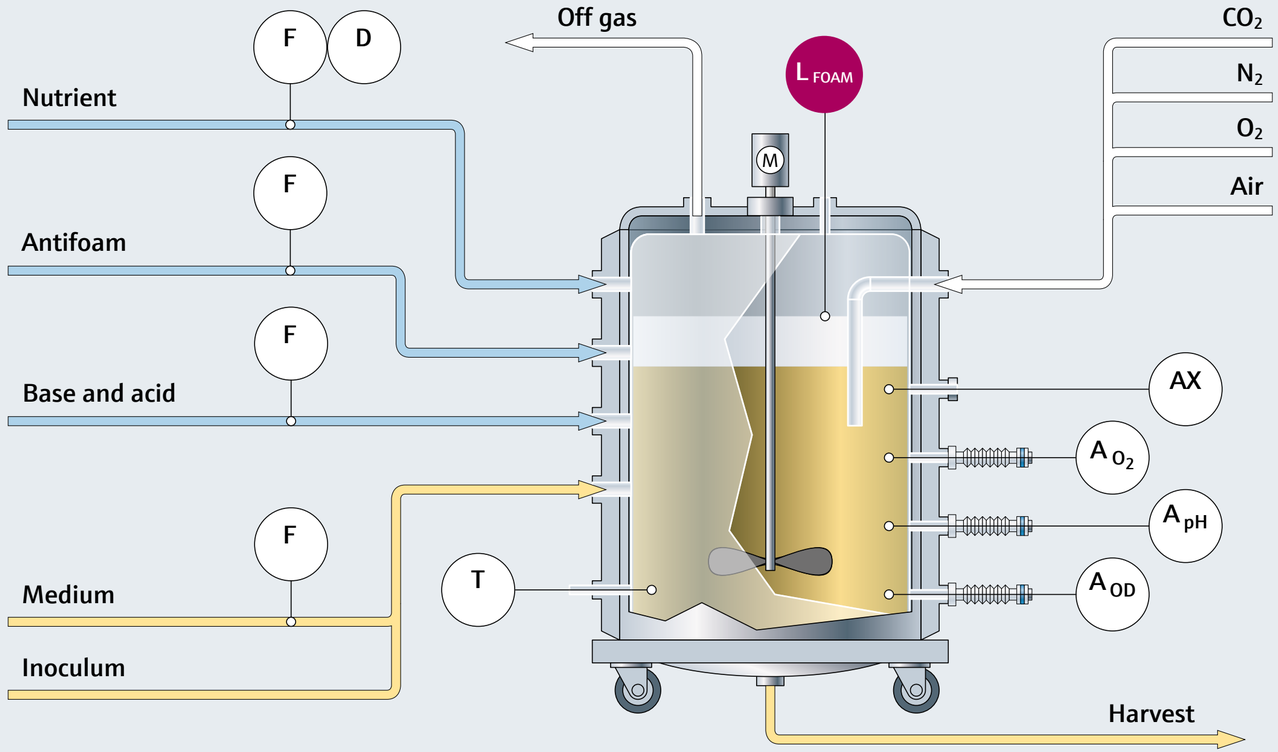
Single-use fermentation



Single-use fermentation

The prerequisites for fast growth of the biomass and maximization of the yield are met in fermentation. The most important parameters are pH value, dissolved oxygen, temperature and turbidity. By installing the appropriate measuring and control technology, growth can be regulated, monitored, recorded and documented. This not only ensures optimal yield, but also compliance with the legal requirements.

Depending on the aeration rate, agitator speed and pressure, foam can form in bioreactors. A foam sensor detects the maximum permitted level. Foam detection prevents foam and biomass from getting into the vent line and clogging the air filter.



Your challenge
Medium: Liquid/foam (risk of clogging)
Process temperature: 5 to 50 °C (41 to 120 °F)
Density: 0.8 to 1.25 g/cm³

Our answer
Liquicap FTZ61 offers safe monitoring of all types of foams through its non-invasive measurement, fast response time and low hysteresis. Furthermore, thanks to the self-adhesive single-use sensor FZZ61, the device can be easily installed and due to the proven capacitive technology, it does not require extensive validation. The compact design increases flexibility in single- use bioprocesses and allows for use in applications with limited space.

Technical data

The foam detector Liquicap FTZ61 and single-use sensor FZZ61 boast various functions and features which bring clear advantages for biopharmaceutical single-use applications.

Find more information on the technical data on this page.

The Liquicap FTZ61 measuring system fulfills EMC requirements in accordance with IEC/EN 61326. It is compliant with the requirements of the EU guidelines and is labeled with the CE symbol.

FZZ61

Single-use sensor

- Self-adhesive single-use sensor
- Detection of all types of foam in nonconductive containers and disposable bags
- Non-contact measurement

Materials	Polyimide, self-adhesive on acrylic base (3M)
Ambient temperature	Only for indoor use 0 to 50 °C (32 to 120 °F)

Subject to modifications and amendments

Liquicap FTZ61

Transmitter

- Compact and capacitive foam detector
- Monitors the anti-foaming agent
- Prevents overfilling

Materials	316 L stainless steel housing, IP65/NEMA4x
Energy supply	DC 11–35 V
Ambient temperature	Only for indoor use (0 to 40 °C / 32 to 104 °F)
Output	4–20 mA
Sensor cable	2.9 m silicone, M8
Data cable	5 m, TPU, M12
Approvals	Non-hazardous area

Subject to modifications and amendments

Simple, efficient and safe

Early, reliable detection of foam in single-use bioreactors with Liquicap FTZ61.

In combination with the self-adhesive single-use sensor FZZ61, the compact, capacitive foam detector offers a noninvasive solution without the risk of contamination for detecting all types of foam in critical fermentation processes.

Get further insights

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