Long-lasting performance during whey processing

pH monitoring with non-glass sensor Memosens CPS77D

During the separation of whey and the associated plant cleaning, the monitoring of the pH value is essential to protect the plant.

Benefits at a glance:

- Robust ISFET sensor which lasts for more than 300 cleaning cycles
- Reliable pH sensors guaranteeing the integrity and operation efficency of the polymer and ceramic membranes
- Accurate data is provided to ensure the product quality and safety
- Maximum process safety through non-contact inductive signal transmission
- High product safety due to a shatterproof glass-free sensor

The food industry and as well the processors of whey rely on unconditional safety in their processes. When separating valuable whey components, the process is subject to strict specifications and high requirements for cleaning. Therefore, the pH values must be closely monitored.

Challenge

The membrane modules form the heart of the separation process. They enable an efficient process. However, various requirements must be met for this. One critical point is the cleaning of the membrane. The pH value must be strictly monitored here to prevent damage to the membranes. Plant operators must therefore be able to rely on a smooth measurement. Especially, since the system is cleaned one to four times a day.
The membranes are either made of polymer or ceramic. Depending on the material, the cleaning processes also differ. Cleaning of polymer membranes is subject to very strict specifications, especially regarding temperature and the chemicals used, because the pH values specified by the supplier should not be undercut or exceeded under any circumstances. The cleaning solution contains enzymes and buffered chemicals. The enzymes break down the organic material in the pores of the membrane. Whereas, the buffered chemicals ensure that the pH value is maintained.
In contrast to this procedure, ceramic membranes are cleaned without enzymes or buffered chemicals. A caustic solution is used instead. However, monitoring the pH value outside the cleaning cycles is also important here.

Our solution

The CPS77D ISFET sensor is used to monitor the pH value in the inlet and the outlet of every seperation skid. In the plant sections equipped with

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polymer membranes, the sensor is installed in-line and cleaned during the cleaning process.
In contrast, the sensors in the ceramic membrane sections are installed with a retractable assembly. This allows the sensor to be protected during cleaning with caustic solution. In this case, the sensor itself is washed and rinsed separately in the laboratory and prepared for further use.
In both cases, the pH value is reliably monitored throughout the entire process so that damage to the membranes is avoided and the separation process proceeds as desired.

Results

The ISFET sensors do not lose any function even after 300 cleaning cycles. Over the entire period, plant operators benefit from reliable measured values that ensure the integrity of the membranes as well as the operating efficiency. The accurate and reliable readings mean that the data can also be used to check the quality of the product. Calibration is only required every six to twelve months.

Components

- Digital non-glass pH sensor Memosens CPS77D-AA8OHU4
- Retractable assembly Cleanfit CPA875-14Q0/0

Membrane installation for whey processing

Non-glass pH sensor CPS77D

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