

Application report: Meierei Viöl processing plant

FOOD



Efficient processes with reliable exhaust condensate control in new dairy

In only 11 months, the general contractor IE Food built a completely new production plant for Meiereigenossenschaft e.G. Viöl. Over 105 million kg of raw milk from 136 dairy farms are processed here annually. The plant equipment for the entire process chain was installed by Tetra Pak Processing.

Only 2–3 workers are needed per shift for the operations to achieve this high production output.

Numerous process sensors from Anderson-Negele help ensure that all steps during production and cleaning management are highly automated and run with a superior degree of efficiency, safety and reliability.

The application

Following delivery, the milk is cooled and stacked in a tank storage with a capacity of 825,000 kg. It is then separated, heated and processed into concentrate and cream in a 35,000 l plant. The planning of the entire system focused on creating a solution that combines efficient operation with ecological sustainability. For example, the exhaust condensate is processed in a company-operated biological treatment plant.

All processes are subject to a high degree of automation. The production steps and the corresponding CIP cleaning processes are monitored continuously for temperature, conductivity, flow rate and turbidity with hygienic, high-precision sensors from Anderson-Negele.

Benefits in the application



- » Monitoring of the hygienic production and cleaning processes
- » High efficiency due to high degree of automation and reduction in personnel costs for monitoring and control
- » Cost savings due to minimization of product losses and less wastewater
- » Suitable sensor solutions for highly diverse processes and media
- » High reliability and long service life



The central plant area with tubular heat exchanger

“ Our partnership with Anderson-Negele has been very pleasant and efficient. The consulting we received was and still is extremely professional. The systems run highly autonomously and reliably due to the sensor control. We can achieve a consistently high level of quality and sustainable production. ”

— Dairy operations manager Ralf Hansen

The Anderson-Negele solution

A total of **60 temperature sensors of the TFP series** provide for **precise monitoring** of all temperatures required for quality assurance in all process steps. The sensors comply with the “Hygienic by Design” principle and thus feature a **hygienic and easy-to-clean** installation configuration. In sensitive areas, variants with 2x Pt100 have a self-monitoring function. The sensors are designed for high continuous temperatures and thus achieve a very **high service life** even under regular exposure to CIP/SIP processes.

The CIP cleaning process itself is supported by **conductivity sensors** of type ILM for a **precise phase separation** and a needs-oriented adjustment in the acid/base concentration. This makes it possible to **avoid losses** by preventing lines from being switched between cleaning agent and water prematurely or too late and prevents the consumption of excessive amounts of cleaning agent.



ITM-3, ILM-4 and FWS sensors for the precise phase separation



The CIP system with active phase separation by means of sensor technology

The turbidity measurement operates on the basis of the backscatter method. The sensor is installed in a front-flush position and retains its precision due to the resistant sapphire optics.

The **phase separation** for the lowest possible losses of the various end products and CIP media is achieved in Viöl using **combined turbidity and conductivity** measurement. Measuring instruments of the **ILM (conductivity) and ITM (turbidity) series** are used.

The achievement of **efficient operation combined with ecological sustainability** was the core objective in designing the plant. Reliable **monitoring of product flows** during the CIP cleaning process, for example, is achieved by **flow sensors of type FWS** based on the ultrasound principle.

When **treating exhaust condensate**, a precise measurement of the flow rate is necessary for controlling the company-owned, biological treatment plant. Due to the high purity of the condensate that remains after the evaporation phase, ultrasound or magnetic-inductive methods, for example, cannot be used. A **precise and yet cost-effective solution** is the **turbine flow sensor HM-E**. A rotor in the housing is caused to rotate by the liquid flowing through it, and the rotating speed can be inductively determined with a high accuracy without requiring further contact with the product. Thus, this medium can be easily monitored and all stipulations for wastewater treatment can be complied with at a very low investment cost.

The plant successfully achieved the goal of attaining efficiency with a minimized ecological impact.



ILM-4 in the CIP feed and return flow



Project



- » End customer: Meiereigenossenschaft e.G., Viöl
- » General contractor: IE Food, Munich
- » Plant engineering: Tetra Pak Processing GmbH, Reinbek
- » Photos: IE Food/Anderson-Negele



Sensors used in the application

Temperature TFP-41 / 61	Conductivity ILM-4	Turbidity ITM-3	Flow rate HM-E	Flow FWS-141
		* Successor model ITM-51 		
Advantages	Advantages	Advantages	Advantages	Advantages
<ul style="list-style-type: none"> · Precise temperature control · Self-monitoring by means of 2xPt100 · For CIP/SIP processes up to 140 °C 	<ul style="list-style-type: none"> · Precise phase separation in CIP processes · Direct output of the concentration · Modular platform, easy to exchange 	<ul style="list-style-type: none"> · Front-flush installation is possible · For media with medium to low turbidity · Ideal for phase separation and CIP control 	<ul style="list-style-type: none"> · Also for media without conductivity · Hygienic design · Cost-efficient solution 	<ul style="list-style-type: none"> · Ideal for media with particles such as milk · Reliable dry-running protection for pumps · Short response time