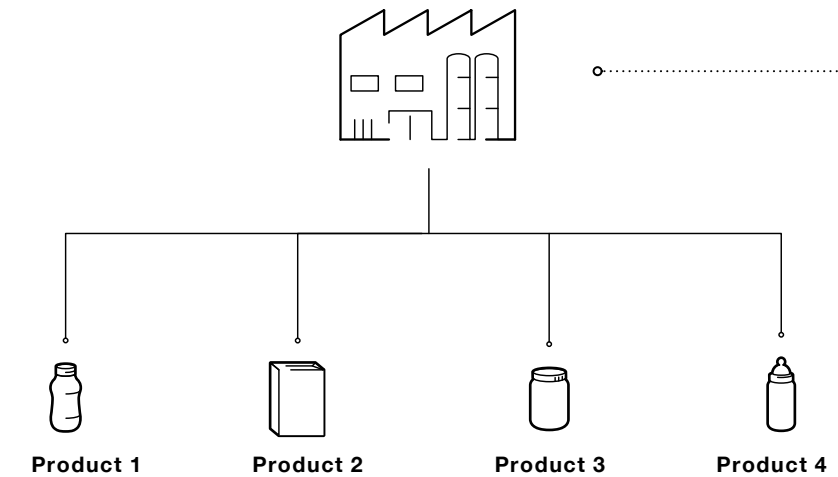




**Smooth flow  
measurement to  
ensure the correct  
protein content**

**/ Make way for proteins /** During the industrial production of milk or whey powder, the protein is separated from the raw milk or whey. Whether it is baby food or a fitness drink: The ability to produce a specific volume of powder with the required protein content is critical for plant operators. A flowmeter that measures more than just the flow rate supports them.

A **dairy** converts milk and whey into powder. The end product must have a defined protein content. The challenge: The separation process influences the protein content. If this content is too low, separation must continue until the correct value is reached. If the protein content is too high, the system may become clogged.

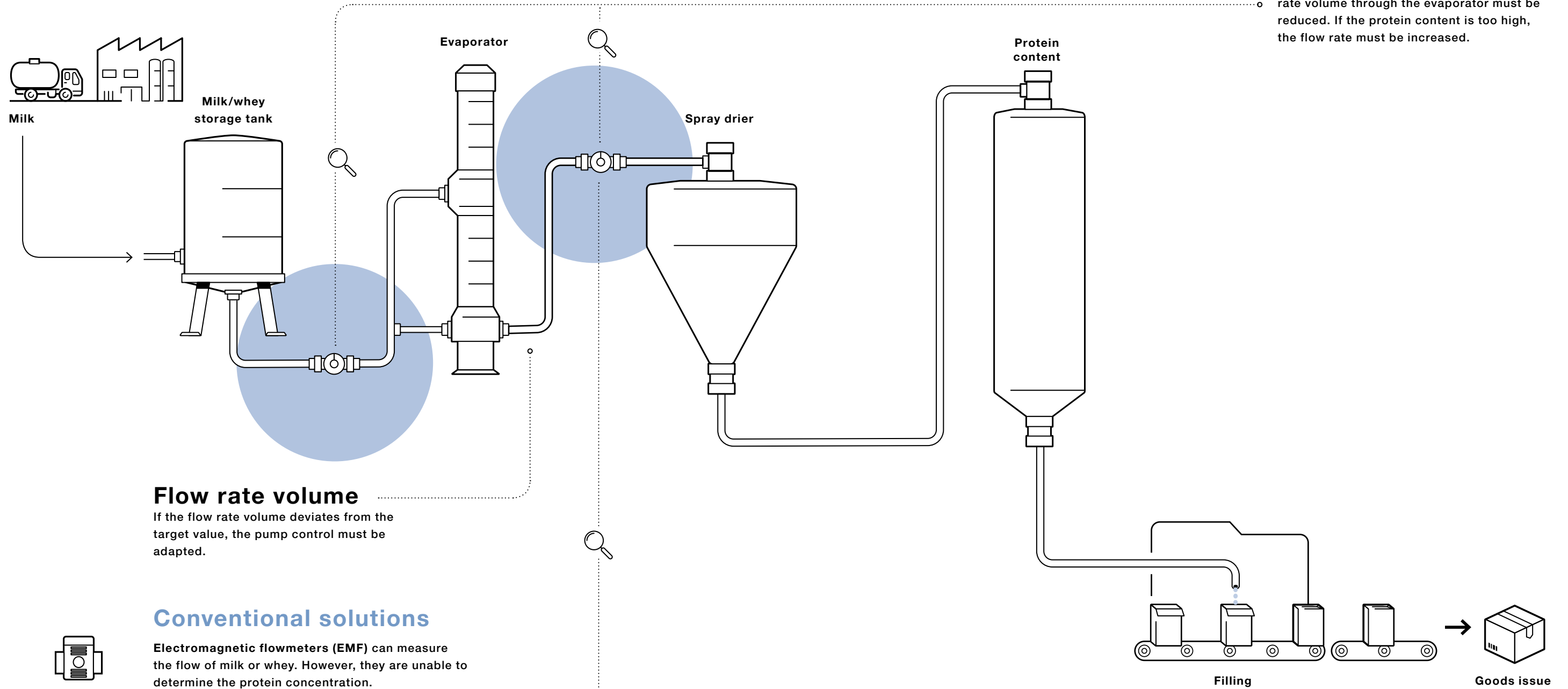


Do you want the ability to measure and control volume flow and protein content continuously? Read the following pages to discover how easy this can also be done in your plant.

**/ Is the protein content correct? / During the production of milk and whey powder, your plant must measure and control the volume flow through the evaporator or filter precisely – because the protein concentration depends on it. A flow-meter that measures more than just the flow rate offers added value.**

### Protein content

If the protein content is too low, the flow rate volume through the evaporator must be reduced. If the protein content is too high, the flow rate must be increased.



### Flow rate volume

If the flow rate volume deviates from the target value, the pump control must be adapted.

### Conventional solutions



**Electromagnetic flowmeters (EMF)** can measure the flow of milk or whey. However, they are unable to determine the protein concentration.



**Mechanical flowmeters** do not conform to the hygiene standards of the food industry.



**Coriolis flowmeters** are expensive to purchase and difficult to handle due to their size and weight. Since the pipeline is tapered, product deposits can accumulate.

**/ Flow measurement with SAW technology / Hygiene is particularly important during the production of dairy products. FLOWave gives you a compact solution that measures the flow under completely hygienic conditions. Thanks to innovative SAW technology, the flowmeter dispenses with sensor elements in the measuring tube. No parts in the measuring tube means: no deposits, no material incompatibility, no maintenance, no pressure drop and easy cleaning.**

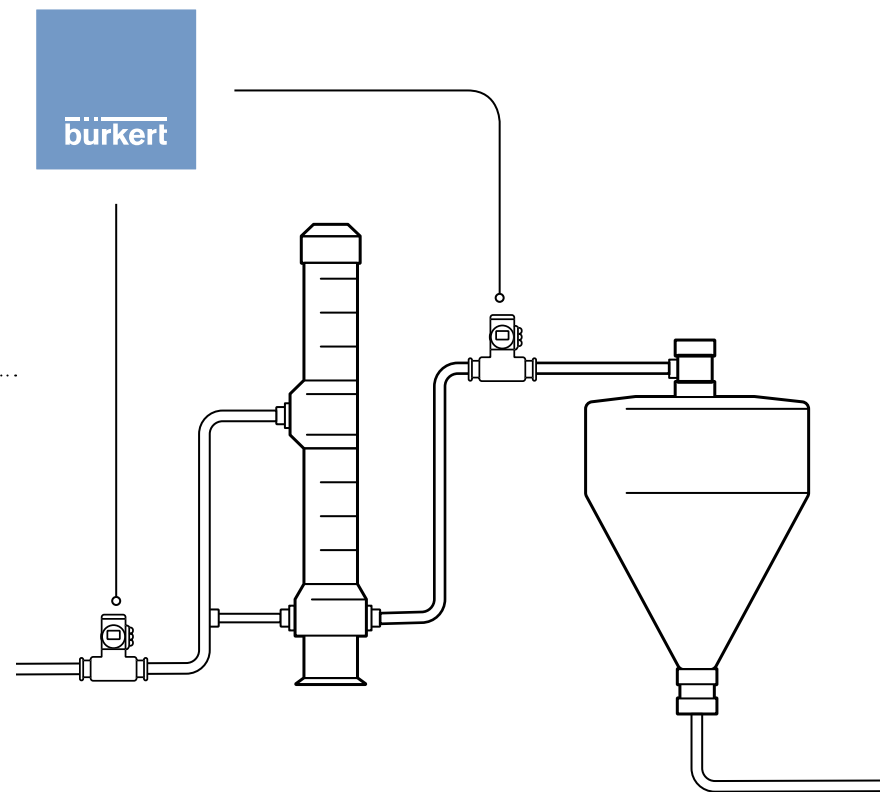


FLOWave

SAW stands for Surface Acoustic Waves. These occur in nature, e.g., during seismic activities. We harness their effect in our patented SAW technology for inline flow measurement.



**/ A compact all-rounder / FLOWave is more than just a flowmeter. The sensor not only measures the flow rate, but also the temperature, density factor and acoustic transmission factor of your liquids. This ensures that the required protein content is reached. This is a gain for your production plant: Your plant operates with maximum reliability.**



#### Maximum precision



FLOWave measures the volume flow independently of the conductivity of the medium with an accuracy of 0.4 % of the measured value, the accuracy for the temperature is  $\leq 1$  °C.

#### Meets the highest hygiene requirements



FLOWave dispenses with sensors in the measuring tube that come into contact with the medium. It therefore measures the flow under completely hygienic conditions. This is confirmed by various certificates (ASME BPE, 3A and EHEDG).

#### Fit for the future



FLOWave devices utilise the Bürkert device platform EDIP. EDIP stands for “Efficient Device Integration Platform”. It considerably simplifies the handling of the devices and helps to integrate them quickly into an existing fieldbus system. In short: EDIP is part of our contribution to Industry 4.0.

#### Constant processes and product quality



The “density factor” and “acoustic transmission factor” functions enable FLOWave to detect different protein contents quickly and reliably. This reduces waste and costs while increasing productivity.

#### Easy to handle and install



The compact and lightweight flowmeter fits into every system and is easy to install. At two inches in size, a FLOWave device weighs just 3.4 kg – compared to the 70 kg heavy, two-inch Coriolis system.

#### Fast start-up and easy operation



The high-resolution 2.4“ display offers flexible operation with intuitive, graphic user guidance. Freely definable measured value designations and the optional display of one to four measured values, a trend curve and the parameterisation interface enable an individually coordinated display.

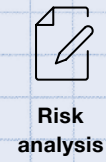
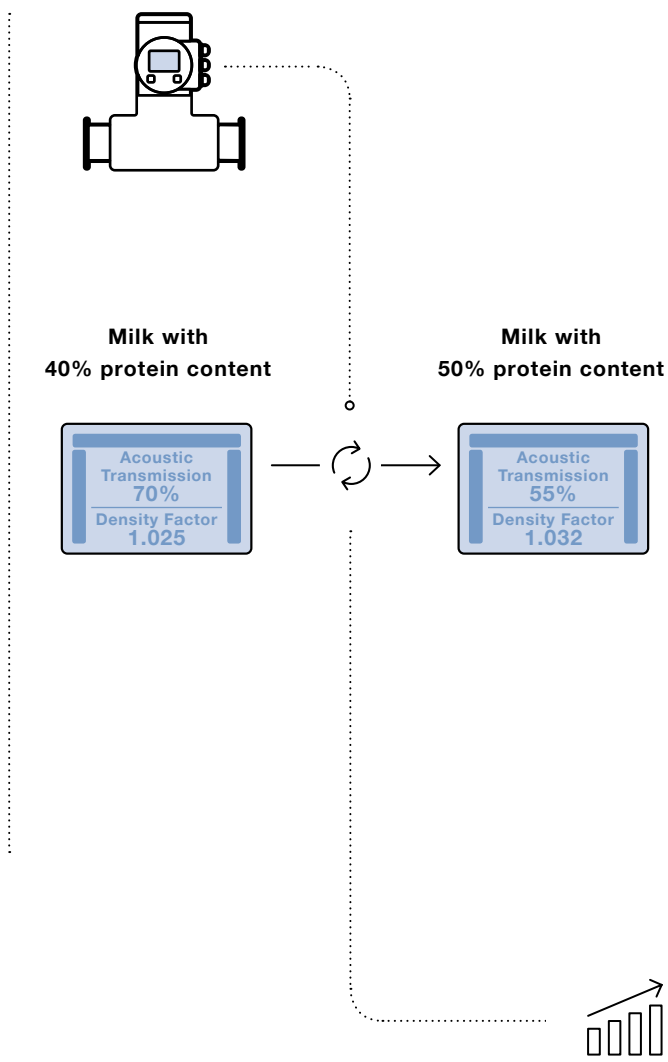
The WiFi module allows remote access to measurement parameters via web browser. This is particularly relevant when FLOWave is installed at difficult-to-access points in the process.

**/ Protein concentration at a glance / FLOWave determines the density factor, the acoustic transmission factor and the temperature. From these measurements, the controller or the gateway module ME43 calculates the current protein content. If the plant is in danger of becoming clogged, the acoustic transmission factor comes into play by revealing differences in the flow characteristics of the protein solution. The more solids in the liquid, the more viscous the flow. FLOWave reports these types of variations and uses continuous inline measurement to guarantee consistent product quality.**

**How does the acoustic transmission factor work?**

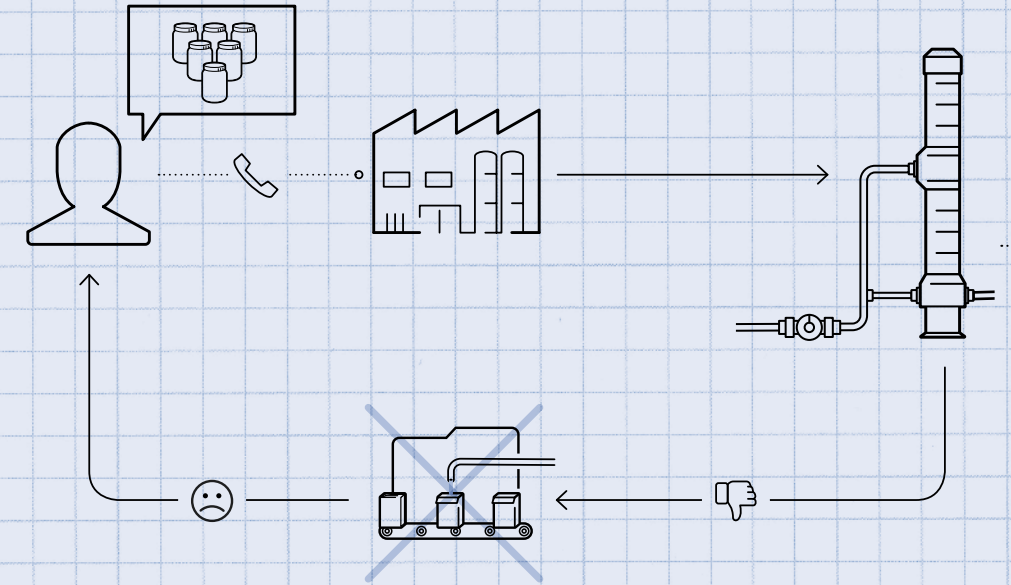
This measured variable indicates the attenuation of the surface acoustic waves as they propagate inside the sensor tube. It is equivalent to the turbidity measurement. The acoustic transmission factor could also be described as acoustic turbidity. It is mainly influenced by bubbles and solids in the liquid.

Pure water has a density factor of 1,000 and an acoustic transmission factor of 100%. In milk or whey, the density factor increases with a higher protein content. At the same time, the acoustic transmission factor decreases as more protein increases the attenuation of the surface acoustic waves.



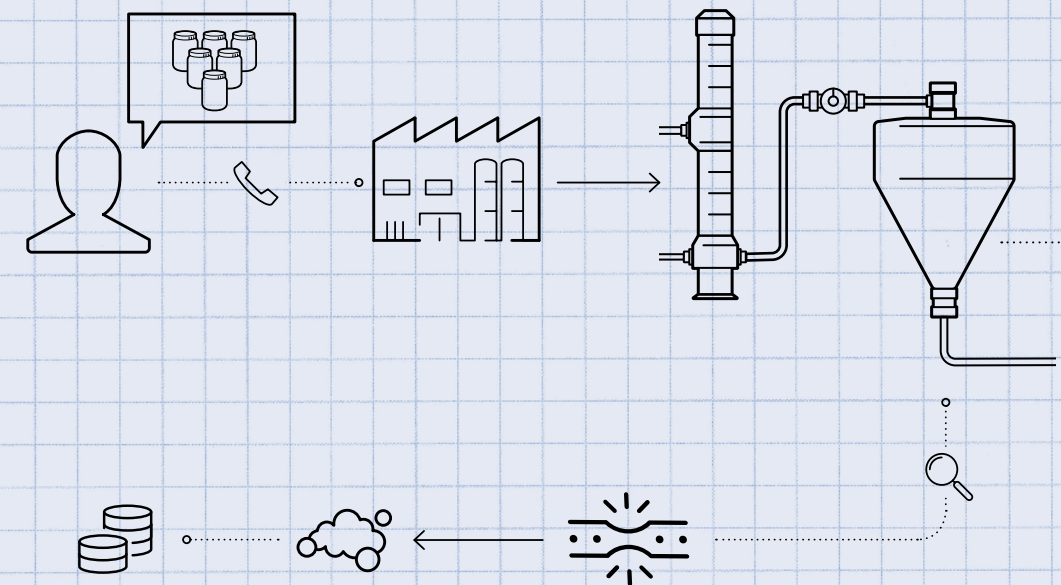
**Risk analysis 1: Protein content too high / too low**

A conventional flowmeter does not detect the protein content in the powder. If this content falls outside the tolerance range, an entire batch can be rendered unsuitable for sale.



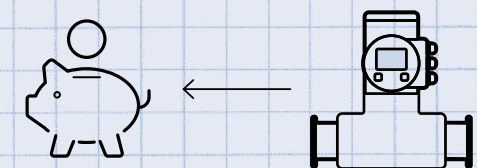
**Risk analysis 2: Plant clogged**

There are two reasons why a plant can become clogged: Excessive protein content and excessive viscosity of the milk/or whey concentrate. The result: The plant shuts down and must be cleaned thoroughly.



**FLOWave**

ensures that the required protein content is achieved and the plant does not become clogged. Ultimately, this saves money and reduces downtimes.





**Flow measurement**

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