

Technical report

# Baumer conductivity sensor helps save 100 000 liters of water daily.

Züger optimizes the cleaning-in-place process with the help of Baumer

Züger Frischkäse AG is one of Switzerland's largest dairy manufacturers. Legal requirements as well as the sustainability approach of Züger's corporate culture result in constant production improvements. In the past few years, Züger has been able to achieve considerable savings in water and cleaning media with CIP cleaning. A key factor of this success is the conductivity sensor *CombiLyz* AFI from the Swiss sensor expert Baumer.



At its production site in Oberbüren, Switzerland, 2.8 million litres of milk are being processed.

The food industry is an important pillar of the Swiss economy, and Swiss dairy products in particular are very popular within the country and abroad. Züger Frischkäse AG is one of the country's largest dairy product manufacturers. At its main plant in Oberbüren, around 300 employees turn approximately 2.8 million liters of milk into more than 150 different types of cream cheese products, including cottage

cheese, mozzarella, and mascarpone. Züger's sales markets not only include Switzerland and its European neighbors such as Germany, Italy, and France – China, Japan and Russia also import the company's cheese products. Since the turn of the millennium, Züger has enjoyed rapid growth. «Compared to 1996, when I first started working for Züger, we now process around 50 times the amount of milk,» explains

Urs Koster, head of technical maintenance and new systems at Züger. The produced quantity increases further every year. Accordingly, the production system must be constantly adjusted and expanded. In addition to this rapid growth, Züger is increasingly facing another challenge – Swiss legal regulations regarding water consumption and environmental regulations are constantly being tightened. What is more, the corporate culture of Züger, which also produces a number of organic products, contains internal requirements for sustainable production. As a result, Züger launched an optimization process for its CIP procedure to lower the consumption of water and cleaning agents. A key factor for saving resources was more precise phase separation, for which Züger installed the conductivity sensor *CombiLyz* AFI from the Swiss sensor manufacturer Baumer. The success of this measure is very notable – today the CIP process consumes up to 30 percent less cleaning agent, up to 50 percent less disinfectant, and up to 100 000 liters less water per day.

### Quick measuring signal for reduced resource consumption

The *CombiLyz* conductivity sensor from Baumer offers optimal prerequisites for the phase separation of food materials, water, and cleaning agents during CIP: It measures the electric conductivity of the flowing medium very precisely and uses this as the basis to deduce the type of medium and its concentration. Thanks to the short reaction time of the temperature compensation, the system control of Züger receives an exact measured value within only 15 seconds. This way, the control can react quickly to precisely separate the individual phases by actuating valves. This is of essential importance as the consequences of a faulty or delayed measuring signal can be quite dramatic: «In the worst case, out CIP tank is flooded and the system goes down,» says Urs Koster. However, our aim was not only to avoid this but also to use resources considerably more efficiently. This is why a quick and reliable reaction of the sensor is important to us.» Its lid made of PEEK plastic with a one-piece hygienic design is responsible for the quick temperature compensation of the *CombiLyz* AFI. It contains the inductive sensor elements for measuring the electric conductivity and the temperature sensor. The sensor tip has a low thermal mass and a low thermal transition resistance, allowing the temperature sensor to react very quickly even to great temperature fluctuation. Sensors with two-part



In order to save resources, Züger implemented an optimization of the CIP process.

lids, in which the temperature sensor is located underneath metal, are a little faster. However, the frequent temperature fluctuations that often occur in practical application put a thermal strain on the transition between plastic and metal, resulting in frequent cracks in these sensors, which cause them to fail and make them unsafe for use with food.

### A long-term reliable solution

«Züger has relied on conductivity sensors from Baumer for a long time,» relates Urs Koster. They are used, for example, to determine the salt content in melt water as well as in the end product of mozzarella production,



By optimizing the CIP cleaning process, up to 100,000 liters of water can be saved per day thanks to the Baumer conductivity sensor *CombiLyz* AFI.

when separating the cream phase from water, or when recovering water. When it came to optimizing the CIP process, Urs Koster therefore quickly decided to use the *CombiLyz* AFI for this application as well. Nevertheless, this decision was not primarily based on brand loyalty. «Whatever I buy is completely benefit-oriented,» says Urs Koster. «I know what I need and then I simply look for the solution that matches my



Züger Frischkäse AG with its headquarter in Oberbüren is one of the largest milk processors in Switzerland.

needs. And the *Combilyz* AFI is simply the best conductivity sensor on the market.» The savings from the successful optimization process allow Züger to comply with the legal specifications for resource consumption as well as its own requirements for sustainable production. When it comes to long-term reliability, Urs Koster is also satisfied with the Baumer sensor: «We have tried many things, because on paper all sensors perform the same. And in the first week usually everything functions as it should. However, what actually counts is the reliability over many years.»



Urs Koster is division manager for technical maintenance and new plants and was jointly responsible for the optimization of CIP cleaning.

only sell products but to be a reliable partner for many years.» The benefits of this approach are felt by customers directly: «They understand what I need, offer advice when it comes to challenges, and recommend good solutions on their own initiative,» confirms Urs Koster. This is a major advantage, especially when it comes to continuous optimization projects, which Züger will continue to implement in the future, judging from its growth.

**Further information:**  
[www.baumer.com/combilyz](http://www.baumer.com/combilyz)  
[www.baumer.com/dairy](http://www.baumer.com/dairy)



AUTOR  
Thomas Schneider  
Product Market Manager  
Baumer Electric AG

«The collaboration with Züger is demanding and exciting,» says Thomas Schneider, who is responsible for Züger at Baumer. «The long-term perspective with which projects are implemented is especially positive. This is in line with the philosophy of Baumer to not