

Technical report

Container exchange timed to the point

Baumer sensors detecting air and gas bubbles increase plant uptime at the Sachsenmilch Leppersdorf GmbH and save valuable resources

One challenge less to care about at Sachsenmilch Leppersdorf GmbH: new analysis sensor PAD20 from Baumer detects even smallest air and gas bubbles when dosing fruit concentrate into yogurt. This way, the delivering container can be fully emptied without running the risk of any gas penetrating the system that has to be exhausted afterwards.



The Sachsenmilch Leppersdorf GmbH in Leppersdorf

Even in difficult times, the F&B industry is a safe harbor for economic development. Consequently, requirements have shifted from out-of-home to home consumption in the past 1.5 years. Despite this trend, or maybe just because, consumers expect a wide range of high-quality products and flavors. Manufacturers in the dairy industry respond to this tendency by new, often seasonal or even short-lived product variants: "The days of having production limited to five or six core variants are long gone" says Dr. Matthias Wiora, Technical Innovation Manager at the Unternehmensgruppe Theo Müller. Today, the company's in-house fruit concentrate production is continuously expanded by three to four seasonal flavors, with ten to twelve

additional new flavors each year. Usually, such seasonal flavors are only offered for a short period of time. "Of course, we are glad to offer our customers the variety and exotic flavors they wish. However, our primary aim is economic profitability, which required increased efficiency in machine deployment and the use of resources." A clever solution for a more efficient use of resources now helps the Unternehmensgruppe Theo Müller master this challenge in yoghurt production.

Loss of efficiency due to frequently changing flavors

The company's affiliate, Sachsenmilch Leppersdorf GmbH located in Leppersdorf, Germany, is one of Europe's most advanced dairy plants. In every fruit

container exchanged during the production of fruit-flavored yoghurt, about six to eight kilograms of fruit concentrate remained in the container and could not be used anymore. Besides extra material costs, this implicated additional costs for disposing of the left-over concentrate and time-consuming container cleaning. "This was an issue of which we had already been aware for ten years," explains Karsten Noack, Senior Expert Production at Sachsenmilch in Leppersdorf. "Ever since that time we have been looking for a solution to the problem."

Since there was no possibility of measuring the exact filling level of the containers for a long time, "we initially thought that we could calibrate the systems to different fruit concentrates. However, with today's variety of flavors this is not feasible." At first, our search for sensors was not a success. "Especially when it came to exotic flavors, the container exchange did not work reliably and in an optimal way," he remembers. In the worst case, the installed sensor would let the system run with an empty container. This made the nitrogen used to take the fruit concentrate off the container entering the pump. When this happens, the system is down for up to 15 minutes and the technician must get it back to operation. Just during this time, around 10 000 cups of yoghurt could have been produced.

To prevent the pumps from running dry, there was no option either to change the container at a later point



In yoghurt production with fruit concentrate, about six to eight kilograms of fruit concentrate used to remain in the container.

in time. The risk of the system running dry was simply too high. And last but not least, any yoghurt produced without fruit concentrate would have been waste. The problem was solved in cooperation with sensor expert Baumer. Now, the Baumer analysis sensor PAD20 is deployed to detect air and gas bubbles. It is installed on the infeed pipe and reliably recognizes that the fruit container is empty at the right moment. This means that now fruit containers can be easily and fully emptied in the system without any problem.

The solution to a long-standing problem

For many years, the right sensor for this challenge has been searched without success. The first commissioning of possible sensor solutions was usually promising, because only one type of flavor or water is used for the test run. However, as soon as flavors changed quickly during production the old well-known problems occurred again. Finally, at a trade show together with the Baumer sensor experts a solution to the



Reliable air and gas bubble detection saves valuable resources during container changeover in yogurt production.

long-standing problem was coming up: Baumer developed the PAD20 analysis sensor. The sensor will reliably and fast detect air and gas in any fluid, whether liquid, viscous or sticky.

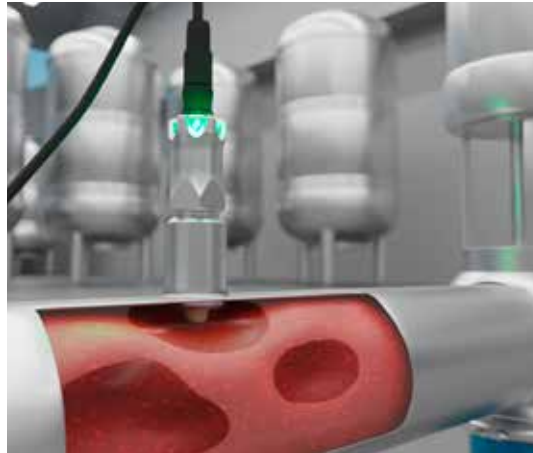
Thanks to this solution, the Unternehmensgruppe Theo Müller can now fully exploit the fruit concentrate in the containers. As soon as they are fully empty, the sensor reacts to make the system proceed with the next container, which is a considerable reduction of waste in parallel. And, unlike previously disposing of up to eight kilograms fruit concentrate, now only very little remains at the container bottom. "This outcome immediately persuaded us," remembers Karsten Noack. "To us, this was the breakthrough we had been looking for all these years. It allows us to optimally and sustainably deploy our resources and considerably increase system availability."

More sustainable and efficient production

When Baumer heard about the problems faced by the Unternehmensgruppe Theo Müller, "we were immediately interested in collaborating with them," reports Julian Budde, Process Sensor Technology Product Manager at Baumer. "Because this called for a clever solution." On the one hand, first air bubbles appearing must not make the sensor react. On the other hand, the sensor was expected to react on an empty signal for container exchange. Otherwise, both system and subsequent processes are down. "To us, it was immediately clear that our engineers would find a solution."

This required targeted modifications for air detection by our sensor experts. Julian Budde proudly relates, "This allowed us to offer the Unternehmensgruppe Theo Müller a solution for which they had been searching for so long."

Today, the Baumer analysis sensor is deployed in three production lines in Leppersdorf and is going to become standard. The benefits for the Unternehmensgruppe Theo Müller are varied – staff and energy costs as well as downtimes were significantly reduced. In parallel, material costs go down because the fruit concentrate in the containers can be fully exploited. According to Dr. Matthias Wiora, at the end of the day it is "a clear increase in our production efficiency and sustainability."



PAD20 analysis sensor for air detection reliably detects any air pockets in filled pipes.

For more information visit www.baumer.com



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