

## SMC Customer case – BMI

### Low-cost and clean food production is no piece of cheese

*By Stefan Walter, Sales Engineer at SMC*

**An innovation in protecting cylinders by SMC ensures lower-cost and consistently clean cheese production at Bayerische Milchindustrie eG.**

**Whether for breakfast or with a glass of wine: cheese is much more than a staple food, it is a real indulgence. To keep it that way, high hygiene standards need to be satisfied during production. Among other things, aggressive chemicals are used to clean the production machinery, which previously required the use of durable, but expensive stainless steel cylinders. Thanks to a joint development by SMC and Technoflon Coating Systems, much lighter and lower cost aluminium cylinders can now be used – a real innovation for the food industry.**

The cheese production process has a history dating back thousands of years, having been perfected and refined by the Egyptians, Greeks and Romans. Depending on the type of cheese, the steps basically consist of preparing the milk (filtering, pasteurising, adding or removing cream), curdling with lactic acid bacteria and/or rennet, cutting the curd to remove the whey, the brine bath (except for cream cheese) and the ripening process.

To ensure high hygiene and quality standards – just like in the rest of the food industry – machines and systems need to be regularly cleaned. This is especially true in cheese production. That's because, if cleaning is not adequate, remnants, such as ripening cultures or the whey, can have a negative effect on the food quality or attack the machine parts. As a result, nitric acid and caustic soda (1.5% solution in each case) at temperatures of 70 – 75 °C are used for cleaning. But the aggressive cleaning methods require the use of particularly durable machine parts.

Bayerische Milchindustrie eG (BMI) is a German cheese producer with a history dating back over 65 years. Edam, Gouda, Tilsit and Swiss-type cheeses are produced in Windsbach, one of the dairy and cooperative's eight locations. The company uses the Tetra Pak "Casomatic" for production, which makes use of tough, but expensive stainless steel VDMA ISO cylinders to press out the whey. To save costs, BMI was seeking a lower-cost alternative for the existing cylinders that would not lead to any technical disadvantages.

## Cylinder with innovative addition

In its search for a replacement, the manufacturer with its headquarters in Landshut was made aware of SMC by a sales representative. The specialist in pneumatic and electric automation was tasked with developing a cylinder that would meet two requirements: first, it would be resistant to the cleaning agents used (caustic soda and nitric acid) and second, it would cost less compared to the stainless steel cylinders currently in use.

Given these requirements, the logical step was to make use of an ISO cylinder with Clean Design as standard. The completely rounded design without corners and edges makes this cylinder ideal and easy to clean. Next, SMC got in touch with Technoflon Coating Systems B.V., a partner and specialist in all things coating, to discuss the next steps. "Our extensive experience in coating systems in the food processing industry allowed us to select a coating that gives the customer even greater benefits than the requirements stipulated by SMC", says Henri Nijenhuis, CEO of Technoflon. This led to the Techno421 coating solution, which impressed with its outstanding properties: it is resistant to acid and alkaline cleaning agents, has exceptional non-stick properties and is anti-bacterial, while the Easy Clean features make cleaning simple and it is certified in line with EU1935/2004 – EU No. 10/2011, which enables it to be used in the food industry. The result was a joint development based on the C96 series: a coated aluminium VDMA ISO cylinder in the Clean Design, which is considerably lighter and cheaper, while it retains the toughness of a stainless steel cylinder.

## Optimum solution for BMI

The new solution was first used in the Tetra Pak "Casomatic", where the cylinders use pressure to press out the whey as part of the curd cutting process. This enabled a like-for-like replacement without any additional investments or modifications. Thanks to the innovative coating, its advantages compared to its stainless steel counterpart already become apparent during production: the anti-bacterial property disrupts the metabolism of bacteria, yeasts, moulds and viruses on the surface. This stops the spread and also prevents the energy production of the organisms. In addition, the non-stick coating allows the cleaning agent to simply be wiped off.

"We were really looking forward to seeing how the coated cylinder would behave with our chemical cleaning agents (acids/alkalis). The results were excellent and we are now reviewing where else coated cylinders can be used", explains Lukas Ries, Head of Engineering at Bayerische Milchindustrie eG. Eduard Meier, maintenance employee at BMI, adds: "Besides the resistance to cleaning agents, the Easy Clean design of the coating and the Clean Design of the cylinder are a huge benefit in the cleaning process."

## Innovative alternatives for the food industry

The advancement of the C96 series based on the aluminium cylinder with coating represents a genuine alternative for BMI as well as the entire food industry. Because, in addition to the optimum hygiene properties in the Clean Design and the anti-bacterial non-stick coating (Easy Clean), users also benefit from cost savings of around 40% per cylinder thanks to the use of lower-cost aluminium. What's more, the lighter metal leads to a significant weight

reduction. “The much lighter cylinder compared to stainless steel cylinders makes them ideal for use on moving axes or directly on robot arms, even in harsh environments. Because, in these cases, weight is a key variable in inertia loads”, says Torsten Klein, Strategic Market Manager FOOD at SMC. And thanks to the piston diameters of 32, 40, 50, 63, 80 and 100 mm, the cylinder can be used for a wide range of applications.

The positive feedback from BMI on the new C96HYB-series cylinder also led to the consideration of using the new coating for other components. During an inspection of the plant, the replacement of the quick exhaust valves with a coated version from the SMC AQ series was identified as a measure that would be beneficial for BMI. Further innovative projects are more than likely, as the enthusiastic feedback by Henry Nijenhuis shows: “The collaboration with SMC during the project was extremely professional and objective, and I am already looking forward to future projects with the company.”

## Images



Fig. 1: (from left to right) Henri Nijenhuis, CEO of Technoflon, Lukas Ries, Head of Engineering at BMI, and Stefan Walter, Sales Engineer at SMC Image: SMC Deutschland GmbH



*Fig. 2: The newly coated C96HYB-series cylinders help Bayerische Milchindustrie eG press out the whey as part of the curd cutting process. Image: SMC Deutschland GmbH*



*Fig. 3: Four newly coated CP96HYB-series cylinders (centre) at work on the Tetra Pak Casomatic. Image: SMC Deutschland GmbH*



*Fig. 4: The Clean Design and anti-bacterial non-stick coating of the aluminium cylinders from the CP96HYB series ensure optimal hygiene and are also much lighter and cheaper. Image: SMC Deutschland GmbH*