

More than just GAS



Filling line for milk powder

For Terlet, it all started in 1917, when entrepreneur J.W. Terlet founded his own company, which focused on the manufacturing of equipment for the dairy industry. The area around Zutphen was and still is an agricultural area, with many dairy farmers, and at the time, lots of small milk factories, where it produced pasteurisation tanks, fermentation tanks and other similar equipment. In the following decades, Terlet developed into a specialist for equipment for the dairy industry, but also other parts of the food market like sauces and fruit concentrates became gradually more an important part of Terlet's business. Terlet got more and more international contacts through Dutch multinationals as a result of its innovation efforts and long lasting partnerships.

From the 1980s onwards, Terlet grew into a global player and international supplier, specialising in the design, production and installation of complete production lines, components and process equipment for the food, dairy, chemical and pharmaceutical industry. In 2015, Terlet became part of the ProXES Group and from then on focused, in combination with the other members of the ProXES Group, Stephan Machinery and

Terlet, the vacuumising and gas filling specialists, has a unique position in the world can making marketplace. Evert van de Weg finds out more about the gassing process for cans

FrymaKoruma, on the common goal of leading the worldwide expertise for batch-cantered and continuous processing technology.

VACUUMISING AND GASSING CANS OVER THE LAST 60 YEARS

The Netherlands is one of the most important producing countries of milk and consequently of products based on milk like butter, cheese, milk powder, infant formula food and numerous other milk-based products. When the production of dry milk-based powders like milk powder and infant formula food increased strongly, in particular from the 1980s onwards, the need for adequate equipment to cope with the market demand was a real challenge and Terlet took up that mantle. Milk powder and infant formula food contain milk fats, which oxidise under the influence of oxygen and that results in a shelf ▷



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life of less than three months, whereas a shelf life of at least two years is necessary. The only way to increase the shelf life is to remove the air including the oxygen out of the filled can and to replace it with an inert gas.

“Since the 1960s Terlet has provided solutions on a very small scale to the dairy industry to vacuumise and gas cans filled with oxygen-sensitive products,” explains Wim ten Dam, sales engineer Vacuum Gassing at Terlet. “These were only small systems in which you could vacuumise and gas 10 cans at the time and this made the process quite inefficient. When I became the product specialist for the Vacuum Gassing Systems in 2013, I could follow the development work done by my predecessors and work on further development of the vacuumising and gassing equipment, as there was a continuous need to increase the capacity of those systems.”

Nestlé, the leading international producer of dairy products with settlements in the Netherlands

as well, was the main development partner of Terlet in the early days.

Ten Dam explains: “As a company we had quite a challenge trying to increase the output of the systems. It’s not only the air in the headspace of the can you have to extract, but also the air incorporated in the powder. For that you need a really deep vacuum before you can add the inert gas.

“In that way you can reach a residual oxygen level of less than one per cent. For the rest, there are also other influences that determine the residual oxygen level and thus the shelf life. Of course the properties of the product itself and the purity of the inert gas you inject, but also the quality of the can and the can end play a role. But in particular the time between gassing and the final seaming operation can make a lot of difference. The inert gasses we use are nitrogen, carbon dioxide, or a mixture of these two gasses.”

THE SUCCESSIVE STEPS IN THE VACUUM-GASSING CYCLE

The typical can sizes for milk powder and infant formula are 99, 127, 153 and 189mm cans. After filling the cans with the powder, the can ends are clinched on the cans, so that they are slightly fastened to the can bodies, but still can let through gases. The clinched cans then descend into the vacuum chamber, where up to 99.5 per cent of the air is pumped out. By holding the vacuum

long enough, the remaining oxygen content is brought back to less than one per cent. Then the inert gas is let in, the vacuum chamber opens and the cans are conveyed by the shortest way to the seamer, where the clinched cans are hermetically sealed as soon as possible.

“In the course of the last few decades we have been able to increase the process speed considerably,” says ten Dam. “Today our biggest vacuumising and gassing unit with four vacuum chambers with a diameter of 1700mm can handle up to 300 cans per minute; switching to a different size of can hardly results in any stagnation. “I dare say that the total design, as well as the programmed control supports minimum adjustment times.

“Moreover, we have put a lot of emphasis on the prevention of rough handling during all the transport phases through the whole line. I am sure the total quality and reliability of our systems explain the decades-long and still continuing success of our vacuum and gassing systems. In the meantime, we have supplied hundreds of vacuum and gassing systems to virtually all big dairy-processing companies throughout the world.”

The melamine scandal in China during 2008 led to a real boom in the demand for new infant formula filling lines including the Terlet vacuumising and gassing systems in all parts of the world.

“The effect of this drama is somewhat over, but

nevertheless the demand for our systems from all parts of the world, also even from China itself now, is still very big,” says ten Dam. “We are getting inquiries from several countries in Europe, but also from the Middle East, Australia, Mexico, China and so on.”

Ten Dam explains how versatile Terlet is in high-end technology for the food processing industry. Wim points at so-called ‘Terlotherm’ scraped heat exchangers for inline heating or cooling of viscous liquids like sauces, fruit concentrates, chocolate or even candle-wax.

Wim also explains about the so-called Van Meurs bag-in-box filling machines for which he is a specialist himself as well. These special filling machines are used for aseptic bag-in-box and bag-in-drum filling of dairy products, fruit juices and concentrates, liquid egg, aromas and sauces like mayonnaise.

“Customers come to us with very challenging questions for the production of new products and then we try to solve their questions in a very close co-operation,” he says. “Often these questions are very challenging for us and we consider it an honour to satisfy the client then. The interesting side of my job and of our company is that there are so many interesting movements in the whole food processing technology that we keep developing as a company.” 



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