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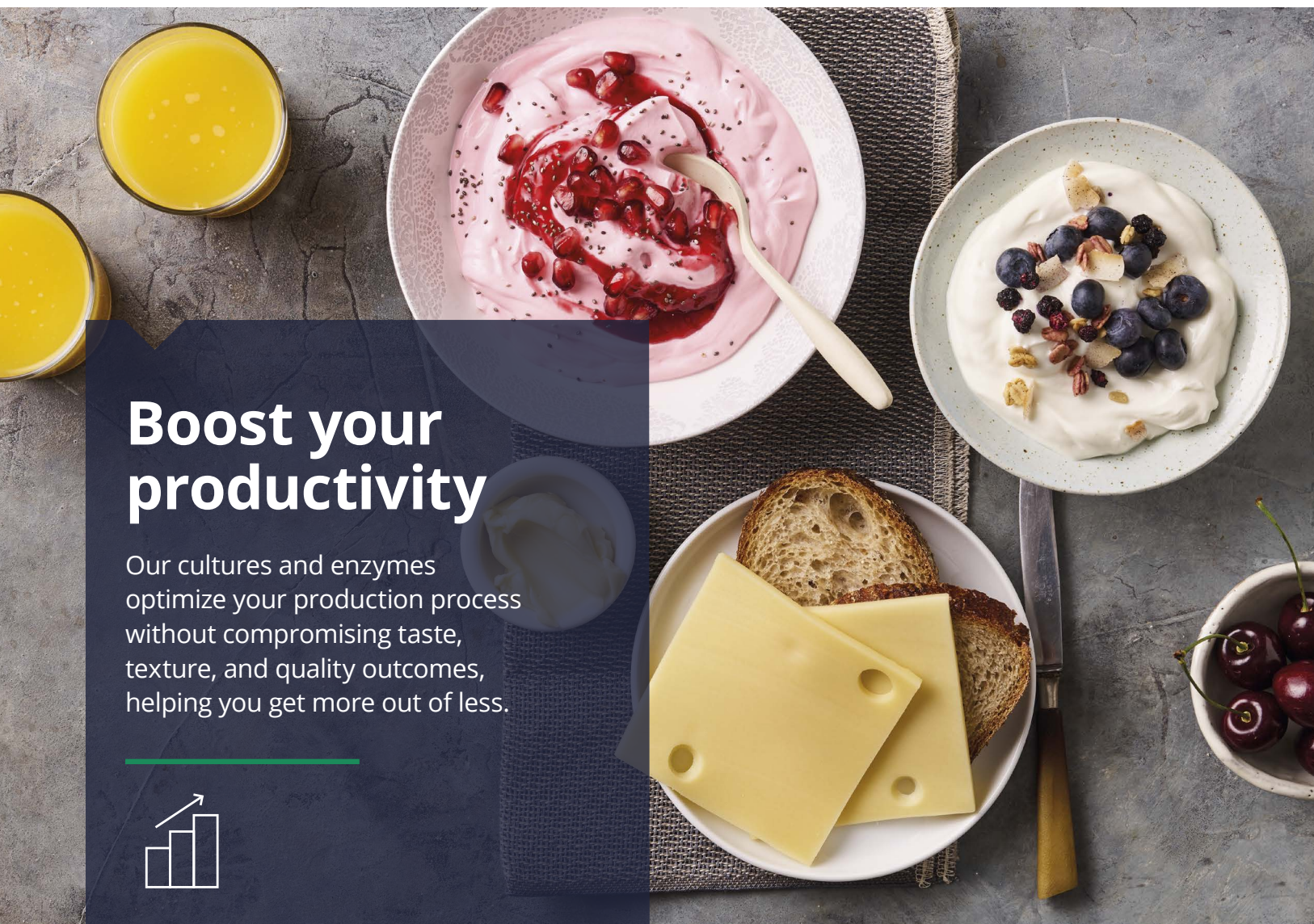
DAIRY

May/June 2023

magazine

PROCESSING | INGREDIENTS | PACKAGING | IT | LOGISTICS

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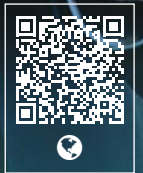
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Away with the cows!

European governments are completely lost



Roland Sossna
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If you believe the NGOs and some politicians, the commercial keeping of dairy cattle must come to an end soon in order to save the planet from climate collapse. The World Wildlife Fund, for example, requires a significant reduction in animal populations and consistent area-based animal husbandry. At the same time, both domestic consumption and the export of animal-based foods are to be significantly reduced. If meat is eaten, then it should be regional game and pasture meat, according to the organisation. Very similar and sometimes even more aggressive are the demands of other – always excessively loud NGOs such as Greenpeace and even the Christian churches.

It seems that these ‘institutions’ – reliably unaffiliated with agriculture – have found a sympathetic ear in some national governments. The supposedly necessary fight against climate change has gone completely mainstream and legions of ignorants are getting involved. Sometimes the hysteria is so great that governments take insane measures. Ireland is an example of this. Even before and especially after the milk quota, the local dairy farmers increased production from 7 million tons in 2015/16 to over 9 million tons in 2021/22, i.e., by 28%, with the support of the then government. Now it's time to return the command, milk production is to be reduced by 25%. The Netherlands is spending €25 billion to reduce livestock by a third. The situation is similar in Germany, where the government has stipulated that production should be restructured in a way that is fair to animal welfare, but does not suspend any significant subsidies and simply waits until milk producers give up under the burden of the conditions of their own accord.

What these governments, and the NGOs that feed their ideology, don't tell us is that grassland food production is simply not profitable. In fact, the contribution of the EU – a favoured location that has little in terms of equal anywhere in the world – is apparently no longer intending to play a role in supplying the growing population in regions less blessed with agricultural conditions. The new European path has nothing to do with sustainability or humanity, but is and will remain just a pipe dream and is therefore doomed to fail from the start, says Roland Sossna.

CSG series rotary screw compressors Purity and efficiency at the forefront

The CSG rotary screw compressor by Kaeser series provides highly efficient compressed air generation, yet requires 19 percent less floor space than its predecessor range. Models are available with air- or water-cooling, with integrated refrigeration dryer or i.HOC (Heat of Compression dryer), and for flow rates ranging from 4 to 15 m³/min. For applications with fluctuating compressed air demand, speed-controlled "SFC" versions are available.

The CSG series is equipped with high-quality, durable airends featuring the energy-efficient Sigma Profile. The rotors now feature an innovative new wear-free PEEK coating, which is also particularly temperature-resistant. Biocompatible, FDA-certified and in compliance with European requirements for food contact materials, this coating is perfectly adapted for the foodstuff industries.

The range is equipped with IE5 Ultra Premium Efficiency synchronous reluctance motors and water jacket cooling on both compression stages – on both air- and water-cooled systems. The fibre-free pulse dampers fitted to the CSG operate on a broad spectrum and at very little pressure loss.

These and other optimisation measures have enabled system efficiency to be improved further. This means that the CSG series delivers 16 percent higher flow rate for the same rated motor power, whilst maximum working pressure has been increased from 10 to 11 bar.



The CSG series delivers compressed air dependably and efficiently for oil-free applications (photo: Kaeser)

NEWS



LUBRIZOL'S holistic nutraceutical solutions meet round-the-clock needs

AI driven research has identified several types of nutraceutical consumers (photo: Lubrizol)

Lubrizol Insights-driven, consumer-led Nutra 2.0 strategy

Lubrizol Life Science Health unveiled a new, consumer-led approach for its added-value nutraceuticals at Vitafoods Europe. The new mission, "Connecting the dots: synchronizing supplement makers with their customers' behaviors," reflects Lubrizol's increased consumer focus, highlighting the strengths of its current portfolio of insight-based solutions built to deliver strong, market-driven product benefits for its customers.

LLS Health has partnered with 113 industries, an AI-driven research company that specializes in developing consumer behavior models using machine learning, and AI to gather and analyze vast relevant consumer-generated content. The objective was to gain deeper insights into the purchasing behavior of dietary supplements based on conversations and activities on social media platforms. It helped specify unmet needs and evolving preferences, as well as perceptions and concerns regarding ingredients and nutraceuticals.

The research characterized several types of supplement consumers, the most prevalent being the health-hooked consumer eager to explore new products to maintain overall well-being. This was followed by the informed seeker of solutions to personal problems, specifically sleep, mental health, skincare, and gut health. Other types included irregular users, mechanical users as well as skeptics who believe in "food first and supplements only when necessary".

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NÖM increases capacities

Showcase project at Baden location

“Everything worked perfectly, we also got a good handle on the interfaces. I think we have realised a showcase project here”

Josef Simon, Director of Production & Technology at NÖM



Last year, NÖM AG completed one of its largest investment projects to date in record time at its headquarters in Baden, Lower Austria. This despite a general shortage of important components such as those needed for automation. IDM spoke to Josef Simon, Production & Technology Director at NÖM, Franz Möstl of Möstl Anlagenbau and Christian Westing of Asepto about the €20 million project.

“We were under a lot of pressure. On the sales side, with an export share of 45%, we are strongly specialised in the area of long-life products filled in plastic bottles. Increasing demand meant that we were permanently sold out. That's why we decided to build a new production hall to increase our capacities,” Josef Simon explains the initial situation. The new hall has a floor space of just under 4,000 m² and currently houses two filling lines for PET bottles along with the peripherals. A third line is to be added in 2025. While NÖM was able to guarantee a best-before date of 50 to 60 days before the commissioning of its new bottling plant, it can now guarantee a whole year's product shelf life in some cases on the basis of the newly installed technology. This applies to mixed milk and coffee beverages as well as special food products.

Aseptic processes and filling contribute to the long shelf life, as do the packaging materials, which are provided with barrier layers or barrier sleeves.

Möstl was general contractor

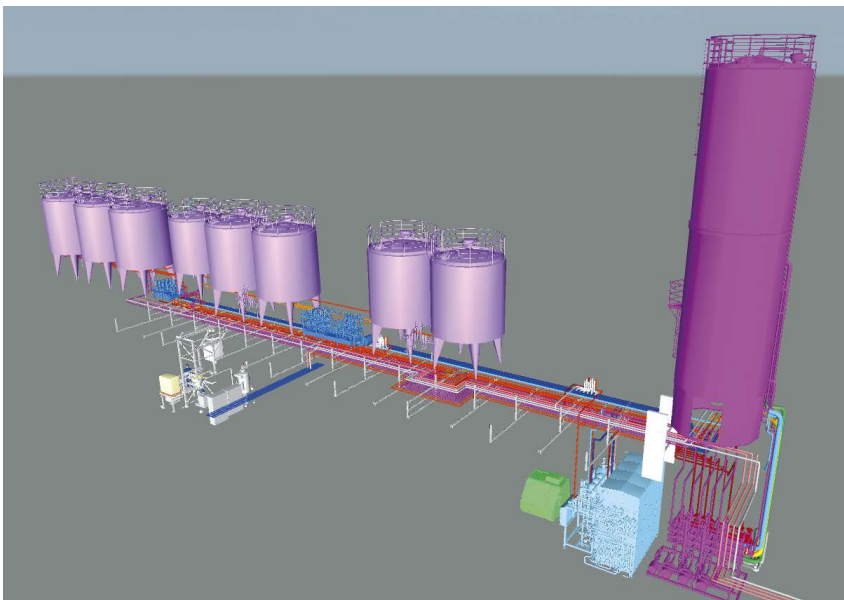
General contractor for the processing was Möstl Anlagenbau from Passail, Austria. Managing Director Franz Möstl: “Our part consisted of the entire energy supply as well as the installation of the tank farm and the CIP plant including the piping. As there were some delays in the construction work, we had to pull our forces together massively in the final phase so that we could keep to the specified time frame.” 8 production tanks with a total volume of 400 m³ and a 3-chamber CIP tank with 120 m³ were installed, all of which were supplied by frassinox/Croatia.

Tube heater at the heart

The heart of the new processing plant is a tubular heat exchanger from Asepto. A UHT system with a capacity of 10,000 - 18,000 l/h was supplied. The heat exchanger modules are designed as hair-pins. These are available from Asepto with a length of 6 - 12 m and were individually adapted to the space conditions on site. The



With an investment of €20 million, NÖM AG has expanded its capacities in the field of highly added-value dairy products (photo: NÖM)



3D sketch of the process flow in the new production hall of NÖM (photo: Möstl)

heat exchangers of the NÖM-UHT have a length of 7.5 m and are equipped with flanges on the front side and fully welded, flow-optimised 180° bends on the rear side. The special design of the heat exchangers allows maintenance of the product and water sides in the installed state and reduces the number of flanges/gaskets to a minimum. The heat holding can be switched off by using high pressure valves depending on the recipe requirement.

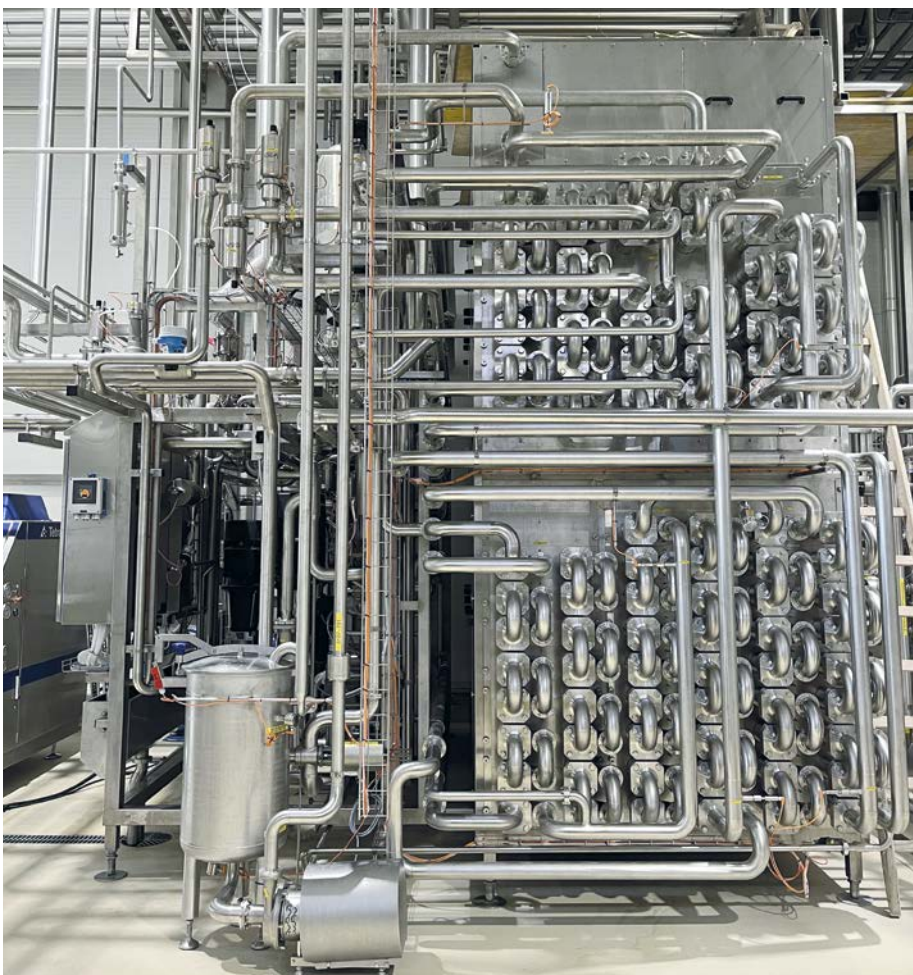


The new CIP tank has three chambers and a total volume of 120,000 liters (photo: Möstl)

In order to keep heat radiation of the system as low as possible, the heat exchanger modules were designed in such a way that they can be insulated on five sides with mineral wool. For this purpose, the modules were covered in two layers with aluminium-laminated mineral wool mats with a thickness of up to 360 mm and glued together. In this way, the individual heat exchanger compartments could also be thermally insulated from each other.



The part of Möstl Anlagenbau consisted of the entire energy supply as well as the installation of the tank farm and the CIP system including the piping (photo: Möstl)



The heart of the new production facility is a UHT tubular heat exchanger from Asepto in hairpin design (photo: Asepto)

The cover consists of removable VA segment sheets, which are additionally lined and bonded with 19 mm Armaflex panels suitable for high temperatures.

The UHT system can be operated independently of each other by two fully-fledged operator stations incl. WinCC V7.5 installations. The operator stations are operated virtually on the servers of NÖM. To ensure a permanent connection between the production and IT networks, routing was set up on the computers using a communication tool. This implementation enables NÖM to exchange recipe data from the SAP system.

Christian Westing, Asepto: “We have already built a heater in linear design several times. But the one for NÖM is characterised by particularly strong insulation. We have a large heat exchange surface in the system and wanted to achieve as little radiation of thermal energy as possible. That’s why the heater is fully encased. We were lucky with the automation. We were able to procure all the control components from Siemens on time.”

Filling

The production hall currently houses two aseptic filling lines, each consisting of two components: a bottle former from KHS and an aseptic filler from GEA Procomac, which have been blocked. A third line will follow in 2025.

Manoeuvre review

The order from NÖM was placed in spring 2022, commissioning was concentrated in late autumn, and the sterile test then took place on schedule in mid-January 2023. Meanwhile, production is running at full capacity, and in March 80% utilisation had already been achieved. Josef Simon is very satisfied with the course of the project in terms of quality and time. “We had a well-rehearsed team, because we have been working with Möstl for 25 years. There has also been cooperation between Möstl and Asepto in the past. So everything worked perfectly, and we also got a good handle on the interfaces. All in all, I think we were able to realise a showcase project here.”



For filling in the new production hall, a bottle blowing machine from KHS and an aseptic filler from GEA Procomac were blocked (photo: NÖM)

NÖM AG

- » NÖM AG, based in Baden, Lower Austria, processes 430 million kg of milk from 2,300 farmers. It employs 730 permanent and 200 temporary staff, with a turnover of € 418 million in 2021. 45% of its business comes from exports.
- » NÖM specialises in the white line, one third of the production is generic articles, the majority of the rest is highly added-value dairy products in cups and bottles as fresh, UHT and sterile products.
- » NÖM is the first European dairy to produce exclusively GMO-free since 2009 and climate-neutral since 2016. In the entire PET range of NÖM, 30% rePET share was already used by 2020, which is above the targets set by the EU circular economy package for 2025 for beverage bottles made of PET. In 2021, NÖM's rePET share was increased from 50% to 100%.



NÖM has made a name for itself internationally with its highest-quality milk products (photos: NÖM)

Advertising

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Getting cultured

An expert's guide to creating signature cheese

Author: Evandro Oliveira de Souza, Senior Global Business Unit Director Cheese at DSM

Cheese making is as much an art as it is a science. English Cheddar, Dutch Gouda, Italian Mozzarella, Greek Feta and beyond – cheese is intrinsically linked to cultures around the world. Europeans consume about 9 million tons of cheese every year but tastes are changing. Whether it's an increased demand for more "authentic" products in France, or German consumers potentially swapping out parmesan for cheddar to keep grocery costs down – there is a huge opportunity for cheesemakers.

Brands that can differentiate their cheese offerings with unique variations inspired by traditional cheese types will stand out to consumers looking for more adventurous flavors alongside their usual supermarket staples. However, for large-scale production, it can be a challenge to re-create such distinctive flavors and textures while also maximizing shelf-life and ensuring a consistent and efficient production process. There are countless cheese cultures that manufacturers can employ to address these challenges but testing new culture combinations can be prohibitively

expensive. So how can cheese makers tap into these distinct regional variations to create so called "signature" cheeses – cheese with a unique character and authentic taste and texture – at scale? In this article, we'll look at how you can design culture combinations with ease and create delicious, distinctive, repeatable cheese products inspired by the world's regional favorites.

Starting off on the right foot

Getting the right starter cultures is critical for cheesemakers. Starter cultures initiate the cheese making process by fermenting the lactose in milk, producing lactic acid and, consequently, lowering the pH of the cheese. Next to that – depending on the selected strains – starter cultures can also impart the desired final taste profile of the cheese. When done right, starter cultures lay the foundation for a great cheese by providing consistent acidification performance, predictable activity, robust protection against bacteriophage infection, the desired taste and yield improvements.



Leading cheese cutting technology

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With a strong base, flavor can then be refined with adjunct cultures. With so many varieties in cheese flavors and interactions between cultures, DSM created the Flavor Wheel™ to enable producers to get signature cheeses to market faster and highlight the unique taste complexity that can be layered with the right ingredients. With this selection of adjunct cultures, you can create a signature cheese with ease. It's also important to note that the dosage of cultures – and the enzymes the cultures produce – also have a big impact on flavor due to the speed they breakdown the sugars and proteins, usually lactose, casein, peptides and amino acids. For example, if too little culture is added, the fermentation process can be slow so the cheese flavor could be underdeveloped. On the other hand, if too much culture is added, the bacteria can consume all the lactose and casein too quickly, resulting in a sour and bitter taste and an undesired texture.

Creating standout Gouda and cheddar

DSM's Flavor Wheel has the versatility and depth to help cheesemakers design a variety of cheese flavors. Looking specifically at cheddar, we have a range of cultures that can support everything from block cheddar to table cheddar to specialty cheddar. For a reliable, consistent acidification performance and robust culture rotations for more efficient cheese production, we can focus on building specific flavor profiles that best suit your brand. Whether that's balanced and neutral flavor development with a fast acidification process, a classic British cheddar taste profile as a base to enhance and differentiate, or an authentic cheddar style that has an early flavor development, evolves in savory complexity over time and contains gas producers for a slightly open texture – our culture portfolio and formulation expertise means we can help you craft a standout cheddar application.

Looking at Gouda cheese, everything from young to aged Gouda can be upgraded to a signature cheese. Here, a characteristic and consistent taste and texture throughout the cheese's shelf life is paramount. Here we have specific solutions to create such a characteristic taste, flavor and texture. You can choose endless flavor solutions to create your own signature cheese, like bouillon, fruity, citrus and sweet while at the same time reducing bitterness levels, improving texture and accelerating ripening time.

Getting more cheese for your money

While taste and texture are king for consumers, more and more are increasingly price motivated. We have been working hard to help our customers improve yield to help keep costs as low as possible so they can price competitively for these consumers.

Our Delvo®Cheese cultures are great examples of the success we've had in improving yield in specialty cheeses. For example, DelvoCheese CP-120 help cheesemakers improve the efficiency cost-effectiveness of their mozzarella processing. This culture delivers a consistent acidification in cheese cultures to extend shelf life while improving the elasticity and browning of the cheese. Meanwhile, DelvoCheese CP-500 takes process efficiencies to the next level by packing more moisture into the mozzarella so cheesemakers can get up to 1.3% more cheese from the same inputs. It even set a new standard in cheese yield, something that



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will win over cheesemakers and consumers alike. Thanks to our team's know-how, these cultures can also improve the stretch and melting of mozzarella, as well as impart a more buttery taste and improve browning, making it the perfect crowd-pleasing topping for everyone's favorite – pizza.

(Bio)Protecting the planet with longer lasting cheeses

In Europe alone, 20% of dairy products are wasted every year – contributing to the carbon footprint amassed by overall food waste worldwide. Manufacturers are therefore under increasing pressure to protect against spoilage in cheese and maintain flawless production to avoid waste from quality downgrades. And with consumers looking closely at ingredient lists, choosing the right type of preservation solution is an integral part of cheese production.

Cultures like DSM's Dairy Safe offer a natural way to avoid spoilage, like late blowing, to guarantee high quality cheeses and reduce costly losses. These cultures are used in a rotation system with several phage alternatives, ensuring consistent output and performance. This offers a proven and widely recognized solution for acidification, flavor development and protection against spoilage, without the need for artificial preservatives.

Looking for your next signature cheese creation?

Creating signature cheeses with a great taste and texture, improved yield and efficient processing can feel like a lot to ask. Thankfully, specialist cheese cultures, paired with market-leading insights means we're up to the challenge. DSM's dairy cultures along with its complimentary portfolio of enzymes, bio preservatives, phage-kit, coatings and ripening solutions, work together to solve common production challenges and provide you with the tools you need to create great tasting and sustainable cheese products so you and your consumers can enjoy it all.

For more information on DSM's broad range of cheese cultures and other solutions for unique, authentic cheese visit https://www.dsm.com/food-beverage/en_US/markets/dairy/cheese.html.

- 1 <https://www.statista.com/statistics/547588/cheese-consumption-volume-european-union-28/>
- 2 <https://www.euromonitor.com/cheese-in-western-europe/report>
- 3 <https://store.mintel.com/report/germany-cheese-market-report>
- 4 FAO, 2020, <https://www.fao.org/3/i4807e/i4807e.pdf>

Arla Foods Ingredients

High-protein ready-to-drink tea and coffee

Arla Foods Ingredients served up innovative concepts for high-protein ready-to-drink (RTD) tea and coffee at Vitafoods Europe. The market for functional RTD teas and coffees is predicted to grow 6-7% by 2026 (Innova Market Insights) creating opportunities for both sports nutrition manufacturers and mainstream health brands. To support them, Arla Foods Ingredients has created two inspirational new RTD concepts:

- » A cold brew coffee that works as either a morning caffeine boost or a pre-workout energizer. High in protein, calcium and caffeine, but low in sugar and fat, it will appeal to the 58% of consumers who choose functional food and beverages that increase their energy levels.
- » A refreshing RTD tea, designed as the perfect mid-afternoon pick-me-up. Flavored with yuzu and high in protein and calcium, it's tea but with an invigorating new twist, and is ideal for the 57% of consumers who choose products that support strong and healthy bones.

Both concepts owe their high protein and calcium content to Lactodan MicelPure, a micellar casein isolate produced using gentle membrane filtration technology. As well as allowing on-pack nutrition claims, its benefits include a mild milky taste and low viscosity throughout a product's shelf life. During production, Lactodan MicelPure offers outstanding heat stability, unlocking a range of processing, packaging and flavor options.



Arla Foods Ingredients showed concepts for high-protein ready-to-drink tea and coffee at Vitafoods (photo: AFI)

Troels Nørgaard Laursen, Director for Health & Performance at Arla Foods Ingredients, said: "Consumers are increasingly seeking out beverages that are novel and convenient and also offer a nutritional boost. RTD teas and coffees with functional benefits are riding a major wave right now, and these concepts demonstrate how they can deliver an on-trend combination of protein, calcium and caffeine."

Other concepts on show included a multi-textured bar with protein in every layer, a special edition of which has been created for Vitafoods, and Rehydrate & Restore – a clear refreshing RTD beverage solution which combines protein with electrolytes.



The family-owned company Vepo Cheese in Bodegraven, South Holland, impressively proves that “typically Dutch” also includes innovation and growth (photo: KUKA@Vepo Cheese)

What a cheese

Vepo Cheese relies on fully automated production line



Author: Sebastian Schuster, KUKA, Director Marketing & Communications, E-Mail: Sebastian.Schuster@kuka.com

Dutch family brand Vepo Cheese relies on a fully automated production line: two KR AGILUS hygiene robots from KUKA process cheese into sticks and feed them to a packaging machine. This has raised the standard of hygiene – and doubled production capacity.

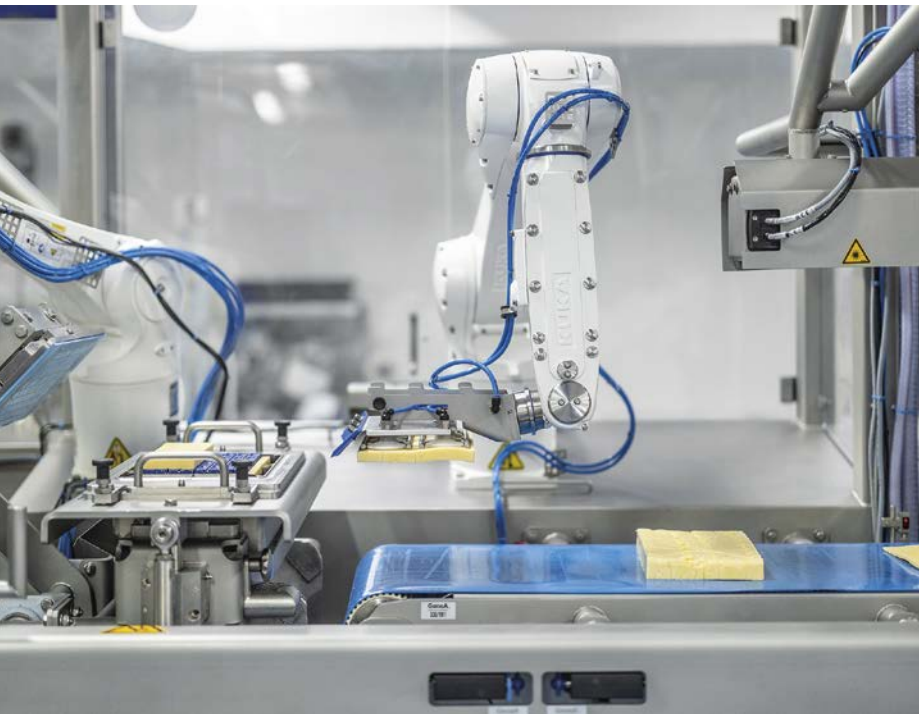
100 years of cheese tradition

Among cheese lovers, the Netherlands is considered the Grande Nation. A look at the export figures also shows that the Netherlands is at the top of the world: With 3.8 billion euros, they are in second place behind Germany (4.5 billion euros), according to OEC World Statistics. Cheese and the Netherlands belong together – that's what Mrs Antje has stood for for over 50 years. And the family business Vepo Cheese in Bodegraven, South Holland, impressively proves that “typically Dutch” also includes innovation and growth.

“When we talk about cheese, it's all about what we love and what drives us,” says Mark Verkleij, CEO at Vepo Cheese. “Generation after generation we work on improving the cutting, grating, portioning and packaging of (semi-)hard cheese. That's how we came up with the idea of an automated production line for our cheese sticks.”

10,000 cheese sticks per hour

The focus of Vepo Cheese, with its more than 100 years of family tradition, is on the European market. Like other companies, the Dutch had to face the increased productivity as well as hygiene requirements in food processing. “Only as many people as necessary should touch the cheese directly,” recalls Hugo van Put, Technical Operations Manager Vepo Cheese. “At the same time, we wanted to double the production capacity for cutting our cheese



The LAMBDA 405 is a cutting machine for individually packaged cheese snacks such as sticks and allows the production capacity for cutting cheese sticks to be doubled from 5,000 to 10,000 pieces per hour (photo: KUKA@Vepo Cheese)



"The compact KR AGILUS HM was our first choice," says Robin de Groot from system integrator Groba. "This is because it is designed for the highest operating speeds. This enabled us to achieve Vepo Cheese's goal of doubling the number of sticks to 10,000 per hour." (photo: KUKA@Vepo Cheese)

sticks from 5,000 to 10,000 pieces per hour. To achieve this, we were looking for a strong automation partner." They found one in system integrator Groba and KUKA. Today, the LAMBDA 405 with two KR AGILUS HM ("Hygienic Machine") ensures fully automated operation.

"The machine has never been built before"

The LAMBDA 405 is a slicing machine for individually packaged cheese snacks such as sticks. "Together with Groba, we adapted the robot unit to our needs and our packaging machine," says Hugo van Put. And Robin de Groot, Managing Director Groba, adds: "The machine has never been built in this form before."

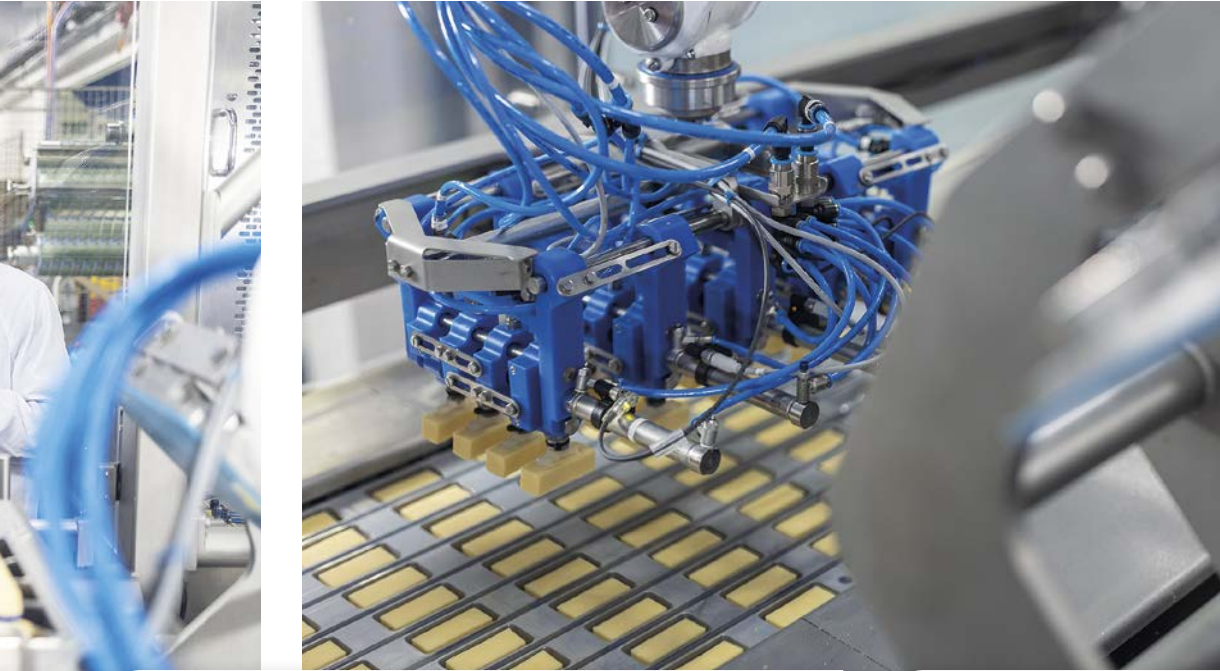
And this is how it works: The operator only has to select one of the two pre-configured programmes, depending on the type of cheese. The cheese is then transported into the machine via a conveyor belt. Its length is measured via the distance between the cutting blade and the gripper and the number of cheese slices is calculated from this. The LAMBDA 405 then cuts the slices with a defined thickness, which thus influences the height of the sticks and the portion weight. Excitingly, a checkweigher ensures that the deviation of the weight per stick is minimal at best. This is because it gives the slicing machine a signal to cut thicker or thinner slices if necessary.

Minimal cutting loss with maximum precision

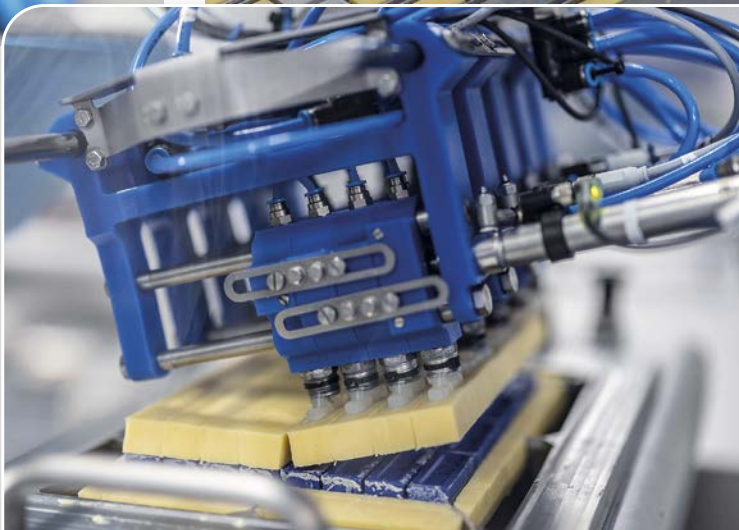
The slices then fall onto a conveyor belt, which also serves as a buffer when the cheese is changed. Above the conveyor belt, a camera scans the position of the cheese slice – and passes the information on to the first KR AGILUS HM. In this way, it knows exactly how to grip the slice and place it on the cutting plate. "That was a difficult part for us," says Robin de Groot. "Because the robot has to grip the slice exactly and place it centrally under the knife so that the sides are the same length when cutting and no crumbs are produced. At first it was challenging to transfer the data from the camera to the robot. But thanks to the interface support from KUKA, it worked out."

Stick by stick to success with hygiene robot

The camera also detects slices that do not meet certain minimum dimensions. These are discharged into a Eurobin to be made into grated cheese later. The second KR AGILUS HM picks up the finished cheese sticks with a vacuum spreading unit and places them in the cassettes of the packaging machine. "Where previously many steps were done manually, the new line now works completely automatically," says Hugo van Put. "Nobody touches the cheese, only the robot. This has not only increased hygiene and significantly minimised cutting loss, but also doubled our capacity."



The second KR AGILUS HM picks up the finished cheese sticks with a vacuum spreading unit and places them in the cassettes of the packaging machine (photo: KUKA@Vepo Cheese)



"Nobody touches the cheese, only the robot. This has not only increased hygiene and significantly minimised cutting loss, but also doubled our capacity," says Hugo van Put (photo: KUKA@Vepo Cheese)

With KUKA.Sim, details of robot applications can be simulated before commissioning and then transferred 100 percent to the real controller (photo: KUKA@Vepo Cheese)

A clean business for direct food contact

Hygiene requirements in food processing are high, so a special robot was needed for the production line at Vepo Cheese. The KR AGILUS in the "Hygienic Machine" version meets these requirements. Corrosion-resistant surfaces, food-grade lubricants and the use of stainless steel parts guarantee the highest level of hygiene. The cleaning-critical electrical interface is not located in the primary contact area, but underneath the robot. "The compact KR AGILUS HM was our first choice," says Robin de Groot from system integrator Groba. "Because it is designed for the highest working speeds. This enabled us to achieve Vepo Cheese's goal of doubling the number of sticks to 10,000 per hour."

A strong team with strong software

And something else helped Groba with the integration: the simulation software KUKA.Sim. With this software, details of robot applications can be simulated even before commissioning and then transferred 100 percent to the real controller. "We used KUKA.Sim to run the movements of the KR AGILUS and thus identify potential problems," says Robin de Groot, "for example with regard to the high speed of the system." Another advantage: via virtual reality goggles, the customer himself can also see his plant even before it is up and running. "We are absolutely satisfied with the solution for our cheese sticks," sums up Hugo van Put. "Together with Groba and KUKA, we have built a line that delivers more output, more safety and quality compared to manual production."

Emmi uses ADD*ONE

INFORM optimises demand planning and inventories

Emmi products from Switzerland now reach the 60 or so export countries more quickly (photo: INFORM)



(photos: INFORM)

Leading Swiss dairy Emmi (sales CHF 3.9 billion) has transformed its international decision-making and planning processes in supply chain management with the "ADD*ONE" software in the direction of integrated planning. By using the specialised solution, the group not only achieved considerable cost savings, but also halved the replenishment time for many items and scheduled over 6,000 products 18 months in advance in each case.

The optimisation software for demand planning and inventory optimisation from the Aachen-based developer INFORM enables Emmi to implement an Integrated Business Planning (IBP) process across all locations. The system transparently brings together all information along the supply chain and integrates sales, inventory, supply chain and financial data in a single planning step. The introduction of the forecasting and optimisation algorithms has enabled Emmi to realise important market opportunities that would not have been identified previously due to a lack of transparency, particularly through the optimised use of goods.

Rolling demand and revenue planning

The goal of the project was to set up medium and long-term rolling sales and revenue planning processes tailored to supply chain

management. Demand planning for the range of dairy products requires complex planning decisions, not least because of the rapidly fluctuating demand and the heterogeneity of the many regional markets. After the uniform introduction of SAP as an ERP system, Emmi quickly realised that the existing solutions did not meet the requirements for a consistent implementation of a cross-location Integrated Business Planning (IBP) process. Therefore, the milk processor was looking for a solution that could further process data from SAP and derive a rolling 18-month forecast plan from it.

Strategic planning supported by algorithms

A choice was made for the forecasting and optimisation algorithms of the German software developer INFORM. "We now plan sales, revenue and cost development integrated in a single process," says Stefan Ziswiler, Head Processes & Systems at Emmi. "This allows us to transparently weigh up opportunities and risks, simulate scenarios and plan strategically." The demand planners only have to deal with the items for which the algorithms forecast uncertainties. The add-on system, which can be used for any ERP, is used in demand planning at the 15 locations of the home market in Switzerland as well as in Germany. Rollouts for other countries such as the USA are in preparation.



"We now plan sales, sales volume and cost development integrated in a single process."

Stefan Ziswiler, Head Processes & Systems at Emmi

Since last year, Emmi has also been using inventory optimisation systems from INFORM to improve the balance between low inventories and delivery capability. "The system automatically calculates location-dependent requirements based on the forecasts and informs the respective planners, who then trigger production at the respective plants," says Stefan Witwicki, Head of Inventory & Supply Chain at INFORM. The system includes factors such as transport times, storage capacities or the remaining shelf life of articles in its calculations. The optimisation software decides independently which forecasting method to use in which situation.

Emmi sees a further advantage in terms of replenishment time, which is halved by using the software. This means that goods from Switzerland reach the 60 or so export countries more quickly, for example Germany, where the company sells around 150 of the total of 6,000 different articles. Whereas it used to take three weeks from the time the order was placed until the goods arrived, today the goods are already on site after about ten days. "As a result, we achieve better remaining shelf life and are on the market faster," sums up Head P&S Ziswiler at Emmi.

INFORM (inform-software.com) develops software for optimising business processes by means of digital decision making based on artificial intelligence and operations research. It complements traditional IT systems and increases the profitability and resilience of many companies. While data management software only provides information, INFORM systems can analyse large amounts of data in a matter of seconds, calculate numerous decision variants and propose the best possible solution to the user for implementation. More than 950 software engineers, data analysts and consultants support more than 1,000 customers worldwide. Sales planning, production planning, personnel deployment, logistics and transport, inventories and supply chain management as well as fraud prevention in insurance, telecommunications and payment transactions are optimised.

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The importance of color and flavor in dairy



Author:
Eleanor Johnson, data analyst at FMCG Gurus



Consumer Experts, Insight Driven

Taste and flavor are the main factors consumers base their food and drink choices on. Despite many consumers now being more conscious of their health and seeking products which will help facilitate their health goals, taste is something that consumers do not wish to compromise on. This article will explore the importance of color and flavor in the dairy category.

Flavor

As taste and enjoyment are the main reasons consumers turn to certain food and drinks, brands will need to continue to create flavor innovation in dairy products. Our research has found that of the people who consume dairy, 84% said taste is the most important factor when choosing dairy products, making it the most important

factor. Our research has found that in dairy (yogurt, ice-cream, milk, and dairy drinks), the most popular flavors are vanilla, chocolate, and chocolate-hazelnut. Our research also shows that nearly three quarters of consumers like products with new and unusual/exotic flavors. In the dairy category this could be flavors such as banana spice



(photo: Ben & Jerry's)

and caramel apple, with around 1 in 5 saying they like these flavors in dairy products.

One way to create excitement and buzz around a product is the use of limited-edition flavors, nearly two thirds of global consumers said that they like limited edition flavors as they are often more experimental. Our research has found that ice cream is a popular category for limited edition flavors, with 67% of consumers agreeing this.

Consumers are likely to believe that flavor innovation could be improved within the dairy category, with 49% of consumers believing it could be improved in milk, 43% in ice-cream and 39% in yogurt. The dairy industry should push the boundaries of affordable indulgence, focusing on flavor innovation.

Color

While consumers can show a preference for exciting flavors, color is preferred to be kept simple. 52% of consumers state that they associate food and drink with specific colors and do not want to change this, showing how they would rather stick to what they know they like. Furthermore nearly 8 in 10 consumers who do not like new and experimental colors say this is because they do not think they are natural. Naturalness is highly important to the consumer, associating this with being safer and better for their health.

This consumer view is displayed in dairy. 71% of consumers state that the color white is appealing in dairy products, making it the preferred color, followed by green which is 41%. This is due to white being perceived as more natural and without any artificial colors added, which can be seen as not good for health.

Furthermore, consumers are likely to avoid products which contain artificial colors, 39% of consumers who buy dairy check the nutritional labelling for artificial colors.

Cost of living

With nearly 6 in 10 consumers believing that their country is currently in a recession, people are going to be more conscious of what they're spending their money on. This means brands will need to continue to seek

ways to appeal and enhance perceptions of value in this recessionary era, as consumers continue to scrutinize what is essential and where costs can be cut.

One way that brands could seek to do this is with nostalgic flavors, our research has found that 2 in 5 consumers say that over the last twelve months they have sought out products and flavors that remind them of the past and simpler times. In uncertain

times consumers can seek moments of comfort, consumers may seek comforting and retro flavors that help elicit an emotional reaction.

This article is based off FMCG Gurus Dairy, Top Tend Trends for 2023, The Importance of Flavor, Color & Texture in 2022.

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When productivity and sustainability go hand in hand

Chr. Hansen has 149 years of experience using nature's own resources as a powerful tool for dairies to optimize processes for greater efficiency and sustainability. We work with our customers to improve yield, reduce waste, reduce production time and more.

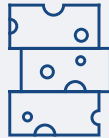
Beside are specific examples of how yogurt and cheese manufacturers have worked with Chr. Hansen to maximize productivity, reduce costs and get the most out of their milk.

Small increases in productivity can have a big impact

Chr. Hansen Technical Account Managers have the experience and expertise to work with dairy processors around the world to identify the best culture and enzyme solutions and apply optimal process parameters to existing and new recipes.



Reducing the protein content in yogurt, combined with the latest culture innovations, can help manufacturers cut costs. Chr. Hansen's YoFlex® Premium range consists of texture-forming cultures that compensate for the loss of texture when dry matter is reduced. With these unique cultures it is possible to reduce the protein content by 0.2% - and in some cases even more.



With the right excipients and production process, manufacturers **can reduce dry matter in their cheese**, which can reduce costs without compromising flavor and texture. Market-leading coagulation enzymes with low proteolytic activity, such as CHY-MAX®, can improve ingredient transfers and water retention, resulting in increased cheese yield while maintaining high quality.



Reducing the maturation time is another lever to improve efficiency. Cheese makers have been able to incorporate cultures to accelerate the cheese's ripening and get it to market ahead of schedule. While natural maturation plays an important role in developing intense flavor, Chr. Hansen's maturation solutions naturally enhance desirable flavor notes, only faster.

MULTIVAC Pouch Loader

More automation,
greater efficiency,
better ergonomics

MULTIVAC's Pouch Loader (MPL) for chamber belt machines is a semi-automatic solution, which significantly improves the filling of the film pouches and the loading into the packaging machine, when it comes to overall performance, efficiency, hygiene and ergonomics. Up to 40 percent reduction in personnel costs and a significant increase in efficiency can be achieved, when compared to manual loading – and all with maximum flexibility in terms of products and pack formats.

The operating principle of the MPL is simple: one operator positions the products on the infeed conveyor of the machine. Two other people then load the products by pulling the film pouches over the loading conveyor, so that the product can be conveyed



The MPL reduces workforce requirements (photo: MULTIVAC)

automatically from the conveyor into the film pouch. Then it is simply sufficient to turn the film pouch through 90 degrees, before it is placed on the machine conveyor and subsequently vacuum packed and sealed. When compared with the manual procedure,

which generally requires at least five people, only three operators are necessary with this semi-automatic solution. Although personnel costs can be reduced by up to 40 percent, the cycle output can still be fully utilised.

Enzymatic production of technofunctional milk protein hydrolysates



Authors: Dr. Jacob Ewert, Global Application Manager & Senior Application Scientist, IFF; Prof. Dr. Lutz Fischer, Head of Department of Biotechnology and Enzyme Science at the University of Hohenheim, Germany

Proteins are an elementary component of foods and significantly determine their textural, sensory and nutritional properties¹. The functionality of proteins can be roughly divided into technofunctional properties (e.g. solubility, gelling, emulsifying and foaming behavior), physiological properties and organoleptic properties (taste, mouthfeel). Each of these properties is specific to a protein, i.e. dependent on its amino acid sequence, size, conformation and charge, as well as its processing and the respective food system itself².

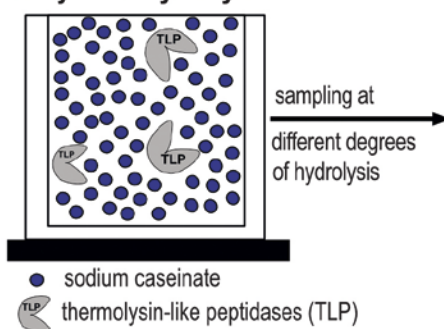
With regard to the technofunctional properties of milk proteins, especially their behavior at interfaces (foaming and emulsifying properties) is often insufficient³. This limits the use of milk proteins in emulsified or foamed food systems, so that an emulsifier (surfactant: surface-active agent) must be added to such foods (e.g. mouse, dressings, ice cream).

The technofunctional properties of milk proteins can, however, be changed by an enzymatic hydrolysis with peptidases. During the hydrolyses, proteins are cleaved into smaller fragments (peptides) or amino acids⁴. Peptidases are broadly classified

depending on the location of the cleavage site (regioselectivity), as either endopeptidases (cleave within the polypeptide chain) or exopeptidases (cleave from the C- or N-terminal end of the polypeptide chain)⁵.

Depending on the specific peptidase(s) chosen and their selectivity, the above-mentioned interfacial properties can be specifically modified in a food system⁴. Such protein hydrolysates are usually produced in batch processes. Here, the peptidase preparation is added to a protein solution or a protein-containing food and incubated under defined conditions (i.e. temperature, time and pH). To ensure the microbial stability of the process, such enzymatic hydrolyses are usually carried out at temperatures $>55\text{ }^{\circ}\text{C}$, $<15\text{ }^{\circ}\text{C}$ or at a $\text{pH} < 5$. For example, caseinates were hydrolyzed at a process temperature of $65\text{ }^{\circ}\text{C}$ without microbial contamination⁶. Here, a thermolysin-like endopeptidase (TLP) was applied, as this enzyme had suitable properties for a hydrolysis at $65\text{ }^{\circ}\text{C}$ (residual activity after 24 h = 80 %). A hydrolyses at such high-temperature conditions was not feasible for whey proteins, due to their different solubility and heat-stability, compared to caseins. Alternatively, a $\text{pH} \leq 3$ was determined to be suitable for a whey protein

enzymatic hydrolysis



Caseinate solution



+ Endo-peptidase



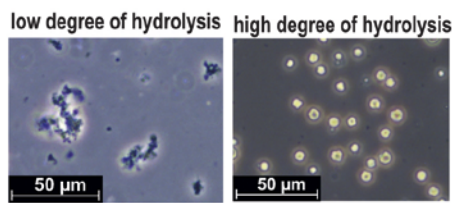
hydrolyses, to ensure a microbial stable process without protein denaturation [7]. The endopeptidase preparation aspergillopepsin was applied for this hydrolyses, at 45 °C and pH < 3 (residual peptidase activity after 24 h = 40-60 %). When the target degree of hydrolyses was reached, the peptidases were inactivated either by heat (in the case of TLP) or by a pH shift to the neutral range (in the case of aspergillopepsin). Such enzyme inactivation avoided subsequent product changes and an uncontrolled progression of the enzymatic hydrolysis during shelf-life.

Besides the process conditions and the peptidase preparation used, the degree of hydrolysis of the protein (increase in free amino/carboxy groups) majorly impacts the resulting foaming or emulsifying properties of the hydrolysate⁴. The optimal degree of hydrolysis for increased interfacial properties must be determined empirically in kinetic investigations. The optimal degree of hydrolysis for increased interfacial properties of caseinate, hydrolyzed with TLP, was only about 2%. At this low degree of hydrolysis, the protein fragments were increased in their hydrophobicity and ac-

cumulated into network-like agglomerates (supramolecular structures) (see Fig. 1). The foam stability of this hydrolysates was increased by 31 % and the emulsion stability by even 210 %⁶.

Furthermore, the optimal degree of hydrolysis for increased interfacial properties of whey protein isolates hydrolyzed with aspergillopepsin was also only approx. 1-2%. Here, the emulsion stability of the final hydrolysate increased up to 71 %⁷. However, both the caseinate and whey protein hydrolysates were perceived

hydrolysates form supra-molecular structures



investigation of
interfacial properties

tailored functionality

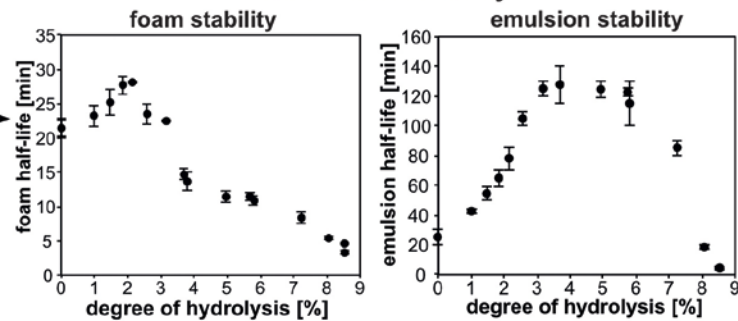


Figure 1: Production of technofunctional caseinate hydrolysates in a batch process and their interactions at interfaces. The peptide from the hydrolyses form protein-agglomerates (supramolecular structures), which stabilize and cross-link at oil/water and air/water interfaces.

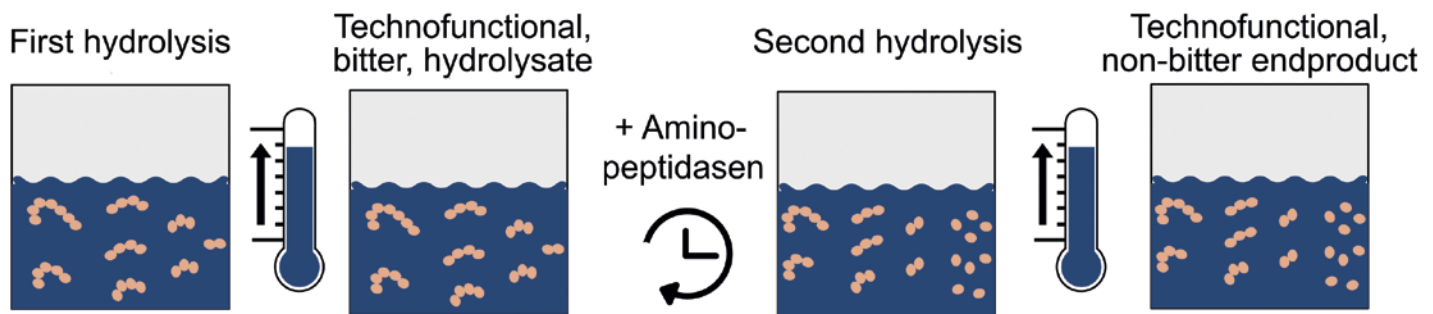


Figure 2: Scheme of a two-step batch process for the production of technofunctional caseinate hydrolysates with a non-bitter taste. An inactivation step (heating) was carried out between the 1st and 2nd hydrolyses.

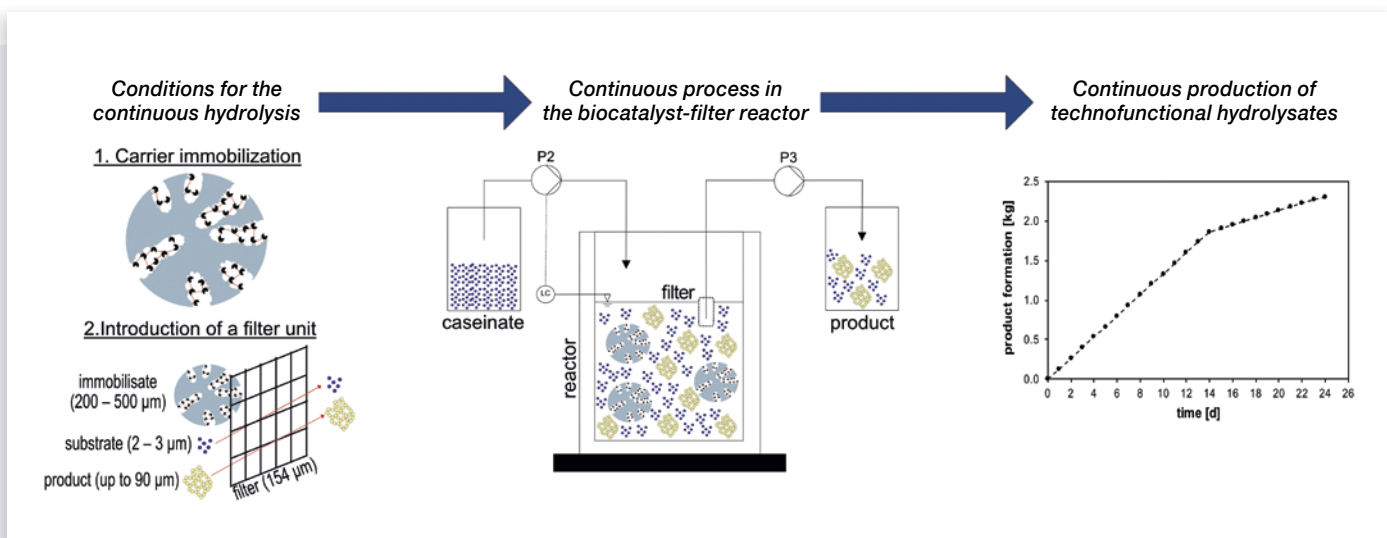


Figure 3: Scheme of the enzyme-filter-reactor (EFR) process. The thermolysin-like peptidase (TLP) was immobilized on a carrier in advance. The immobilization retained the biocatalyst in the reactor and ensured a continuous product formation through the filter unit.

as "very bitter" in sensory studies. The bitterness is caused, among other factors, by hydrophobic amino acids and/or proline in smaller protein fragments and can be reduced by a subsequent, second hydrolysis step with exopeptidase(s) [8]. A complete debittering of the hydrolysates was possible with the exopeptidase PepN from *Lb. helveticus* or with a commercial, endopeptidase-free exopeptidase fraction from *A. oryzae* (Fig. 2). The improved technofunctionality of the protein hydrolysates was still maintained after the second hydrolysis step with exopeptidases⁸.

Although batch processes can be easily established and demand low to no equipment investment, they have certain disadvantages. These disadvantages include that i) the enzymes can only be used once, which results in high enzyme/process costs, ii) the resulting protein fragments/amino acids can lead to product inhibition of the peptidases, which slows down the overall hydrolysis step and iii) the quantitative and qualitative composition of the final protein hydrolysate can vary from batch to batch⁹.

Continuous processes offer an alternative to batch processes. Here, the peptidases are immobilized, and either bound to a carrier material or retained as soluble enzymes in a so-called enzyme membrane bioreactor (EMBR)¹⁰. Continuous hydrolysis

processes ensure a maximized enzyme usage and a constant permeation of small protein fragments and amino acids from the process chamber (maximized product formation, reduced peptidase inhabitation). Furthermore, the protein hydrolysates obtained in the permeate have a defined composition and consistent technofunctionality [11]. As an example, the previously described batch process for caseinate hydrolysate with improved interfacial properties was translated into a continuous process as well [10]. A specifically designed enzyme-filter reactor (EFR) was used for this process (Fig. 3). The TLP was immobilized on a carrier before use in the EFR. This immobilization prevented any permeation of the enzyme from the EFR (Fig. 3). The continuous hydrolysis procedure was carried out at 65 °C for 24 days. The process was superior compared to a batch process regarding its space-time yield (+155%) and enzyme productivity (+695%). The continuously produced caseinate hydrolysate was comparable to the product from the batch process, regarding its foaming and emulsifying properties¹⁰.

However, the carrier immobilization necessary for the EFR process includes a separate process step and displays a hurdle for small and medium-sized food producers. As an alternative to the EFR, a two-step EMBR was developed for the continu-

ous production of caseinate hydrolysates¹². Here, the enzymes were free in both EMBR systems and only physically immobilized by an ultrafiltration membrane (cut-off: 10 kDa) and due to their molecular size (Fig. 4). Despite the enzymes itself, smaller protein fragments were able to pass through the membrane, while the native proteins and the large peptidases were retained. In the first EMBR step, the caseinate was hydrolyzed with TLP to its maximum achievable degree of hydrolysis of $7.3 \pm 0.2\%$. In the second EMBR step, the permeate from the first EMBR was further hydrolyzed and debittered with a commercial exopeptidase. Due to the high degree of hydrolysis ($21.8 \pm 0.8\%$) obtained, the final product showed no improved foaming or emulsifying properties, but had an increased antioxidativity (+40%). Furthermore, the final hydrolysate was perceived as "not bitter" compared to untreated caseinate¹².

Overall, the examples demonstrate the application potential of peptidases for the batchwise or continuous production of technofunctional milk protein hydrolysates. The selection of a suitable enzyme or enzyme preparation is decisive for success, so that both the desired selectivity and the selected process conditions, can lead to a microbially harmless product with a non-bitter taste. As an example for a potential

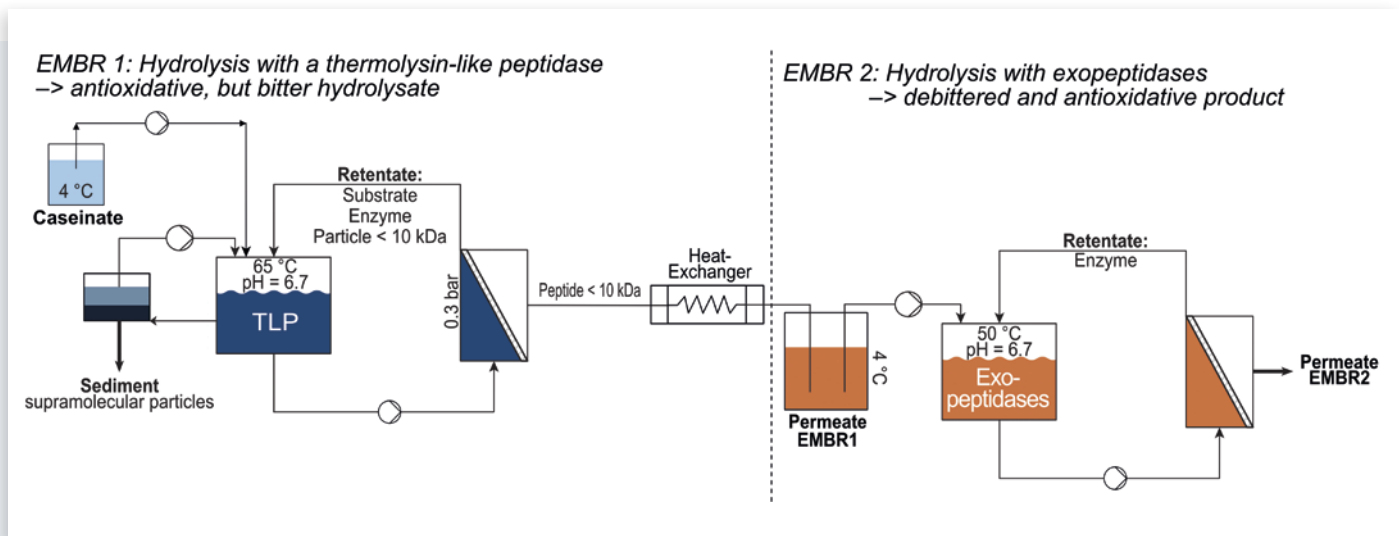


Figure 4: Two-step EMBR process for the production of antioxidative, debittered protein hydrolysates. The enzymes (thermolysin-like peptidase = TLP, exopeptidases) were physically retained in the process via an ultrafiltration membrane.

application of such hydrolysate, a caseinate protein hydrolysate with improved techno-functionalities, produced like described here, was used as a replacer for emulsifiers in ice cream¹³. The resulting ice cream properties (overrun, stability, sensory properties) were comparable to those of an ice cream produced with a commonly used emulsifier (mono- & diglycerides of free fatty acids). However, compared to the commercial emulsifier an INS- or E-number declaration was no longer necessary for the caseinate hydrolysate. Therefore, the ice cream with the hydrolysate could be considered as clean label regarding its emulsifier¹³.

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Edible polymer additives

Create safer packaging



Author: Ulrik Aunskjær, Global Industry Director, Bio-Speciality Additives, Palsgaard A/S

Consumers are not just becoming increasingly interested in food ingredients and how they're produced, but also in the safety and sustainability of the plastic packaging foods come in. Here's how applying the capabilities of plant-based emulsifiers to packaging materials presents an easy, affordable way to lift safety and ease production.

Why plastic packaging products need additives

Today's food and non-food packaging applications are characterised by a wide range of different polymer compounds, films and foams formulated to meet important functions in terms of processability, handling, safety and usability.

Among the most significant features, food-grade emulsifiers can be used as polymer additives to enhance and ensure long-lasting anti-static and anti-fogging performance of PP and PE packaging products. Both properties are instrumental for instance in maximising the aesthetic appeal and shelf-life of packaged food. In most cases, these effects rely on migratory internal additives. However, anti-fog or anti-static additives are also available as coatings for formulations or applications where the migratory route may not be feasible. Further polymer additives serve as effective mould release agents, ageing modifiers or pigment dispersants.

How anti-static and anti-fog additives work

In a hungry world, packaging solutions must extend the shelf-life of products and reduce food losses while at the same time maintaining the aesthetic appeal of the packaged items. Palsgaard is addressing these needs with a range of surfactants designed to reduce the fogging and the accumulation of static electricity of the packaging material.

Fogging on the inner packaging surface can occur when moisture in the packaged product, such as food, condenses due to varying conditions of ambient humidity and temperature during transportation and storage. An effective anti-fog additive will lower the surface tension so that condensed moisture will spread as a continuous thin film across the surface. This helps reduce food waste as it preserves the clear view on the food and protects its freshness.

Another critical function of surfactants in packaging materials is to prevent the accumulation of static electricity on the surface. Static build-up attracts dust, which creates an unhygienic look of the product. Moreover, it can result in serious processing and downstream problems, such as reduced film rolling speed, congestions on conveyor belts, impaired stackability of moulded or thermoformed items, and poor sealability of packages for powdery food. In electronics packaging, it may even damage the packaged product. Palsgaard's plant-based anti-static additives interact with ambient moisture to form a conductive layer that will effectively dissipate the static.

Why plant-based additives from Palsgaard are 100 percent food-safe

Palsgaard's additives business started in 1917 with natural emulsifiers designed to improve the taste, stability and texture of foods from margarine to ice-cream and chocolate coatings. Beyond their fundamental ability to mix oil and water, these emulsifiers were soon expanded into a full range of food-safe additives to reduce spattering, prevent thermal shock, control viscosity, facilitate aeration and extend the shelf-life of food. Many of the very same emulsifiers have recently also proved effective as functional polymer



Anti-static additives prevent static build-up during production, handling, and usage of plastic products. Static build-up can be a hazard during production as it can result in a sudden electrostatic discharge which can hit personnel or short circuit the machinery. During handling and use, static electricity can make the plastic products virtually impossible to separate or cause dust attraction, which makes it hard to seal the packaging properly or causes the product to look dirty and uninviting.

additives. While their bio-based chemistry provides the flexibility to create new or tailor-made molecules for properties such as anti-fogging, it retains their natural safety.

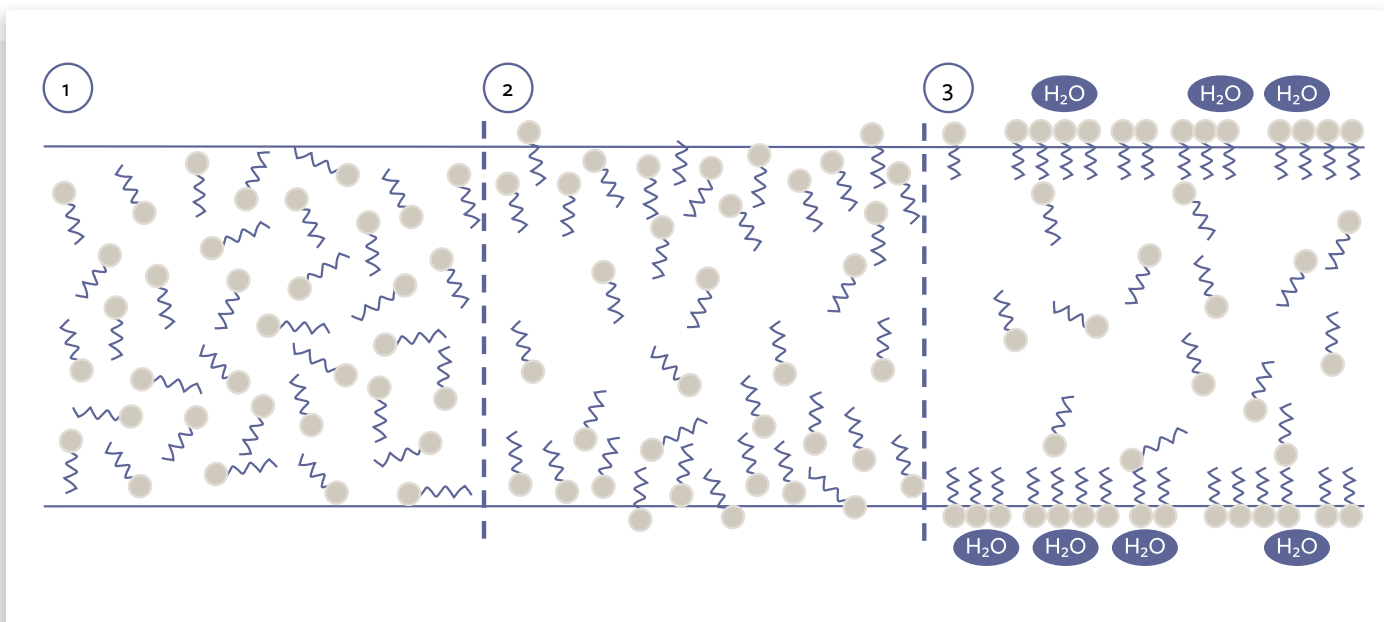
This is a significant benefit especially with regard to the desired migration of anti-static and anti-fogging additives. Normally, there are strict migration limits for additives in food packaging to eliminate health hazards and prevent changes in the taste of the packaged food. However, as virtually edible additives, most of our plant-based Einar® products are not subject to these constraints. In fact, they can even help formulators and compounders reduce the overall additive concentration in the polymer without compromising their functional effectiveness. All are FDA and EU as well as kosher and halal approved for food-contact applications.



An efficient anti-fog additive can help reduce food-waste as it will lower the surface tension on the packaging film so that condensed moisture will spread as a continuous thin film across the surface. This preserves the clear view on the food and extends its shelf-life by protects its freshness.

How plant-based additives excel in effectiveness and efficiency over fossil-based competitors

With anti-stats, for instance, this is measured as static decay time or surface resistivity. For fogging, tests are run to simulate cold storage of products such as salads and hot-fill applications such as newly cooked meat. In both scenarios, Einar plant-based additives have shown that they can easily match or outperform the effectiveness of traditional fossil-based competitors, including ethoxylated amines/amides and polyethylene glycolers, at similar or lower concentrations.



Einar additives are migratory additives, meaning that they migrate to the surface of the polymer and place themselves at the interspace between the plastics packaging and the food it contains – and as Einar additives are plant-based and food-grade you don't need to worry about food safety.

As ageing modifiers in PE and PP compounds, they are successfully replacing ethoxylated amine and amide modifiers to support the release of excess blowing agents from foamed articles. Moreover, they have no stress-cracking impact on packaged electronic components. In injection and compression moulding plastics, they combine excellent mould release and denesting with high heat and process stability at low loading levels.

In addition, the plant-based technology has proven extremely effective for the dispersion of pigments, fillers, and other additives in polymer masterbatches at a significantly lower concentration than traditional waxes in the market. This means that pigment loadings can be reduced to achieve the desired colour strength, which saves cost, facilitates colour changes and enhances the sustainability profile of the polymer formulation.

Palsgaard's plant-based anti-fouling additive for the polypropylene and polyethylene polymerisation process has been developed especially to remove severe concerns about the ethoxylated amine chemistry currently used. As a non-toxic and food-contact approved anti-fouling additive, the product offers a drop-in regulatory-compliant solution to replace incumbent ethoxylated amines and can also be used as a more efficient alternative to sorbitan monooleates. This makes it an ideal process additive in the polymerisation of PP and PE materials for sensitive applications, including e.g. medical devices and baby food containers.

Why plant-based polymer additives from Palsgaard offer unmatched sustainability

As the plastics industry is transforming into a circular economy, we are seeing increased use of packaging polymers derived from renewable, non-fossil and recycled resources. This has resulted in a

growing demand for material formulations using more sustainable functional additives to help minimize fossil depletion and waste.

Palsgaard's bio-based additives are polyglycerol esters or glycerol mono-stearates made exclusively from vegetable fatty acids. Derived from animal-free and edible plant sources, such as certified palm oil, rapeseed, sunflower, soya and other vegetable oils, they meet the highest standards of safety and sustainability. This gives them a perfect fit in innovative new responsible packaging solutions and makes them an ideal drop-in replacement for fossil-based additives in existing polymer formulations.

Likewise, it is important that additives have no negative influence on the recyclability of post-consumer packaging. Apart from minimising the required concentration, Einar plant-based additives are not known to degrade into any harmful compounds which might contaminate the recycled material, promote discolouration or loss of properties.

Moreover, our bio-based solutions are produced in certified CO₂ neutral factories (scope 1 + 2), worldwide, supporting ambitious decarbonisation targets across the entire value chain from the additive feedstock to the final packaging product.

Where you can find the ultimate plant-based additive solutions to your specialised packaging needs

The development of Einar plant-based additives is backed by a dedicated Polymer Application Centre at our global headquarters in Juelsminde, Denmark, which provides comprehensive customer support. The Centre is fully equipped for meticulous testing and validation to make the successful implementation of our sustainable plant-based technology as flawless as possible.

50% less water and power consumption

Digital CIP optimization for membrane filtration

GEA reduces water and power consumption during the cleaning of membrane filtration plants by up to 50 percent with two new digital tools. The software duo, GEA Smart Filtration CIP and GEA Smart Filtration Flush, automatically intervene in CIP, pulsing the pumps and flushing the membranes individually and according to real-time water quality.

GEA Smart Filtration Flush uses sensors to constantly measure the permeate quality of the water during the flushing process, reducing the freshwater required. Setting blanket rinsing intervals and water quantities in advance are no longer needed as the software stops the process as soon as the necessary hygiene level is reached, and the cleaning agents are discharged. Depending on the type and size of the plant and the water properties, operators can reduce their freshwater requirements by up to 50 percent.

"A typical dairy whey protein concentration process needs two to four filtration plants connected in a series. This set up can require more than 100,000 liters of water, per cleaning cycle," explains Nils Mørk, R&D Engineer for membrane filtration at GEA. "Today, we know from plant tests that we can save well up to 50,000 liters of water per cleaning in such large plants and 500 to 700 liters per CIP in small productions." Additionally, when less water is fed into the process, this decreases the amount of wastewater which needs to be discharged.

Up to 50 percent less energy thanks to pulsating pumps

The second software module, GEA Smart Filtration CIP, is a software module that regulates cleaning efficiency. It causes the pumps to operate in a pulsating manner as opposed to running continuously. As a result, the pumps consume up to 50 percent less energy during the CIP process. Traditionally, the best results were achieved by cleaning with high shear forces (e.g., mechanical washing with a strong rinse flow). This approach meant the maximum allowed pressure drop across the membranes was applied during the CIP process – which entails much higher energy consumption. GEA Smart Filtration CIP breaks with this inefficient method, without losing efficacy.

Compared to plants with standard pump operation at full load, small production plants with GEA Smart Filtration CIP would save between 5 and 7 kilowatt hours per cleaning. Large filtration plants would require 60 to 100 kilowatt hours less electrical energy per CIP process thanks to this innovation.



With two new digital tools GEA Smart Filtration CIP and GEA Smart Filtration Flush, GEA reduces water and electricity consumption by up to 50 percent when cleaning membrane filtration plants (photo: GEA)

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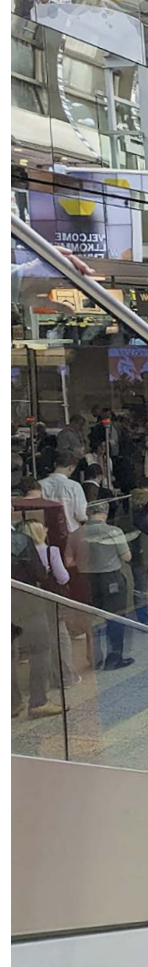


interpack 2023

A summary by IDM



The world's largest trade fair, interpack, was able to continue its old successes despite a forced six-year break. Because of the importance of packaging for sales and product durability, we have already reported extensively on the trade fair in issue 3/4. On the following pages we have put together further information for you based on our tour of the trade fair.



TREPKO: Aseptic rotary filler concept

With the 200-A series, Trepko presented an aseptic rotary filler concept. The machine has a footprint of only 7.63 m² and fills 14,400 cups per hour on six lanes with a sterilization rate of log 5.9. The mode of operation meets the requirements of VDMA 8742. A height-adjustable cup magazine stores packaging for a production time of 30 minutes, sterilization is carried out with H₂O₂. The format change is carried out by servo drives, with the new parameters including viscosity being set on the HMI. PET and aluminum lids are processed, which are also sterilized with peroxide. The sealing station can be adapted to the lids to be processed over a wide range. The cup leak test is carried out without squeezing the packaging. The 200-A series can be designed with one to six lanes, its energy savings compared to alternative systems at 20%., while the cleaning time has been reduced by 40%.



The new aseptic rotary fillers of the 200-A series from Trepko work with log 5.9 (photo: IDM)

INTELLIGENT FORMAT CHANGEOVER: KHS increases the efficiency of packaging systems

More efficiency, speed and reliability in the packaging process: KHS automates the product feed and formatting of its Innopack Advanced series packaging systems and Innopal PB palletizers with robot grouping. Compared to manual format changes, the changeover to new products is significantly faster and easier. A time saving of up to 30 minutes can be realized per format change.

The semi-automated format changeover can be implemented on almost all packaging systems in the Innopack Advanced series. In their development, the KHS experts initially concentrated on the product feed and formatting process modules, which usually cause a relatively high level of adjustment work for the operator. With the Innopal PB palletizer with robot grouping, KHS has already achieved full automation of the format changeover.



KHS has developed an intelligent format changeover (photo: KHS)



interpack 2023 easily caught up with the previous trade fair six years ago in terms of visitor numbers (photo: IDM)

KHS: Nature MultiPack with universal adhesive

For its Nature MultiPack (NMP), KHS has developed a universal adhesive that can be used on almost all top coats of both aluminum and tin cans. This makes it easier for beverage producers to switch to this environmentally friendly secondary packaging solution. Ever since the technology was successfully established on the market, the requirements, especially for the adhesive, have continuously increased. The Dortmund-based system provider is now taking this into account – and enabling customers to form the right container with the new one-fits-all solution for beverage cans and to support them in achieving their sustainability goals.



KHS has developed a universal adhesive for its Nature MultiPack that can be used on almost all can top coatings (photo: KHS)

KHS: CO₂ footprint calculation tool

Together with German ifu institute, KHS has created a calculation tool for the CO₂ footprint of packaging. The tool provides information on whether and how a conversion, e.g. of stretch blow molding machines, affects the carbon footprint. Bottlers also receive decision support for the selection of packaging by comparing primary packaging made of PET, HDPE, glass, metal or cardboard. The tool also takes into account location, transport routes, circulations, etc. as well as water and chemical consumption and disposal. Calculations for secondary packaging complete the picture.

KHS: Service for consumables

The KHS service business is expanded to include consumables. This should reduce the coordination and research effort and simplify the processes for bottlers. Customers no longer have to deal with multiple sources of supply.

WEBER: Machines for smaller throughputs

New at the trade fair was the weSLICE 1000 slicer for low to medium output (up to 400 slices/min), which can also be loaded by hand. It was shown together with a traysealer with matching performance. With the traysealers, a squeezing and non-destructive check for O₂ can now be carried out using hyper-spectral analysis.

The Who's Who of packaging machine manufacturers, here ALPMA, showed the latest developments at the world's leading trade fair for packaging, interpack, in Düsseldorf (Photo: IDM)



WEBER: Complete line for Emmi

Weber exhibited a complete line at the trade fair, which went to Emmi after interpack. The company now offers integrated line concepts for sliced and piece goods, ranging from the preparation of the raw product through processing to the finished, tested primary pack. A holistic approach as well as seamless integration and intelligent networking of all line modules lead to more cost-effectiveness.

Various solutions were combined in the line, starting with the weSCAN 7000 X-ray scanner for cheeses with wholes. The scanner is operated via the slicer's HMI, which improves user-friendliness and ensures optimum accessibility to the slicer.

The heart of the line was a high-performance weSLICE 9500 slicer, in which cutting quality and performance are achieved using Weber DirectDrive technology. Due to the direct drive of all components of the feed, the product is guided precisely, so that in addition to perfectly cut, visually appealing slices, the highest portion weight accuracy is achieved while at the same time protecting the product. In addition, the vario technology of the slicer flagship weSLICE 9500, which enables a lane-independent product feed, contributes to this performance with the highest possible portioning accuracy. If the Weber vacuum gripper technology is used, the product yield is increased even further, since the remaining end pieces are reduced by more than half.

Perfect mechanical and software integration of the line solution is also evident in the wePICK 7220, an automatic loading solution, in connection with the wePACK 7000 thermoforming packaging machine: the pick robot has been completely merged with the thermoformer here. Minimal space requirements, more efficient robot movement sequences, easier and faster cleaning of the floor in the production hall and best accessibility for belt removal are just a few of the advantages.

Film and product losses are avoided thanks to a camera-supported check of the actually stretched upper web roll against the stored recipe data. In addition, the camera check contributes to a significant increase in production reliability. The upper tool of the thermoforming packaging machine is equipped with an integrated gate for peel corners – with a quick-change insert to reduce downtimes when changing formats.



The new high-performance cheese slicing line for Emmi was one of the eye-catchers at the Weber stand (photo: IDM)



Tobias Weber, CEO of Weber Maschinenbau, explaining the new labeller weLABEL 5000 (photo: IDM)

The Emmi line processes mono-polypropylene (PP), which is not only more suitable for recycling systems than conventional films, but also meets the new food retail requirements. The Weber weSORT 3000 pack separator formed the end of the high-performance line.

The entire line is fully monitored by cameras, enabling error identification via video feedback.

WEBER: Clever solutions for digitalized production

Domino Printing Sciences (Domino) introduced the new Vx150i thermal transfer printer (TTO). Developed in direct collaboration with customers who have extensive experience in TTO printers and flexible packaging, the Vx150i increases the efficiency of vertical and horizontal flow wrappers. Downtime due to complicated ribbon drive technologies and inflated costs due to inefficient ribbon usage were identified as major problems. Customers say the Vx150i TTO printer is very easy to use and delivers consistent, high-quality prints, even when using ribbon saver mode.

The Vx-Series currently includes the Vx150i TTO printer, which prints high-resolution, machine-readable code, text and graphics onto flexible packaging materials at industry-leading print speeds of up to six prints per second, with a maximum print size of 53 x 100 mm and a resolution of 300 dpi.

The Vx150i uses up to 60% less ribbon per print and has four ribbon saving modes to suit a wide range of applications, helping to reduce waste and overall costs.



Weber VideoAssist allows for determining the root cause of malfunctions (photo: Weber)

The extra-long ribbon roll capacity allows for longer production runs, and the lightweight, cartridge-based ribbon loading system allows for faster ribbon changes, further minimizing downtime. In addition, the printer works fully electrically and does not require compressed air.

SIDEL: Palletizing unit combines robotics with cobotics

Sidel expands the range of palletizers with the introduction of the RoboAccess_Pal S. This new one combines cobot and robot technology. It also provides a solution that offers more agility and usability in a small space. With the integration of cobotics in palletizing, Sidel has managed to respond to the growing market demand for very compact and affordable cells that increasingly take over the manual operations.

RoboAccess_Pal S offers speeds up to 12 cycles/min and allows a carton payload up to 25 kg while ensuring a fast payback of typically one to two years. With a footprint of less than 12 m² for 2 stations and a pallet height of up to 1,700 mm, the palletizing solution delivers a new level of compactness.



The RoboAccess_Pal S combines cobot and robot technology (photo: Sidel)

MULTIVAC: Compact traysealers and high-performance slicers

With the TX 6, MULTIVAC presented a new series of compact traysealers. The machines, which can be switched over quickly, require neither compressed air nor heating energy and, according to MULTIVAC boss Christian Traumann, can process all relevant packaging materials. With their integrated automation, they do not place any major demands on the qualifications of the operators.

SLX 2000 represents the first of a new generation of MULTIVAC cutting machines. The high-performance slicer achieves a very high cutting speed on up to four tracks. Products with a length of up to 1,600 mm can also be processed at warmer temperatures. The MULTIVAC Sustainable Liquid Interleaver (SLI) ensures plastic-free packaging.

The SLX 2000 can be used as a stand-alone device as well as within fully automatic cutting and packaging lines. Integration into the MULTIVAC Line Control enables efficient operation, including line-wide start-up, starting, stopping, idling and recipe changes. Short set-up times, fast conversion and full machine accessibility guarantee high availability.



The new SLX 2000 from MULTIVAC is a high-end slicer (photo: MULTIVAC)

SIDEL: New Cermex ProSelex case packing infeed module

Sidel has developed a new generation of its Cermex ProSelex flexible collating system for complex unstable bottles. This gentle, streamlined, grouping device is designed to associate with any type of case packer and will deliver extreme efficiency, high availability, and greater operability, Sidel promises.

Acting as an integrated module of a case packer that is receiving products upstream from one lane, the latest Cermex ProSelex continuously pitches, collates and prepares the container batches before they are transferred and case packed. Based on a simplified and streamlined

kinematic process, this new generation improves on the performance of the previous module with an increased speed capability of up to 300 products per minute, in addition to a more compact footprint. Productivity is also delivered by additional timesaving, achieved through a reduction in changeover time, courtesy of a simplified and repeatable process for operators, which anticipates an average changeover to last between 1 minute for a new collation to 2 minutes 30 seconds for a complete bottle change. Perfectly adapted to cater to the secured handling of complex unstable shaped bottles and

DOMINO: Vx series thermal transfer printers

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The extra-long ribbon roll capacity allows for longer production runs, and the lightweight, cartridge-based ribbon loading system allows for faster ribbon changes, further minimizing downtime. In addition, the printer works fully electrically and does not require compressed air.



The new Vx150i thermal transfer printer is designed for efficiency (photo: Domino)

WEBER: Knife management

Weber can provide circular knives with a DMC code so that their use and service life can be made transparent. The underlying concept is called Durablade Care, Durablade being the brand name for the knives made by Weber. Data about the current stock of slicer knives and their use at the current time can now be called up. Questions about the sharpening processes carried out are answered as well as about the state of wear, the sharpening parameters, use including angle adjustment in the process, etc. A prognosis for the overall service life can also be called up. The operating temperature and quantity as well as the type of product are recorded. All information, more than 60 parameters in number, is displayed on dashboards.



With Durablade Care, Denny Wolf from Weber has developed a sophisticated management concept for slicers' knives (photo: IDM)

asymmetric containers from the food, home and personal care industries, Cermex ProSelex keeps container stability throughout the whole collating process, avoiding fallen bottles at any step. Designed with protection as a priority, Cermex ProSelex continues to ensure no loss of integrity to the final product. Friction is reduced courtesy of the module's collation concept, which limits the number of contact points between the collating combs and products.



Due to a small number of change parts required, Cermex ProSelex delivers significant cost efficiency and overall time-to-market optimisation for any new format needed in the future (photo: Sidel)

Advertising

ISHIDA: X-ray inspection system IX-EN-5592 provides security

The IX-EN-5592 X-ray inspection system was developed by Ishida for large and heavy food or bulk containers. The device detects the smallest foreign bodies and can be integrated into existing production lines.

The X-ray inspection system IX-EN-5592 has an inspection chamber that is 550 mm wide and 270 mm high. Therefore, even EURO standard containers with the basic dimensions of 600 x 400 mm can be checked. The test objects may weigh up to 25 kg. With the patented Genetic Algorithm technology, the X-ray inspection system can be sensitized to specific foreign bodies and, according to the manufacturer, achieves excellent detection rates. Impurities from steel, aluminium, hard rubber and plastic as well as stones, bones and mussel shells are reliably detected.



X-ray inspection system IX-EN-5592 for large and heavy food containers (photo: Ishida)

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Sachsenmilch

Ultra-durable aseptic line

Take a look at
Sachsenmilch's colourful
product range
(photo: Sachsenmilch)



In 2004, the dairy Sachsenmilch GmbH put an aseptic four-colour filler into operation. But it wasn't just any old four-colour filler: It was the very first of its kind built by Krones. Over 15 years and 100,000 operating hours later, the machine is still in the pink of condition, thanks to a sophisticated maintenance concept that leaves nothing to chance.

When you're going through East Saxony, you can't help feeling you're on a country outing as you pass fields, meadows and small copses, with soft rows of hills lining the horizon. An industrial estate is probably the last thing you expect to find here – until the road sweeps left one more time, revealing one of Europe's most modern dairies.

Beautiful scenery outside, high tech inside

With an area of 63.2 hectares, the Sachsenmilch premises are nearly as large as some of the small towns nearby. The company is also a boon to those towns, providing 3,000 jobs and thus playing a crucial role throughout the region. Its present facility in Leppersdorf near Dresden was opened in 1995 and has been continually expanded since then. "In the 20 years I've been with Sachsenmilch, there hasn't been a single day without a building site somewhere," says "Freshness 2" production manager Oliver Schmidt, laughing. And his colleague Jens Wenzel, the head of "Freshness 2" bottling line maintenance, adds with audible pride: "New buildings, new lines – the factory has never come to a halt. It keeps on making big strides, not least as far as technology is concerned."

Brief portrait of Sachsenmilch

- » Founded in 1990, since 1994 a subsidiary of the Theo Müller group of companies
- » Located in Leppersdorf near Dresden (opened in 1995)
- » Payroll of 3,000
- » Product portfolio ranging from milk and milk-based mixed drinks, butter, yoghurt and cheese right through to rice pudding and other desserts
- » Capacity: The annual volume of milk supplied to and processed by the company is around 1.7 billion kilograms.



Sachsenmilch, one of Europe's most modern dairies is located in Saxony (photo: Sachsenmilch)

The result of the dairy's enthusiasm to invest in new kit are 27 production and filling lines for liquid and high-viscosity products, including milk and milk-based mixed drinks, yoghurt, kefir, rice pudding and semolina pudding. The company's three cheese-making facilities produce mozzarella, sliced cheese and sour milk cheese, all of which are packed on a total of 23 packaging lines.

Four spray towers for producing protein and calcium as well as four fluidised-bed dryers for lactose are used for the milk's finishing treatment. Ultra-fine-tuned interaction of products, technologies and processes is instrumental in assuring that almost nothing of the 1.7 billion litres of milk supplied annually is lost. To give you two examples: The whey is used to obtain high-quality protein powder, and the residual sugars that are no longer food-grade are processed into bio ethanol.

This systematic focus on making optimum use of the raw materials supplied is also reflected in the maintenance concept for the filling kit. Following a plan drawn up in meticulous detail, all components susceptible to wear are removed at predefined intervals and overhauled. Periodically conducted inspection routines during ongoing operation prevent unforeseen product losses. And the time anyway needed for line cleaning is also used for making minor repairs. "Our maintenance plan was specifically developed to match our requirements and assures a maximally efficient production process with minimal downtime," emphasises Pierre Göhring from Sachsenmilch. "A welcome side-effect of it all is that we extend our lines' useful lifetime."

Two Sleeveomatic labellers dress the containers in sleeves (photo: Krones)





Contipure AseptBloc DA

- » Space-saving combination of blow-moulder, filler and capper
- » Gentle, dependable filling of sensitive products
- » Preforms and caps are sterilised by means of hydrogen peroxide (H₂O₂)
- » 360-degree preform treatment: inside, outside and in their neck area
- » Short cleaning times make for high availability levels

The heart of the new lines: the dry-aseptic blow-moulder/filler block (photo: Krones)



A good deal of excitement

The latter is demonstrated not least by an aseptic line from Krones, which was commissioned in 2004 and has meanwhile clocked up more than 100,000 operating hours. Its heart is a four-colour filler able to fill up to four different products simultaneously. Back then, it was a prototype specifically developed for Sachsenmilch. Both companies have benefited in equal terms from this project to this very day, as Jens Wenzel confirms: "The four-colour filler was the first of its kind in the dairy sector at that time. With it, we laid the cornerstone for a mutually supportive relationship which we've fostered and expanded for 20 years now."

One of its crucial constituents is close cooperation with the Krones service support team. "We're running a 24/7 production here in Leppersdorf, and that is why we depend on high system availability," emphasises Oliver Schmidt. In order to ensure that, the entire line is shut down for one week each in spring and in autumn for maintenance purposes. Despite the meticulous care that goes into planning the deployment of the service engineers, "each time they actually turn up here, there's a good deal of excitement," says Jens Wenzel, laughing. "The biggest highlight though is when production is started up again one week later."

The aseptic line has already gone through a great number of these scheduled maintenance weeks – and there is every indication that a lot more will follow in future. "No matter which assemblies and components are needed at any given time, Krones supplies them to us without delay. They do this even though we're talking an availability period of nearly 20 years here," says Jens Wenzel. "And in the rare case that a certain spare is actually no longer available, they promptly offer us alternative solutions or upgrades." He adds that all of this has over the years evolved into a close bond between the two companies: "I think the teamwork

between Krones and our dairy is excellent. No matter whether it's day or night: We invariably get the support we need."

Another aseptic block, another prototype

When the dairy was faced with the need to add more aseptic capacity in 2019, Krones came knocking with yet another prototype, the most recent upgrade of the dry-aseptic blow-moulder/filler block this time – and Sachsenmilch went for it yet again. The features distinguishing it from the preceding model Contipure Asept-Bloc DA include the cleaning concept which uses hot caustic for the machine's surface and steam for the paths coming into contact with the product, which makes for shorter sterilisation times and higher system availability. The filler installed in the new block is again a four-colour machine. The 15 years of development since the first prototype was commissioned have yielded many improvements. "The servo technology now installed can be checked, monitored and controlled while operation is ongoing," says Pierre Göhring. "And automatic adjustment of the handling parts provides substantial time savings in make-ready and also significantly reduces physical stress for the staff."

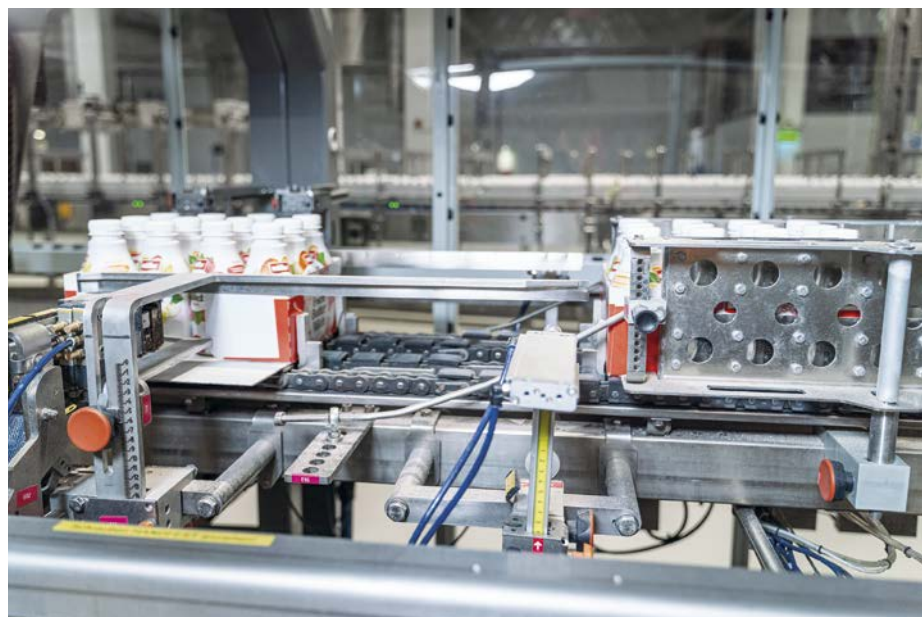
The scope of delivery also included two Sleevematic labellers and a Variopac Pro T which packs the labelled containers onto trays. Milkron was responsible for linking the new four-colour filler up to the process-engineering kit, which also contained a device for culture dosing, a yoghurt cooler and a fruit-mixing station.

The line has been running at a speed of 36,000 containers an hour since 2021. And even though it still has quite a bit to go to reach the 100,000 operating hours clocked up by the first line, one thing is certain: The line is in safe hands at Sachsenmilch. The dairy will make sure it reaches this benchmark in the pink of condition.

The line fills up to four different products simultaneously (photo: Krones)



The containers are packed onto trays in a Variopac Pro T (photo: Krones)



Preventing recalls

Acoustic sensors detect glass breakage

Where food or beverages are filled into containers made of glass, it can happen that they burst. The resulting shards sometimes contaminate other units in the immediate vicinity. If the glass breakage is not detected immediately, the affected products can end up on the market and, in the worst case, all the way to the end customer. At the latest then, elaborate and cost-intensive recalls of entire batches are necessary, which not only annoy the customer base, but also cause lasting damage to the manufacturer's reputation. To prevent this problem from arising in the first place, Schwerin-based ds automation gmbh has developed special acoustic sensors. These can be easily integrated into existing lines and reliably detect

glass breakage incidents by signal level and frequency characteristics. Depending on the degree of automation, the line is then either stopped for manual inspection or the affected units are automatically ejected from the filling line. The sound sensors used here are dustproof and watertight in accordance with protection class IP67 and made entirely of stainless steel, so that they also meet the high hygiene requirements in food and beverage production.

If the glass breakage is not detected immediately, the affected products can end up in the shops and, in the worst case, all the way to the end customer (photo: Laboko/Shutterstock.com)



The sound sensors are dustproof and waterproof according to protection class IP67 and are made entirely of stainless steel (photo: ds automation gmbh)



QA via airborne sound

"The sensors for glass breakage detection are special microphones that continuously monitor their environment," explains Christian Schröder, developer at ds automation gmbh. "They detect any deviation from a noise situation defined as normal." For this purpose, specific trigger thresholds are defined in advance, within which the usual background noise of the production line moves. The noise generated by a glass breakage can be characterised as a bang, which is very broadband and has a relatively high signal amplitude. This exceeds the set threshold and can accordingly be identified as an anomaly by the sensor.

A major challenge in detecting glass breakage events with the help of airborne sound, however, lies in the sound attenuation caused by the air itself and the interference noise of the production line. However, the closer the sensors are placed to the sound event to be measured, the lower the air attenuation and thus also the susceptibility to errors.

Furthermore, the risk of false alarms increases with the usually relatively loud ambient noise of the production lines, because of which employees often have to wear hearing protection. The measurement technology specialists at ds automation get around this problem by not only measuring the sound level, but also performing band-pass filtering. In this way, for example, the measurement signal can be concentrated on the frequency spectrum between 16 kHz and 32 kHz, which is barely or not perceptible to the human ear. In this way, the sound event triggered by breaking glass can be reliably identified and appropriate follow-up steps can be initiated.

"In order to avoid both false alarms and undetected incidents, we always configure the sensors individually to the needs of the application," says Schröder.

The acoustic sensors from ds automation can be easily integrated into existing lines and reliably detect glass breakage incidents by the signal level and frequency characteristics (photo: ds automation gmbh)

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Strategic acquisition

BERTSCHfoodtec takes over Italian partner Giacomazzi Food Tech



The combination of the core competencies of BERTSCHfoodtec and Giacomazzi Food Tech is in great demand, especially for the production of mozzarella and pizza cheese (photo: Giacomazzi Food Tech)

BERTSCHfoodtec has acquired Giacomazzi Food Tech as a 100% subsidiary. The focus of the strategic acquisition is to strengthen market presence and further market penetration in Italy, the home of Giacomazzi Food Tech, which is also an extremely important market for BERTSCHfoodtec. At the same time, BERTSCHfoodtec's core markets in Europe are to benefit from the added products and solutions. In addition, the companies plan to enter new markets with combined forces and a linked product portfolio.

BERTSCHfoodtec provides a strong foundation for joint future endeavours. Right now, synergies are used, structures are adopted, processes are aligned, and the mutual learning continues. The Austrian company's expertise in plant construction and



The contracting parties and business partners after signing the contract in Milan: Lisa Oliveri, Mauro Giacomazzi, Hubert Bertsch Jun., Christoph Hueber (photo: BERTSCHfoodtec)

mechanical engineering for semi-hard and hard cheeses is topped off by the Italian know-how for pasta filata. Giacomazzi Food Tech specializes in systems for curd drainage and maturation as well as hardening and brining lines for moulded cheeses.

BERTSCHfoodtec has been operating in the dairy industry for nearly 100 years and has since developed into a leading international player in plant engineering for cheese processing plants and dairy plants. Addition to the company's international locations are an office in Carpi (Modena) and a production facility in Parma. Giacomazzi Food Tech will continue to operate under its own name and the management will remain in the family with Mauro Giacomazzi as Managing Director.

Mauro Giacomazzi is the second generation Giacomazzi in the company and is also excited about the acquisition. "We are proud to now be a part of BERTSCHfoodtec. We look forward to joining forces and achieving new goals together. This acquisition is a big step for us. We are ready to grow and succeed with BERTSCHfoodtec."

Hubert Bertsch Jr, Managing Director of BERTSCHfoodtec and responsible for technology and production, represents the fourth

generation of the Bertsch family in the company: "It is a pleasure for us to add Giacomazzi Food Tech to our group. We are building intensively on our previous cooperation and using the connecting strengths to provide our customers with high-quality production lines and to drive innovation."

It is not only a strategic but also an emotional matter for both parties involved. BERTSCHfoodtec as well as Giacomazzi Food Tech are family businesses with strong innovative power, great quality awareness and dedicated customer centricity. The extremely profitable and also in terms of interpersonal relationships successful cooperation of the past 25 years has shown that the Austrian and Italian companies complement each other perfectly. By realizing joint projects, both parties have become stronger and, with the legal union, intend to sustainably support the relevant markets in a goal-oriented manner.

"We are confident that together we will expand our business and serve our customers even better. We strive to shape the future of the dairy industry and to consolidate our position as a leading supplier of cheese processing plants and dairy plants," comments Christoph Hueber, who as Managing Director of BERTSCHfoodtec is responsible for sales and project management.

INGREDION Educational videos on stevia and sugar reduction

Ingredion have launched a five-part video series to help food and beverage manufacturers harness the potential of stevia sweeteners and functional build-back (FBB) ingredients in sugar reduction formulations. The series explores today's enhanced understanding of the stevia leaf — from its sustainability and versatility — to the identification of new steviol glycosides (stevia leaf molecules), such as Reb M, which contributes to a more balanced, sugar-like sweetness without bitter off-notes. Other topics explored include the natural origin of stevia, and why it is ideal for achieving sugar reduction goals while meeting consumer demands for a healthy lifestyle.

Helen Hook, Sugar Reduction and Specialty Sweeteners Platform Lead EMEA at Ingredion, says: "The challenge for manufacturers is to not only develop products that help support a healthy lifestyle; products must also be great-tasting and deliver an ideal texture and nutritional appeal, and may support consumer-preferred label claims such as 'plant-based', 'natural origin' and 'no added sugar'. Innovation in stevia is creating opportunities for manufacturers to develop products that achieve these sensory, nutritional and claim expectations. Utilising our extensive knowledge and experience of the steviol glycosides within the leaf, PureCircle by Ingredion have developed optimal solutions for many applications using combinations of steviol glycosides, to deliver the right balance between sweetness and eating experience."



Ingredion have launched a five-part video series to help food and beverage manufacturers harness the potential of stevia sweeteners (photo: Ingredion)

The videos also acknowledge how innovations, such as bioconversion technology, are driving the affordability of premium stevia molecules like Reb M, as well as how Ingredion's FBB ingredients, such as polyols and soluble corn fibre, help replace the bulking, texture and mouthfeel lost when reducing sugar. These FBB ingredients can be used in combination with PureCircle's enhanced stevia solutions and flavour modifiers to deliver great-tasting, sugar-reduced products.

To learn more about the power of stevia, visit: <https://www.ingredion.com/emea/en-uk/solving-a-challenge/challenges/sugar-reduction-specialty-sweeteners>.

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Dairy export

Powerful support for the dairy industry of Ukraine

The Ukrainian dairy industry has always been export-oriented. However, due to the influence of a decrease in milk supply and other factors, in recent years the volume of dairy exports has been steadily decreasing. With the beginning of the war, exports became a salvation for the industry. Forced migration of the population and the economic crisis in Ukraine caused a significant decrease in dairy consumption. Therefore, even with a significant reduction in milk production, its surplus turned out to be too large. If proper exports level had not been managed in 2022, farmers would continue to slaughter livestock en masse, reducing the milk supply.

Ukrainian dairy farmers managed to overcome a lot of problems caused by the war, and so in 2022 exports of dairy products even increased.

In 2022 almost 25% of milk received by dairies for processing was used for the production of export products. In 2021 this share was 17%. For comparison: in Poland, it constitutes 35%.

According to the Ukrainian Association of Business and Trade, the share of dairy exports in total agricultural exports of Ukraine is 0.8%, and its volume is quite small compared to the leaders of the world dairy trade. In 2022, Ukraine exported 700,000 tons of dairy products in milk equivalent worth 420 million dollars. For comparison: in the same year, US dairy exports amounted to 9.5 billion dollars (7.6 in the previous year). In volume units, the United States exported 2.82 million tons of dairy products.

Traditional products of Ukrainian dairy exports are stock products – butter, spreads, dry milk and whey, casein, cheese, cheese products, and canned milk. Fresh dairy products – milk, sour cream, cream, cottage cheese and desserts are also exported, but the volumes are small.

In spring of the 2022, because of the military operations on the territory of Ukraine, dairy export activity was extremely limited. Due to broken logistics chains and a lack of ways to transport goods through the ports of the Black Sea, the cost of delivery to

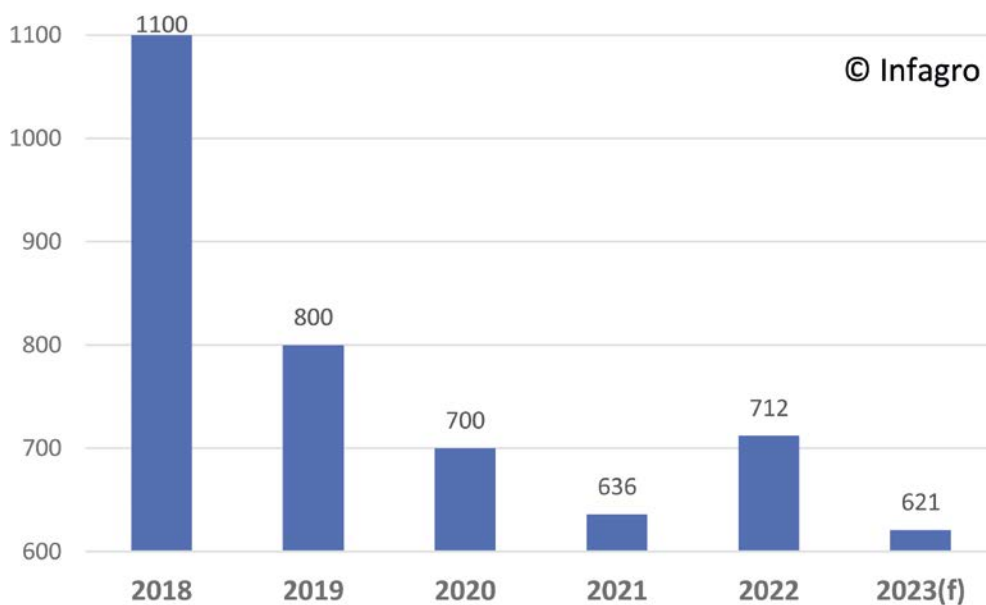


Fig. 1. Dynamics of dairy exports in terms of milk 2018-2023, thousand tons

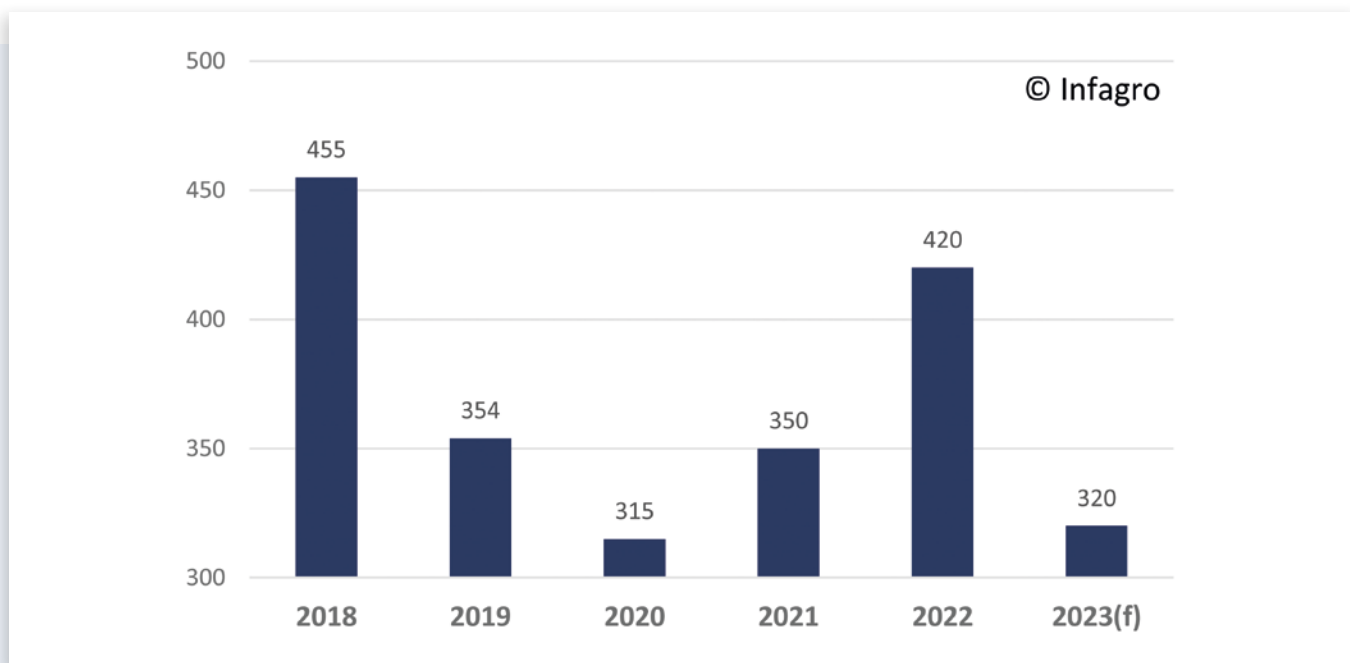


Fig. 2. Dynamics of dairy exports in monetary terms 2018-2023, million dollars

importing countries has significantly increased, for some routes by five times. Some traders-importers completely stopped contracting Ukrainian goods and others did not make advance payment for it, as they had done before.

In the summer of 2022, the situation in foreign trade changed radically. Ukrainian dairy producers, together with traders and due to support provided by government structures, were able to open new logistics opportunities. Dairy exports began to grow rapidly.

Ukrainian dairy was saved due to friendly EU countries which greatly simplified conditions of transit of Ukrainian goods through their territory and, most importantly, allowed to supply goods to Europe without quotas and duties. So, in 2022 the lion's share of some products (butter, milk powder, casein) was sold just to the EU.

Export activity has also been influenced by the market mood. In the EU, during the three quarters of 2022, the prices for dairy products were increasing. For example, for a long time, butter was sold at prices above 7,500 USD/t. Skimmed milk powder also was traded above USD 4,000 USD/t, which is also considered as a multi-year high.

In the third quarter of 2022, prices began to sharply decline. By the end of the winter, some dairy products, such as Gouda, fell to seven-year lows (excluding the short-term price drop at the start of the Covid-19 pandemic in 2020). In February 2023, the price of butter in the EU has already fallen below the mark of 5000 USD/t, and SZM cost only 2800 USD/t, which is a third less than in 2022. At such prices, Ukrainian exporters are not very interested in trading even with European countries.

This is how dramatically the dynamics of the dairy market can change in a short period of time.

Ukrainian exporters successfully took advantage of the conditions that developed in the EU market in a certain period of 2022. This made it possible to bring Ukrainian butter exports to a much higher level than in the previous, pre-war year, and to take first place among the countries that supply this product to the EU, being ahead of even the traditional leader, New Zealand.

A significant impact on the state of the world dairy trade, and therefore on Ukrainian exports, had the demand by China. The restrictions imposed by China in connection with the pandemic led to a decrease in purchases and an increase in supply in the world dairy market, which also became one of the factors in the decrease in prices. This also affected exports of the milk powder of Ukrainian produce. Having reached a record level in the last 7 years in September 2022, the volume of exports of SMP decreased, following the trends of the world market.

It should be noted that the first deliveries of cheese to EU countries happened only in 2022 when tariff restrictions were removed (before that very high tariffs were in effect). In addition, Ukrainian exporters managed to use their competitive advantage in the price of raw milk. Although the active dairy trade did not last long, it was only a few months, after which the export volume decreased.

From the beginning of 2023, raw milk in Europe began to rapidly fall in price. This now worries not only European farmers but also European Commission officials, who cautiously state the need to protect the EU market. At the same time, the European Commission announced its intention to extend the duty-free trade regime with Ukraine, but now with some restrictions provided.

What affects Ukrainian dairy exports

The position of Ukraine as an exporter of dairy products in the world market is constantly changing. For the past several dozen

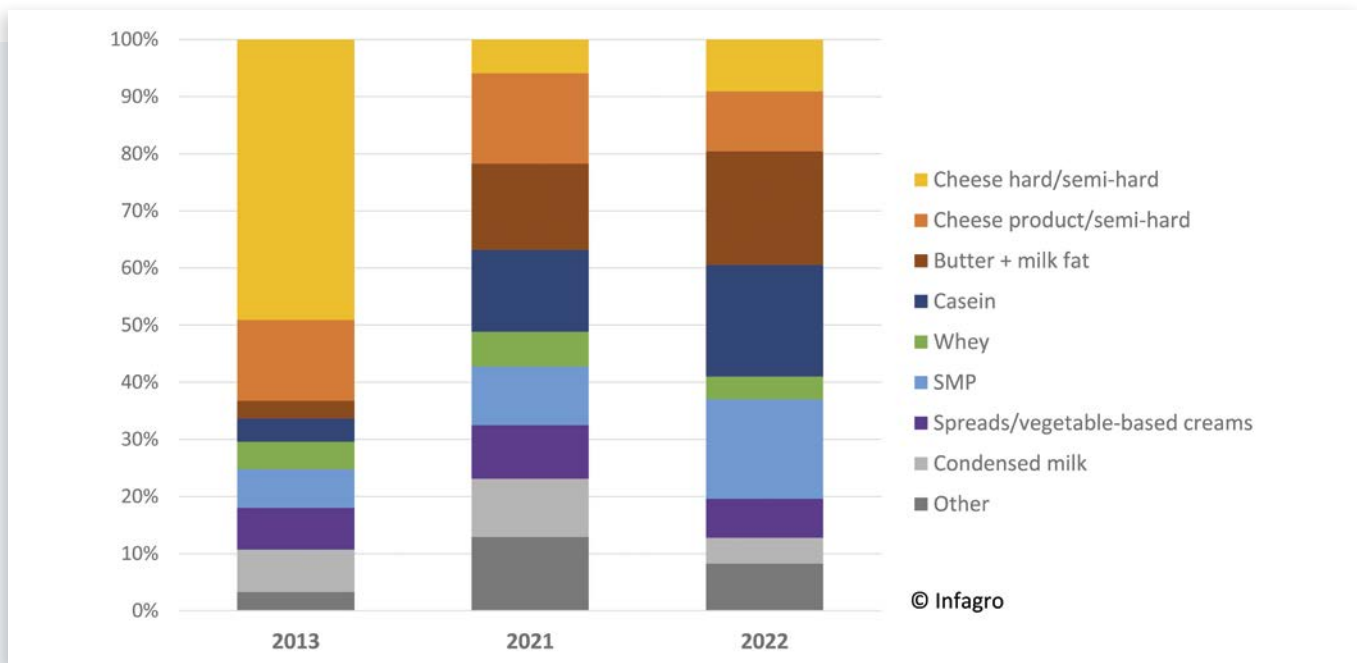


Fig. 3. Change in the structure of dairy exports in 2013, 2021, 2022 in monetary terms

years, the country has traditionally been a net exporter of dairy products, but in 2019-2021 the situation changed, exports decreased, and imports grew very rapidly. In 2021, for the first time in the years of independence, the volume of imports of dairy products actually equaled the volume of exports in milk equivalent, and even slightly exceeded it in terms of money.

The possibility of export and its economic attractiveness affects the domestic milk market: it determines the demand of processing enterprises for raw milk, and, accordingly, leads to a change in its purchase price. The activity of export sales depends on the state of the world market, the ability of domestic enterprises to compete in this market, and the availability of raw milk.

Among the factors affecting the state of exports, there are also political ones. For example, the "milk wars" started by Russia in 2013 led to drastic changes in exports of Ukrainian cheese. Before that cheese exports to Russian Federation had accounted for 83% of all Ukrainian exports of this product. After Russian embargo on the import of Ukrainian cheese and other dairy products, there occurred a redistribution of the use of raw milk in domestic milk processing, and a difficult search for new export markets began.

A comparison of the export data for 2013 and 2021 shows that 9 years after the introduction of the "cheese embargo", exports of cheese were still 11 times smaller, of cheese products – by a quarter, and of canned milk – by a third, compared to 2013. Exports of spreads and vegetable-based cream mixtures also became more modest. At the same time, exports of casein increased by 68%, and in 2021 there was exported almost 3 times more butter than in 2013.

The group "Others" (Fig. 3) includes products with insignificant export volumes: fresh dairy products, whole milk powder, processed cheese and products, and infant formula products.

Geography of Ukrainian dairy exports

2014 became a year of radical changes in Ukrainian dairy exports. Since that time there began its steady reduction. After 8 years, in 2021, exports became half of what they were in 2013 (in monetary terms).

In 2022, despite the war, exports increased significantly. The share of post-Soviet countries continued to decrease and an overall increase compared to the previous year occurred due to a significant, 3.5-fold increase in exports to the EU countries.

In recent years, Ukrainian dairy products have been exported to almost 100 countries: in 2021 to 92 countries, in 2022 to 80. However, only a dozen of countries buy significant volumes. In 2021, the share of the ten largest importers was 68% of all exports, in 2022 it became 76%.

Before the full-scale war, more than half of Ukrainian dairy exports were made to post-Soviet countries. In particular, in 2021 Kazakhstan (19%), Moldova (14%), Poland (7%), Azerbaijan (7%) and Georgia (7%) were considered the largest importers.

In 2022, due to logistical problems and new trade opportunities provided by the EU, 4 European countries entered the top 10 largest importers of Ukrainian dairy products. Poland became an absolute leader with 27% share of all sales. Much dairy produce was delivered to the Netherlands (5%), Germany (3%), and Lithuania (3%). But even then, in 2022 deliveries to Kazakhstan and Moldova remained quite significant (13% each).

It is worth highlighting Israel and China as the countries which both before the war and now are among the top ten importers of dairy products from Ukraine.

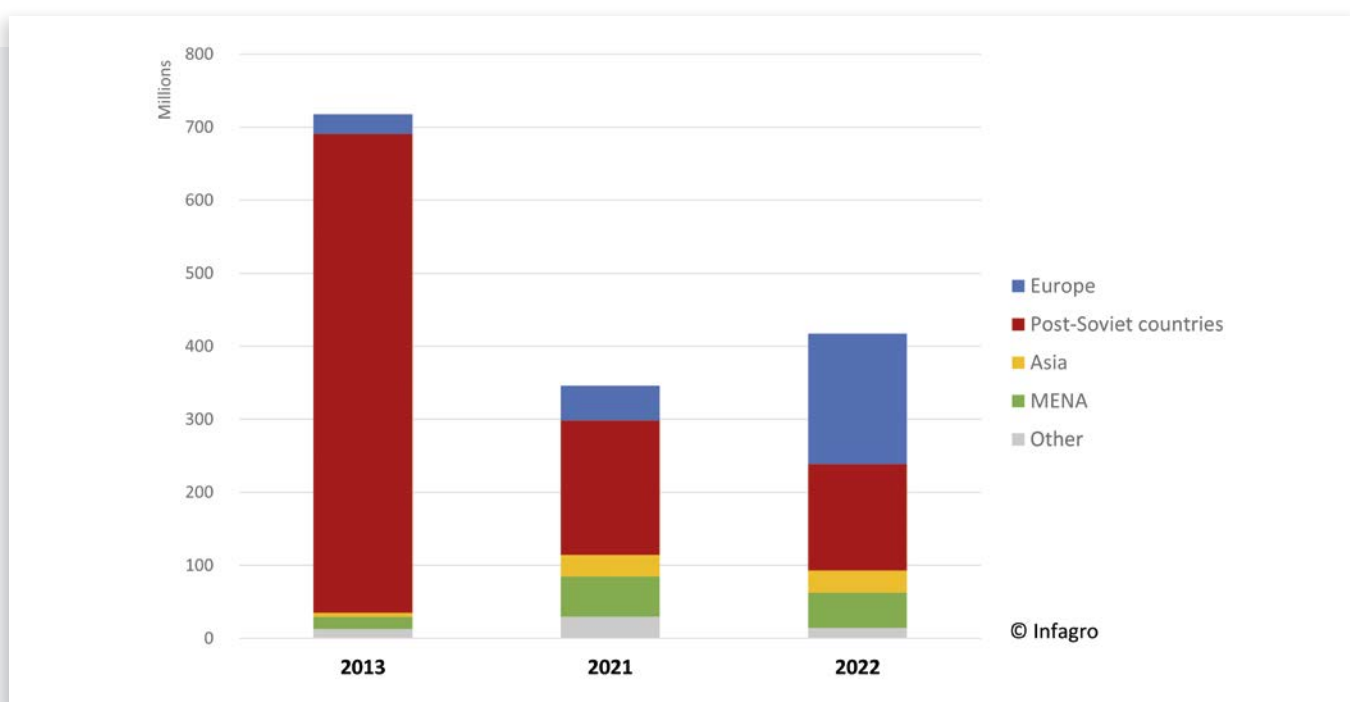


Fig. 4. Distribution of dairy exports by regions of destination in 2013, 2020, and 2021, million dollars

Last year, Poland became an absolute leader in the purchase of Ukrainian butter, milk powder, and casein. A third of all exported cheese was sent to this country.

Moldova buys a wide range of Ukrainian products, but no dairy commodity item can be marked as a leader among those imported by this country.

Kazakhstan is considered the largest importer of Ukrainian cheeses. The Netherlands, as well as Lithuania, buy a lot of Ukrainian butter, casein, milk powder, and even some cheese. Germany actively imports Ukrainian casein. Azerbaijan and Georgia buy butter, milk powder, and canned milk. Israel became an important importer due to purchases of butter and milk powder and China leads in imports of whey.

Since 2013, Ukrainian exporters have also increased supplies to the countries of MENA (Middle East and North Africa) and South-east and North Asia. It is obvious that the share of post-Soviet countries in Ukrainian dairy exports is decreasing year after year, and the share of EU countries is noticeably increasing.

Price trends

Last year substantial increase in exports in terms of money occurred not so much due to the growth of volume but rather because of the high prices on the world dairy market.

Dairy products that Ukraine proposes for export are mainly casein, butter, skim milk powder, and cheese (Fig. 3). Casein is the product with the highest price. In 2022, over 10,000 USD/t was earned for it. In the same year, export prices for skim milk

powder rose to record highs since 2014, and for butter since 2013. Cheese prices were also high, although lower than in 2021 due to the entry into the EU markets. But whey was expensive only until the summer, then there was a sharp price drop and production of whey became unprofitable.

It should be noted that in certain periods of the past years, Ukrainian export prices for butter and cheese were higher than the world prices due to the targeting of supplies to post-Soviet countries. Recently, when the geography of exports has changed, traders have to sell goods at a price with a significant premium to global traders. A significant role in the price gap with the world market is also played by more expensive and complicated logistics for deliveries to Asian and African countries due to the loss of shipping opportunities through Ukrainian Black Sea ports.

Prospects

The availability of a sufficient amount of high-quality raw milk is a major prerequisite for export development. The beginning of the hostilities put this at risk. During the year of the war, livestock decreased by 13.5%. Many dairy farms ended up in the occupied territory, as well as some processing enterprises. This means that in 2023 one cannot expect an increase in milk production up to at least the pre-war level. The scarcity of raw milk means that it will be expensive. Considering the lower prices of raw milk in the EU, this means obstacles for Ukrainian exports due to the inability of finished products to compete on price.

The reason for the decrease in export volumes may be the projected increase in the consumption of dairy products in Ukraine. There is hope that Ukrainian migrants will return home more actively this year.

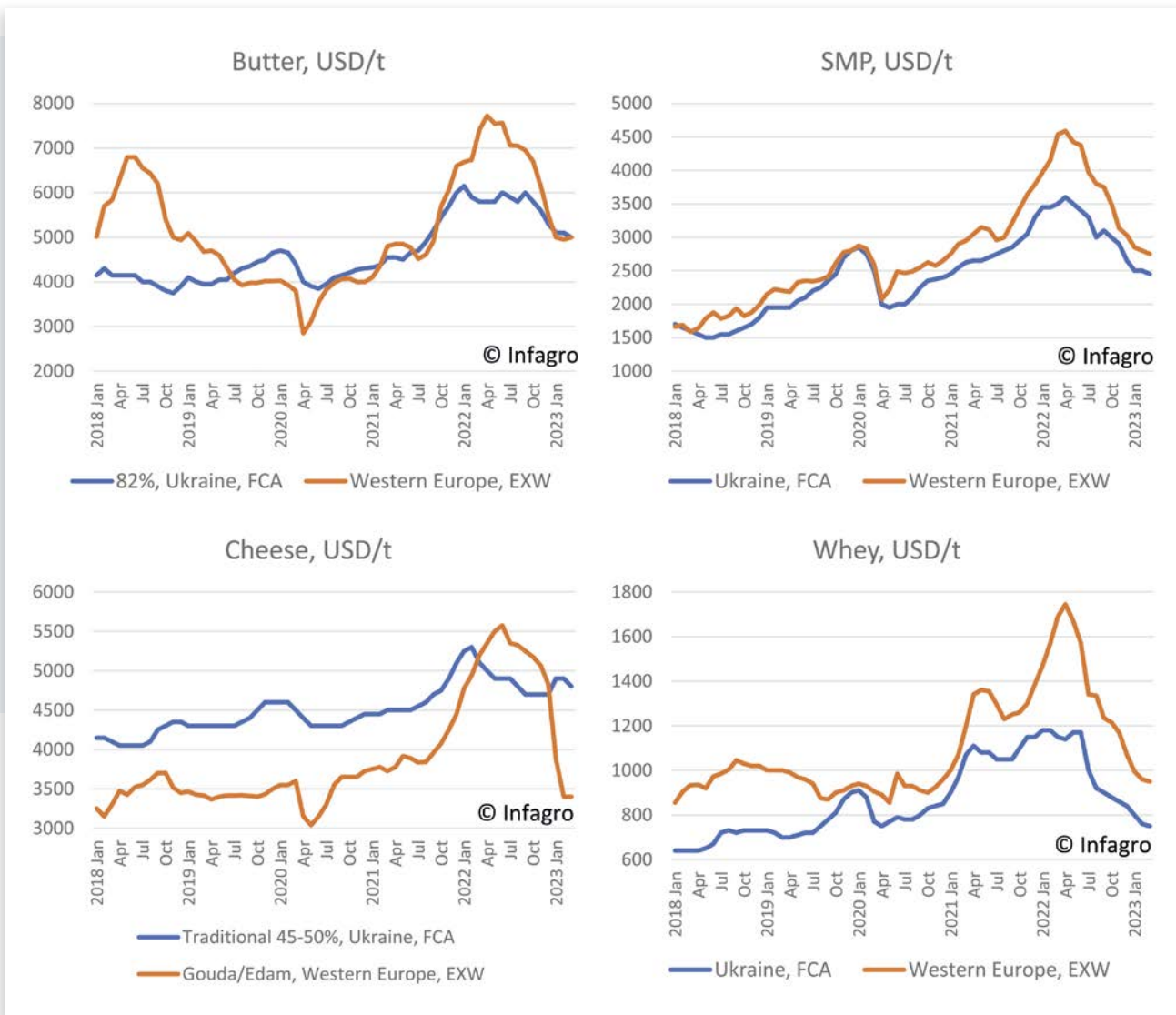


Fig. 5. Comparative dynamics of export prices for some dairy produce (Ukraine, Western Europe)

In addition, the global dairy market is also experiencing a crisis. The GDT auction records a decline in the price index every two weeks, which means low prices in the global dairy market. This restrains exporters and forces them to wait for better times or to sell finished products at a loss.

Political factors can also intervene. Due to the already-mentioned decrease in the price of raw materials in Europe, strikes of dairy farmers began, who through their associations are trying to influence the decisions of the European Commission regarding the creation of preferential conditions for Ukrainian exporters. So far, the European Commission is in favor of continuing the regime of lifting quotas and duties for the export of Ukrainian products to the EU, but there have already been warnings about the introduction of certain restrictions that will protect the European market.

Therefore, Ukrainian exporters will have to work a lot on the effective use of the raw milk available this year, identify promising export dairy products, closely monitor the state of the world dairy market, maintain already established trade relations, and look for new trade opportunities. Exports, although subject to a certain reduction, should remain at a sufficiently high level. In particular, this will define whether it will be possible to stop the reduction of livestock and how soon the dairy industry will have recovered.

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EU dairy industry getting ready for imminent labelling changes



Author: Kinga Adamaszwili,
Director – Food Policy, Nutrition and Regulatory Affairs
European Dairy Association (EDA)

The announcement of the EU Green Deal and accompanying 120 dairy relevant legislative initiatives in December 2019 was meant to change the EU food systems – including EU food labelling regulations. For the last four years, EDA was heavily involved in the numerous consultations with the EU policy makers to ensure our dairy views are duly considered and that the future legislative framework remains feasible for our industry.

As we are approaching the end of the current EU Commission and EU Parliament five-year term (2019 – 2024), we see that the publication of some of the most controversial labelling initiatives is delayed, including nutrition and origin labelling. We have now reached the point where it is highly unlikely to have them approved by the legislators during the current mandate. Let's have a closer look at where we stand with the EU initiatives on labelling and what important changes are foreseen for the dairy products.

Nutrition labelling

The EU Farm to Fork Strategy prioritizes the importance of healthy and sustainable diets as well as providing consumers with the tools to make informed, healthy and sustainable food choices. From the very beginning, the most controversial proposal of the EU Commission was to introduce a harmonised mandatory front-of-pack nutrition labelling (FOPNL) scheme at EU level and possibly linking it with the nutrient profile limiting the use of nutrition and health claims.

The idea behind the EU proposal was to harmonise various FOPNL schemes already existing on the EU market, for instance the Keyhole symbol in Scandinavia, the Heart symbol in Finland, traffic lights in Ireland (and UK) or the recently introduced in Italy Nutrinform battery scheme. One of the most debated schemes however is the (in)famous colour-coded grading indicator Nutri-Score, originating from France and then quickly spreading to other EU and non-EU countries (Belgium, Luxembourg, Germany, the Netherlands, Spain, Switzerland).

As part of EDA's commitment to ensure accurate, useful and credible information to the EU consumers, we have developed our EDA guiding principles on FOPNL and EDA Position on Front-of-Pack nutrition labelling. In addition, we have analysed the main existing FOPNL systems and concluded that, unfortunately, none of them mirrors the nutritional value of milk and dairy. In particular, we have concluded that the Nutri-Score scheme is inadequate as a FOPNL for the cheese category. Most of the cheeses, independently of their very different fat or salt levels, get the same – negative – orange 'D' score, classifying them as foods to avoid, which stands in sharp contrast with any official dietary recommendations that actually recommend several daily portions of dairy. This not only misleads consumers as to the true nutritional value of dairy but also puts in question the scientific basis of the algorithm behind the Nutri-Score scheme.

The same goes for the concept of nutrient profiles for nutrition and health claims which does not correctly reflect the dietary importance of basic food groups, such as dairy products, recognised as highly nutritious foods by the official food-based dietary guidelines.

The recent changes to the NutriScore algorithm proposed by the “International Scientific Committee for Nutri-Score” seem to even worsen the score for the dairy category, especially for milk. It is clear for us that the true nutritional value of dairy foods is not correctly reflected by the Nutri-Score.



As EDA we believe that any EU FOPNL should conform to key principles: 1. Be in line with dietary recommendations; 2. Ensure improved information to consumers about the overall nutritional quality of foods; 3. Recognise the nutritional contribution and health benefits of dairy; 4. Be always based on sound scientific evidence; 5. Be voluntary and harmonised across the EU.

Understandably, the discussions around the future EU nutritional logo raise a lot of controversies due to different views of Member States and stakeholders organisations, making it extremely difficult for the EU Commission to come up to an acceptable compromise. The EU Commission indicates that the delayed proposal could still be published towards the end of 2023.

We will of course remain actively involved in the EU debate on FOPNL and nutrient profiles, and one of our priorities is for the

EU policy to reflect nutrition science and the importance of the official dietary recommendations, including basic food groups such as milk and dairy.

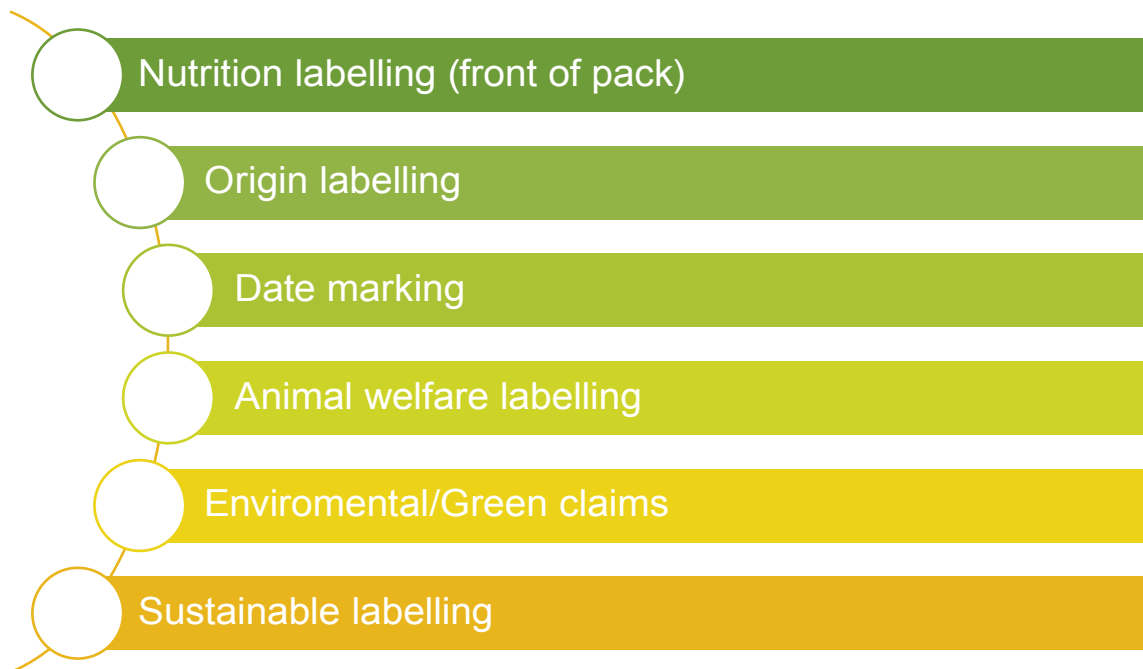
Origin labelling

Following the Farm to Fork announcement, the EU Commission was to introduce mandatory EU origin labelling for milk and milk as an ingredient by the end of 2022. Similarly to the FOPNL proposal, it is now delayed and the EU Commission indicates it might be published towards the end of 2023.

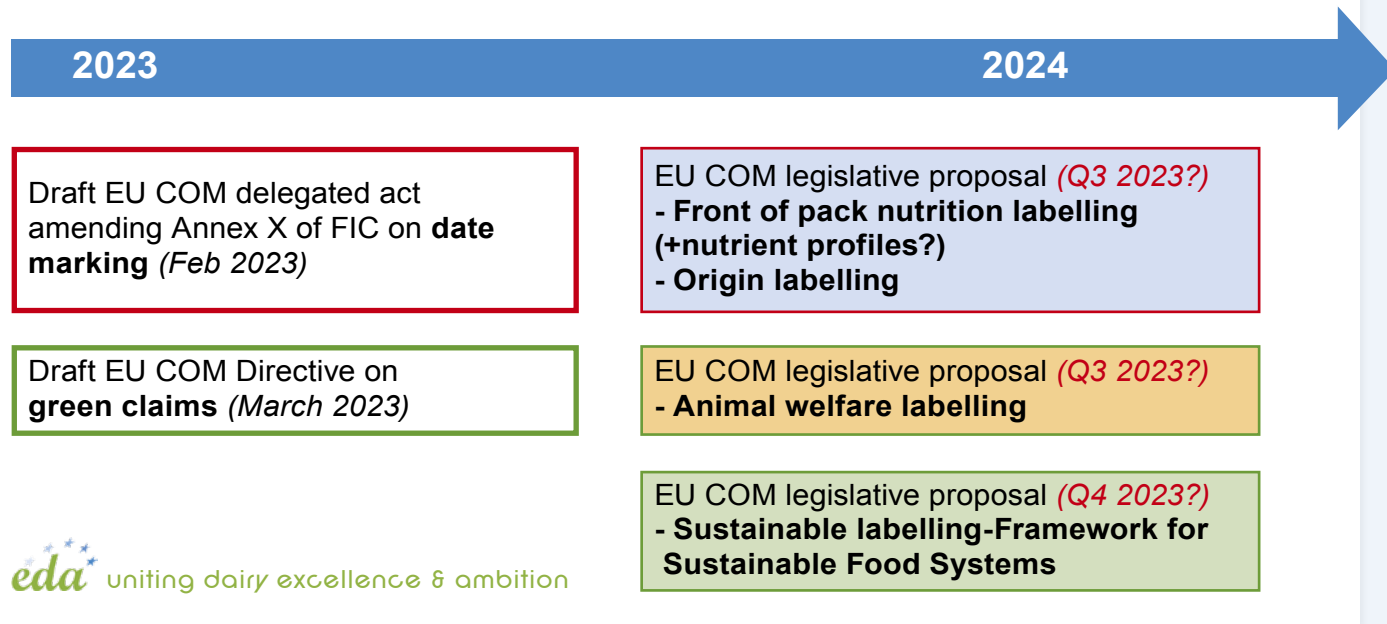
While the background of the EU Commission proposal was to harmonise the national rules on mandatory origin labelling, we believe that the existing EU harmonised voluntary framework is functioning very well and there is no need to introduce mandatory rules. Our EDA guidelines on voluntary origin labelling for milk dairy products are part of our commitment to ensure accurate and credible origin labelling information to EU consumers and highlight specific origin links of a product, where the food business operator wishes to do so.

While supporting an EU harmonised voluntary origin labelling scheme, we continue to oppose any form of national or European additional mandatory measures on origin labelling for milk and/or dairy products (see EDA Position against mandatory origin labelling for milk). We firmly believe that further mandatory origin labelling national schemes lead to the fragmentation of the EU Single Market and not only create obvious obstacles to trade inside the EU, but also turbulences in international trade.

EU labelling changes:



Timeline of the upcoming EU labelling changes



A well-functioning internal market for food supplies is key, especially in the current times of external shocks of the magnitude of the Covid-19 crisis or the Russian war against Ukraine.

As EDA, we continue to protect the integrity of the Single Market and continue to work towards a more environmentally friendly and sustainable approach in line with the objectives set out in the Green Deal and its Farm to Fork Strategy.

Date marking

Food waste and resource efficiency are important goals set by the EU Green Deal and its Farm to Fork Strategy. In this context, addressing consumer understanding of date marking is considered by the EU Commission as one of the ways to reduce food waste.

As the least controversial part of the labelling changes, a draft delegated act amending Annex X to Food Information to Consumers (FIC) Regulation on the indication of the date of minimum durability was finally greenlighted by the EU Commission in February 2023. The proposal introduces a new phrase 'often good after' to accompany the 'best before' indication on the food label. The draft proposal is being discussed with the Member States and not without some diverging views, also expressed by EDA and other industry sectors.

As EDA we are in favour of voluntary expressions and not mandatory as in the current proposal. We are also concerned that 'often good after' might confuse consumers (how long after...?). There might be also some liability issues hence the operators might wish to shorten the best before date to avoid potential criticism on

quality. Finally, some multilingual labels might not have sufficient space to accommodate the additional text.

Considering the difficulty of significantly reducing food losses and waste via date marking only, we may expect the EU Commission to further look into other means to help the citizens to reduce the volumes of food they are throwing away. Every progress in this regard will automatically reduce our environmental footprint.

Animal welfare labelling

The revision of the current EU animal welfare legislation is also amongst the objectives of the Farm to Fork Strategy. The initiative aims to update animal welfare rules to increase the role of recent science-based analysis, broaden their scope and make them easier to enforce, generally increasing the level of animal welfare in the EU. The new EU rules on the welfare of animals in Europe are expected to be proposed in 2023 and animal welfare labelling will be part of the revised legislation.

For animal welfare labelling, the European Commission is considering three policy options: Option 1: Regulating animal welfare claims by introducing common minimum requirements for all animal welfare claims; Option 2: Creating an EU animal welfare label limited to cage/non-cage systems; Option 3: Introducing an EU animal welfare label with key welfare criteria that could be voluntary or compulsory and focused on fresh products.

As EDA we are following the discussions as a member of the EU Platform on Animal Welfare. In the platform, we bring forward our support to make every effort to keep dairy animals healthy as key to dairy production.

Environmental labelling - Green claims

One of the few initiatives that the EU Commission has actually published according to the original timeline was a draft Directive on substantiation and communication of environmental/green claims published on 22 March 2023.

The background of the proposal is to set common EU criteria against greenwashing and misleading environmental claims. The draft directive targets explicit voluntary "green claims" made by businesses that state or imply a lesser, positive, or no environmental impact as well as environmental labelling schemes. The EU Commission proposal incentivises substantiation of Green Claims with the Product Environmental Footprint (PEF) method.

EDA is supportive of the EU Commission initiative as we favour harmonisation of claims on the environmental performance. In particular, we are keen on Product Environmental Footprint Category Rules (PEFCR) and we would like to future EU framework to support and promoting the use of PEF methodology to substantiate green claims. For more details see EDA position statement on the upcoming legislative framework on green claims.

Sustainable labelling

The proposal for a legislative framework for sustainable food systems (FSFS) is one of the flagship initiatives of the Farm to Fork Strategy. An important part of the FSFS will be a proposal on the sustainability labelling framework.

The intention of the EU Commission is that the proposal will govern the provision of information to consumers related to the sustainability of food products in synergy with other relevant labelling initiatives (front-of-pack nutrition labelling, animal welfare labelling and green claims). In practice, the sustainable labelling framework will cover nutritional, climate, environmental and social aspects of food labelling.

The EU Commission intends to publish the proposal for FSFS in September 2023. It is understood that the proposal will be quite generic and will set a legal framework for further regulating sustainability facets of the food systems mostly via more detailed delegated acts that will be published in the years to come. The idea of the EU Commission is that sustainable labelling will be introduced as part of the more detailed measures. There is quite some speculation and discussion around the shape of the sustainability labelling, but it seems that the EU Commission needs first to finalise complex discussions on nutrition labelling, animal welfare labelling and green claims to be able to start the works on the new EU sustainability logo.

Dairy is a crucial sector contributing to sustainable food systems, and we will step up our efforts to provide consumers with safe, nutritious and sustainable dairy products. As EDA, we will continue to voice our dairy messages to make sure that any future legislative framework – be it Green Deal or any other – will take into account the reality of dairy processing.

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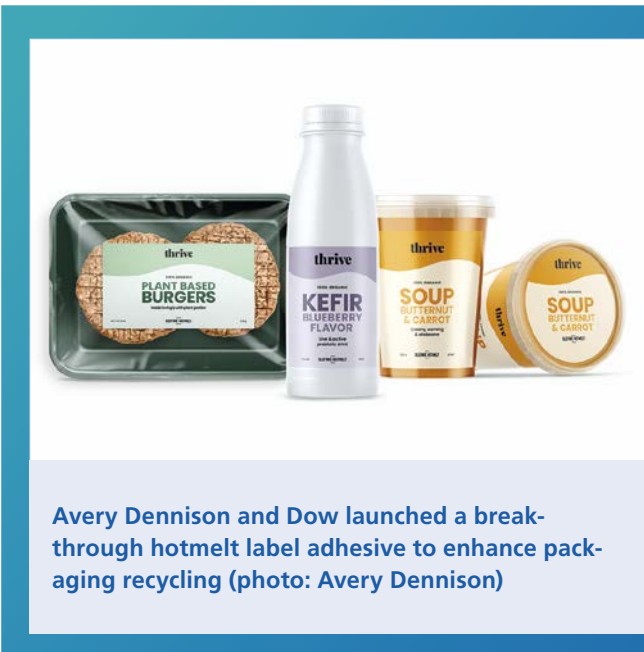


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Reconditioned Dairy Equipment



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Avery Dennison and Dow launched a breakthrough hotmelt label adhesive to enhance packaging recycling (photo: Avery Dennison)

Dow and Avery Dennison
 Hotmelt für better recycling

Dow and Avery Dennison have co-developed an innovative and sustainable hotmelt label adhesive solution that enables polyolefin filmic labels and polypropylene or polyethylene (PP/PE) packaging to be mechanically recycled together in one stream. The adhesive is the first of its kind on the label market and is approved by Recyclclass for recycling in the HDPE colored stream – Class B.

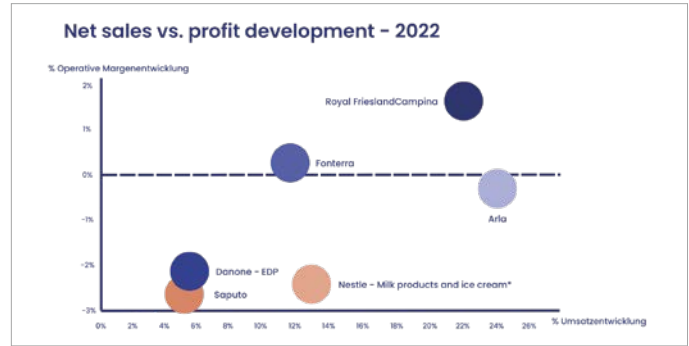
Hotmelt adhesives offer excellent performance in labels for chilled applications (such as food), but standard hotmelts reduce the usability of recycled PP/PE material. Because this new olefinic hotmelt is based on the same chemistry as PP/PE packaging, when it is combined with a polyolefin facestock, the label and packaging can be treated as a mono-material and recycled together. It therefore offers better recyclability than standard hotmelts without compromising performance.





(photo: Tetra Pak)

Innovation in ice cream taste and texture
Technology/IT



(fig.: A-Inights)

Performance of Top Dairy Companies in 2022
Industry analysis



(photo: Karwendel)

Digitization of shipping and export
Logistics



(photo: Alia Laval)

Condition monitoring software with built-in analytics
Technology/IT

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