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DAIRY

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Sustainably different?

The dairy market in 2022



Monika Wohlfarth
ZMB, Berlin

The dairy market started into the year 2022 under different circumstances than in the past decades. Prices for dairy products are at historic highs for the beginning of the year. Revenues from the combination of butter and skimmed milk powder are higher than ever before, passing the 50-cent mark. Historically high prices are also being achieved for new contracts with cheese and whole milk powder.

The European and global market has meanwhile returned to an equilibrium situation after several years of oversupply with protein and is currently even showing signs of a slight undersupply. Since the middle of 2021, the export volume of the main "milk countries" as a whole has deviated from the long-term rising trend and is decreasing slightly – a situation that was rarely observed in previous years and always only in the short term. The reasons for the current decline are manifold. In Germany and other EU countries, the stricter environmental and production regulations, which lead to higher costs and reduced yields, play an important role. Currently, there are also high costs for concentrated feed, energy and fertiliser. In the US, high costs combined with relatively low milk prices are dampening production. In Oceania, the weather has been unfavourable since the beginning of the current season. Meanwhile, global demand for dairy products continued to grow slightly despite the negative economic impact of the Corona pandemic.

Higher prices for dairy products will push milk prices, while the full force of "milk inflation" is far from being fully felt by consumers due to long-term contracts with food retailers.

In the past, higher prices have always stimulated milk production quickly and allowed it to grow beyond demand, triggering price declines again. That this cycle will also be set in motion in the current year seems more than doubtful given the framework conditions.

There may be windfall gains in the form of cows being milked a little longer and slaughtered later. A spirit of optimism among milk producers like at the end of the quota system with increased investments and restocking is not to be expected, not only because of the long approval procedures and high construction costs for stables. The challenges have become diverse and complex. More sustainability is at the top of the agenda. In its Green Deal, the EU Commission has set ambitious targets for the reduction of mineral fertilisers, pesticides and antibiotics. These are measures that will reduce yields in the future – just like the intended increase of the market share of organic products.

In many countries, animal welfare is a strong focus in food retailing and politics, which is likely to further strengthen the ongoing structural change. As far as financing is concerned, an increase in VAT on animal products is now even being discussed in Germany. This would make dairy products even more expensive for consumers than they are due to the strong cost increases faced by dairies and milk producers, which have by no means been fully passed on yet.

More sustainability will ultimately increase competition – on the one hand for the raw material milk and on the other hand for the euro in household budget.

Swiss cheese specialties come into shape

Cutting technology from holac

Swiss cheese manufacturer Imlig, based in Oberriet, has just installed a new high-performance machine from cutting specialist holac into their line operation. For Imlig, the focus was on being able to process a wide range of different types of cheese with a single machine. The high demands on hygiene were also



Swiss cheese manufacturer Imlig relies on cutting technology from holac (photo: holac)

decisive in the company choosing for holac. The new cutting machine is an integral part of the production line. Imlig specializes in large industry packs for hotels, restaurants and canteens, in addition to medium and smaller packs for discount. Imlig produces a wide range of different types of cheese – including semi-hard cheese, grated cheese, raclette cheese and fondue cheese. The cutting machine had to be adaptable to process complete blocks with varying consistencies and fat contents. "With this machine, holac has helped us to close a very important gap in our product range," says CEO Urs Imlig.

Top performance in terms of service and hygiene

Imlig was also convinced of the ease of use and hygiene: "We have also found that the machine is very easy to dismantle, clean and re-assemble, which is vital for the production of food."

The cheese manufacturer Imlig focuses on the quality and reliability of the systems: over 60 employees work in the company, some of whom work in three shifts. Up to 1,000 tons of cheese ripen in the fully automated warehouse, 50 percent of which is exported.

Processed cheese without added phosphates or citrates

HYDROSOL

Hydrosol has developed processed cheese formulations that don't need added phosphates. These "free from" products offer characteristics similar to standard products.

A stabilising system in the Stabisol PCCL series enables the production of spreadable processed cheese preparations without E-numbers. The system is based on a complex combination of a specific starch, vegetable fibre and other plant-based ingredients. The standard recipe calls for more than 30 percent real cheese varieties such as gouda, and is produced in a conventional high-shear process cooker.

Especially for children's products, Hydrosol has developed a stabilising system for squeezable processed cheese preparations in tubes, pouches and similar soft packaging. The declaration-friendly final product needs no melting salts or table salt. This stabilising system, likewise from the Stabisol PCCL series,



Processed cheese preparations in slices or triangles can be given good shaping qualities using a stabilising system from the Stabisol PCTR series which is free from added phosphates and citrates (photo: Hydrosol)

is based on a special combination of a declaration-friendly hydrocolloid and special starch. 50 percent cheese goes into the premium formulation.

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“Great clean taste, no added phosphates!”



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Meat and dairy products from the bioreactor

Those who are skeptical today may be squeezed out of the market tomorrow



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“Survival of the fittest” is probably the most famous phrase coined by Charles Darwin. However, Darwin has not, as often incorrectly assumed, argued that the strongest wins in a competitive environment but stressed the importance of adaptability for survival. The necessity to constantly assimilate to new developments is not only prevalent in nature but also in competitive markets. Companies can only survive in the long run if they are permanently capable of embracing change and reinventing themselves. Prominent cases of Kodak, Nokia, and Thomas Cook vividly illustrate the consequences of companies’ reluctance and incapacity to critically reflect on and question established business models in the face of (technological) change.

The logic of adaptability for survival also applies to the agri-food industry. The industry cannot take for granted that its traditional business models will continue to be successful in the future. In fact, some (regional) markets for meat and dairy products are already undergoing profound changes. The new generation of plant-based meat and dairy substitutes has created a new product category that has firmly established itself in the marketplace. The triumph of plant-based meat and dairy substitutes is closely linked to the fact that they have become increasingly similar to their animal-based counterparts. In this way, the new products are able to satisfy the demand for better nutrition without consumers having to forego the “real” taste of meat and dairy products. Another driver of the rising demand for plant-based meat and dairy substitutes is society’s growing awareness of environmental prob-

lems of consumption and the associated advent of the “vegan zeitgeist”. By now, the vegan movement has outgrown its niche and plant-based meat and dairy substitutes are enjoying increasing popularity with consumers.

For a long time, the incumbent industry has not taken seriously the rise of plant-based substitute products. Only slowly the insight is gaining ground that the growing demand for these products is not a fleeting moment or a negligible trend but has a profound impact on the industry’s traditional business models. Recently, Jais Valeur, the CEO of Europe’s largest meat processor Danish Crown, had to admit to have severely underestimated the vegan wave. Moreover, he acknowledged that livestock factory farming imposes enormous negative externalities on the environment. Therefore, it is only logical that the company has joined the group of other established companies that are involved in plant-based substitute products. Notably, doing business in the domain of plant-based alternatives is likely to be a basic building block for Danish Crown to meet the self-imposed goal to reduce its ecological footprint by 50 percent by 2030.

Profound changes ahead

Plant-based substitute products are, however, just a foretaste for the profound changes lying ahead of the agri-food industry. With in-vitro produced meat and dairy products new disruptive innovations are already knocking on the door. Over the past two years, investments in the new technology for the production of in-vitro products such as hamburger patties and dairy ice cream



It is no longer a question of whether products produced in the bioreactor will come onto the market, but only when this will be the case (photo: Pixabay)

have skyrocketed. In total, several billion of euros have already flown into this technology. The large investments have accelerated technological development in this field and allowed several critical technical obstacles to be overcome. Against this backdrop, it is not the question anymore whether products created in the bioreactor will enter the market, but when this will be the case. Accordingly, it is little surprising that more and more big names in the agri-food industry, such as the food manufacturer Nestlé and the meat company JBS, are bracing themselves for the new reality through strategic partnerships and equity investments in the in-vitro landscape.

In contrast to plant-based substitutes, in-vitro meat and dairy products will not just be similar to their animal-based counterparts but perfect substitutes. This means that the new products will look, smell, and taste the same as the products we are familiar with today. Accordingly, the difference between conventionally and in-vitro manufactured meat and dairy products will not exist on the level of the product, as it is the case with plant-based substitutes, but solely in the production method. This renders in-vitro products in principle appealing to all meat lovers with the conse-

quence that the potential market for in-vitro products will likely to be much larger than the market for plant-based substitutes.

At this point, the question arises about the market potential of in-vitro produced meat and dairy products. Ultimately, the market success of the new in-vitro products will be strongly determined by consumer acceptance. In general, the logic applies that the more benefits innovations offer to consumers, the greater their market success will be. A first added value of the new in-vitro technology lies in its high potential for sustainable development. Some experts predict that the in-vitro production of meat and dairy products might generate up to 90 percent less greenhouse gas emissions than the production of their animal-based counterparts. In addition, comparable sustainability leaps are expected in regard to water and land use. Notably, given that the in-vitro production of animal products is independent of climatic conditions, the new technology can make an important contribution to global food security in the era of climate warming. Moreover, the manufacturing of meat and dairy products in the bioreactor has clear benefits in regard to animal welfare as it neither requires intensive livestock farming nor the slaughter of animals.



Due to economies of scale as well as shorter value chains, substitute products will not only reach price parity with conventional foods in the long run, but can even be produced and thus sold at a lower price (photo: Pixabay)

Price-sensitive buying

The clear ecological and societal advantages of in-vitro meat and dairy products are, however, not a sufficient condition for their market success. In all its clarity, this is reflected in the phenomenon that, on the one hand, consumers regularly demand more sustainable products, yet, on the other hand, display very price-sensitive buying behavior. This phenomenon provides the most powerful argument in favor of meat and dairy products from the bioreactor: Due to economies of scale and shorter value chains, the products are likely to not only reach price parity with but also be cheaper than the traditional products in the long-run. Once this point is reached, it is reasonable to assume that the in-vitro technology will push conventionally produced animal-based products into the niche.

Overall, it can be expected that the emerging in-vitro technology will create unprecedented pressure for change in the agri-food industry. The amount of livestock will be significantly reduced, which will not only require farmers but also all other players in upstream and downstream value chains to rethink their current and identify new business models. Given that change can be shaped but not stopped, the players in the incumbent agri-food industry thus seem to be well-advised to seriously consider the possibility that the last decade of conventional production of animal-based products might have already dawned.

Multi-million investment program

BENEON

BENEON has announced a multi-million investment program for the coming years to expand capacity for its prebiotic chicory root fibre production sites in Penmuco, Chile and Oreye, Belgium. The first step will see more than €30m invested. The entire program will ensure a significant capacity increase of more than 40 percent of BENEON's global chicory root fibre production to meet rising customer demand and drive further growth within the market. The work on both production sites is beginning in 2022.



BENEON will invest €30m in capacity increase for prebiotic products (photo: BENEON)

RFID and ERP system

How Woerle promotes its digitization



Austrian family company
Woerle processes all specific
data in a single system

As a cheese manufacturer, Woerle is hugely successful in two markets: selling its hay milk products in Austria, and supplying processed cheese in international markets. The global player exports 51 percent of its annual output of 28,500 tons to 70 countries around the world. Behind all this is more than just a smart strategy. Woerle has also opted for cutting-edge technologies, including RFID chips for the trolleys in processed cheese production. The central management unit is their ERP system. "Our ERP enables us to serve the national premium market as well as the global market. We are capable of producing small batches subject to stringent quality requirements with the same level of efficiency as large volumes for the international business," says Manfred Hager, head of Controlling & Organization.

Farmer payment directly in the ERP system

Like in other European countries, the Austrian milk market is strongly regulated. This begins with the payment of the farm-gate

milk price, which depends on the quality features of the supplied milk, on the milk's fat and protein content, and on the bacteriological properties such as the plate count. For the calculation of the milk price, Woerle uses the "Milk Payment" module integrated into the ERP system. This program analyzes the data from the milk trucks as well as the lab values and automatically determines the correct price. Any markups or reductions are calculated in line with quantity and quality ranges. The statement of return deliveries is also performed automatically by the software. The key benefit for Woerle: all specific data is processed in a single system, ensuring a consistent information flow up to Financial Accounting.

All warehouses represented in the ERP

From Henndorf to the world: with a new building, Woerle has laid the technological foundation for its international expansion. In 2019, Woerle concentrated its formerly distributed cheese factories at one site. On the one hand, to utilize the efficiency gains from centralized processes, and on the other hand, to reduce its

With the integration of the high-bay storage facility, now all of Woele's warehouses are represented in the ERP

CO₂ footprint: since autumn 2019, they have been able to cut about 5,000 truck tours between the different warehouses and the headquarters.

The fully automatic high-bay storage facility with two temperature zones has been an important part of the large-scale project. This is where the company stores pallets with raw cheese products, semi-finished products from its own production, finished products, and retail goods. Via the procurement process, the raw materials for cheese and processed cheese go into the high-bay warehouse, where an upstream QA test in receiving makes sure that the CSB-System knows the qualities of all incoming raw materials. The key parameters such as lot number and minimum sell-by date as well as features like the fat content of the dry matter or results of the visual inspection are entered in the system. This integration of quality management allows in-process testing throughout the entire supply chain, from reception and storage to the shipment of the finished products.

With the integration of the high-bay storage facility, now all warehouses are represented in the ERP. "In our company, all employees see the same inventory accounts, whether raw materials, finished products, purchased items, or packaging materials. This makes it much easier for us to retrieve stock information." The user interfaces at the workstations for stock putaway and stock removal are supplied by CSB too. "It was important to us that all users work with CSB. It's a lot easier if all employees are working in the same world," says Hager.

RFID for enhanced production security and accurate traceability

One of the fundamental challenges in processed cheese production is the traceability of the final products. Every batch consists of various raw cheese products, partly originating from the in-house production, while some parts are purchased from other cheese manufacturers. In melting, these different raw materials are combined – and have to be quickly identifiable by the ERP system in the case of an incident.

This task will soon be aided by RFID chips. Every trolley will then be labeled with a chip, which is registered at the scale with a hand-held scanner during component preparation. At batch processing, the chip is verified automatically by the software. As a result, the previously weighed cheese raw materials, which are identified by the RFID code on the vats, can be allocated to the correct batch according to the plans.

The aim is to make inventory management more transparent, to enhance production security and control, and to reduce the losses. What is more, the RFID chips smoothly communicate with the CSB-System, ensuring reliable information processing without manual rework.



Mobile information processing to increasing picking speeds

Reducing manual data capture to improve data accuracy – a goal that Woerle has also achieved in picking. Here, the staff carries the ERP system along in the form of handheld devices.

The pickers using this “Mobile ERP” solution no longer need to work with picking notes, as the order data is sent directly to their handhelds for processing. The advantages of mobile data capture and processing are obvious. Paperless processes make the employees more productive, the error rate is substantially reduced, and the data quality as well as the data availability is improved as there are no media disruptions. Supply of the picking zone is also managed by the CSB-System that initiates automatic stock removals from the high-bay storage facility.

Dispatch management is handled via the picking control station by CSB. Full pallets and partial pallets are separated. For full pallets, the stock removal order is transmitted directly to the high-bay storage facility. The partial pallets coming from picking are

returned to the high-bay warehouse, from where they are taken out together with the full pallets of the order or route, and moved to staging tracks for loading. During stock removal, customer-specific labels are attached to the pallets.

Great progress in the digitized cheese production

Woerle has demonstrated how the ERP system has enabled the end-to-end digitization in the entire company. The system links all processes, from the purchase order to dispatch, and provides the executive management with the transparency they need in their day-to-day operations.

The integration of the internal logistics is already well advanced. “We have made great progress on our way towards the digitized cheese production,” says Hager. Yet, this is not all. Additional projects are soon to be implemented, and the family business – now into its fifth generation – is eager to get started: 35-year old Gerrit Woerle will take over as a CEO from his father, Gerhard. In fact, Woerle is here to stay.

The ERP system guides staff via handheld devices



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Automated cheese transport line

Transferring cheese variations safely between production and loading ramp



Author: Jörn Thomas, TRAPO AG

The central benefit of modern food processing is optimized safety through automated processes. Food manufacturers are responsible for product liability, and TRAPO AG, as a partner of the food industry, designs flawless processes in production and intralogistics. With respect for the task of transporting food, complex lines are created – at the traditional German manufacturer JERMI from production to the loading ramp.

The traditional Swabian company was founded back in 1889. Today, the customer base of the food manufacturer from Lauheim-Baustetten includes all German discounters, wholesalers, the food processing industry, and partners in the co-manufacturing sector, in addition to the classic food retail trade. In addition to its own "JERMI" brand, customers' private labels are playing a steadily growing role. 20 percent of the products are exported from Swabia to 50 countries worldwide.

Complete line competence enables flexible conveyor technology

State-of-the-art production makes it possible for over 12,000 tons of processed and fresh cheese and around 28,000 tons of pre-packaged cheese to land on the gourmet's table every year. High performance that needs a partner. In 2018, the first contact was made with TRAPO AG. "The many years of experience in high care areas and in hygiene design were decisive for me," recalls Gerhard Jerg, Managing Director of JERMI.

"Everything from a single source" – the complete line competence of TRAPO AG impressed him – and last but not least the fresh, elegant, compact stainless steel design of the plant.





(photo: TRAPO)

**JERMI operates two HLP 6000
high-performance palletizers**
(photo: TRAPO)

Knowledge based on over 50 years of experience and expertise in stainless steel manufacturing. All components of the hygienic design are manufactured in the company's own stainless steel production facility at its headquarters in Gescher-Hochmoor.

Automated solutions for higher performance

In a first step, TRAPO AG supplied two HLP 6000 high-performance palletizers. The high-performance layer palletizer from the HLP series offers high performance in the tightest of spaces – and serves an almost unlimited product range. This means that perfect, clean layers and stacks can be formed under maximum performance with a high variety of products on the customer's side. With this considerable advantage, the HLP plays off its unique selling point, absolute flexibility: The HLP 6000 deposits perfectly and realizes any layer patterns of different formats – up to 10 layers/min.

Layer formation and palletizing form the basis of reliable packaging. The HLP series palletizers operate at JERMI with a high in-feed. One high-performance layer palletizer will be equipped with a y-axis, the second with a traversing axis – so one or more palletizing stations can be served as needed. Onward transport of the packaged cheese variations to the warehouse or for loading will be handled by six automated guided vehicles of the TTS series. With the TTS series, TRAPO AG is opening a new chapter of flexible conveyor technology in food production. Particular added value



more safety and higher efficiency at the loading ramp. Those responsible at JERMI and TRAPO AG were mutually inspired – united in the visionary idea of sustainably optimizing routine tasks through efficient automation. This is how the idea for seamless automation "from production into the truck" was born. The result is the autonomously operating TLS 3600, which also offers a special competitive advantage: It can automatically compensate for height differences at the loading ramp and make position corrections.

Loading takes place in four sequences. First, up to three pallets are placed side by side in a row on the stationary part of the system and aligned. This is followed by picking up and loading the row. During the loading process, another row of pallets is formed and staged on the stationary part. This is a continuous process that saves time and distance and avoids waiting times during pallet loading. For a 13-meter trailer, the loading time with 33 pallets – depending on the load – is about 15 minutes. To serve several loading hatches, the TLS can be placed on rails. Since no structural changes to the hall floor were possible at JERMI, the TRAPO Loading Mover (TLM series) takes over. The TLM behaves like an XXL load carrier when it completely picks up the TLS and positions it as needed.

"The decision was consciously made in favor of a partner with grown complete system expertise, who offers the highest level of safety and has a proven track record of specializing in automation in high care areas," sums up Jörg Thomas, as TRAPO AG's head

of sales in charge of forward-looking automation at JERMI. As the controlling instance, TIM, the TRAPO Intelligent Management System, regulates and monitors the automated processes between production and the loading bay. The higher-level system nevertheless acts as a "traffic light circuit" to ensure that the TTSSs operate safely and efficiently alongside and with each other.

The TRAPO Loading System TLS 3600 offers more safety and higher efficiency at the loading ramp (photo: TRAPO)



FMCG GURUS

The TOP 10 Trends 2020

FMCG Gurus has identified the top 10 drivers that will shape the market for branded foods in 2022. Each of the ten trends translates into a number of sub-trends as the graph shows.



Solutions for plant-based products

PLANTARIS

FrieslandCampina Ingredients and AGT Foods have developed solutions for plant-based products. The new The Plantaris range will first feature Plantaris Pea Isolate 85 A and Plantaris Faba Isolate 90 A. Both solutions have been designed to overcome common formulation challenges associated with plant proteins – particularly the flavour off-notes of pea proteins, which consumers can find unappealing. The new, light cream-coloured protein powders will help brands expand their protein product offerings and meet high consumer expectations for taste, texture and performance.

Combining the technical expertise of the two companies, both ingredients are extracted using a gentle, chemical-free manufacturing process, and are specially processed to ensure dispersibility, solubility, stability, and low dusting. Well suited for a wide variety of applications, they are also gluten free and a good source of essential ami-



Plantaris makes an end to off-flavour produced by pea proteins
(photo: FrieslandCampina Ingredients)

no acids, such as leucine and branch chain amino acids (BCAA). These ingredients have a very high protein content, which helps to optimally stimulate muscle protein synthesis.

Vacuum filter for maximum hygiene

ANDRITZ

ANDRITZ has launched Nutrion – an innovative vacuum drum filter with a hygiene-optimized design that ensures high-quality end products for demanding sectors such as food. It features a self-emptying filter trough, a vapor-tight hood, and advanced control options.

Compared to traditional vacuum drum filters, the Nutrion vacuum filter from ANDRITZ has multiple improved features to eliminate any risk of contamination – an essential requirement for separation equipment in the pharmaceutical or food industry. Its filter trough is designed without any internal mechanical components and with self-emptying capability, simplifying the maintenance process and increasing cleanliness in this sensitive area. The vapor-tight hood eliminates the risk of contamination, with integrated nozzles for fully automatic cleaning in place (CIP) as well as optional cake washing.

An innovative, magnetic clamping device takes filter-cloth installation to the next level by eliminating dirt traps and reducing downtime for cloth changes. For



The new ANDRITZ Nutrion vacuum drum filter
(photo: ANDRITZ)

pre-coat applications, the product quality and staff safety are also enhanced by the addition of a pre-coat scraper with step motors, again with CIP and a fully enclosed design. Nutrion ensures increased safety for staff, highest hygiene, and product quality, while ensuring greater availability and minimizing manual interventions.

An early warning system for preventing phage problems in cheese and fermented milk production.





While phage testing is a common practice within dairies, receiving results can take anywhere from four hours to over a week. At that point, it is often too late to prevent the effects of phage contamination on the performance of cultures or the duration of the fermentation process. In fact, just one week of phage-affected cheese production can result in significant cheese losses of up to €200k.

A new and unique one-hour phage detection technology and digital phage management platform

DSM introduced the new Delvo®Phage test kit and Delvo®Analytics app. Delvo®Phage test kit is the fastest phage testing kit on the market. It can detect phages in dairy within one hour, helping to increase cheese yield and quality, reduce waste and boost value in cheese production by 5-10%. Part of DSM's broader phage management solution, the new Delvo®Analytics app offers a 24/7 platform for phage insights and data from whey samples of production. It enables dairy manufacturers to take immediate action on results with customized culture rotation recommendations. Together with DSM's whey testing and culture rotation services, the new digital solutions enable cheese and fermented milk product producers to make smarter, data-driven decisions in real-time for more efficient and cost-effective production processes.

The speed producers need to outsmart phages

Ideal for cheese and fermented milk products, DSM's easy-to-use Delvo®Phage test kit is a unique, qPCR test kit offering quantitative phage detection results 'on the spot' at several steps during production. It enables active bacteriophage monitoring and management in mesophilic and thermophilic dairy processes for reliable and consistent production, providing an early warning system for preventing phage problems. With increased consistency, dairies can increase production capacity and improve cheese and fermented dairy product quality, while also reducing economic losses by preventing waste, minimizing production slowdowns and improving sustainability.

DSM expertise at hand with Delvo®Analytics

Further advancing its market-leading portfolio of phage management solutions, DSM also provides the Delvo®Analytics app. After submitting whey samples for testing, dairy manufacturers can view the results of the phage analysis and access insights into phage results and trends via the app at all times. Based on this data, DSM experts can provide culture rotation and process recommendations via the app which is available on computer, tablet or phone, offering a go-to platform for phage insights.

For more information on visit Delvo®Phage test kit page on www.dsm.com/food-beverage/cheese



The specialist for lifetime nutritional powders

FIPROS Nutrition now also offers processing of specialties and private label recipes

Danish contract manufacturer FIPROS Nutrition has repositioned itself for the future. At its brand-new processing site on the island of Funen in Denmark, built in 2019/2020 for the equivalent of € 13 million, FIPROS Nutrition is now also offering the processing of powder products, aiming at the nutritional and functional food industry. IDM was on site.

FIPROS A/S, the mother company of FIPROS Nutrition, has been in the contract manufacturing business since 1992 and processes a variety of food and food ingredients for its customers around the globe. With the building of the new plant of FIPROS Nutrition, the company is now another step further: Under highest food safety standards, the company now offers the development and the processing of lifetime nutritional powders.

Optimum production flow for specialties

In addition to dairy based powder products, such as standard infant nutrition, FIPROS Nutrition also offers the processing of specialties such as vegan or hypoallergenic powder products, serving the entire lifetime span from mothers and babies to children, families, and elderly people. "Our particular strength lies in our flexibility and the concept of our new plant. Due to its relatively small dimensions, it can also handle allergens, as the time required for cleaning is less than 6 hours and we can guarantee 100%-line clearance. This is precisely where large manufacturers have their biggest challenges, as it reduces the cost-efficiency for them to clean their plant after frequent product changes and the handling of for example allergens. This is where opportunities open up for us, because we can serve our customers with batch sizes as low as two tons." says Conny Twisstmann, CEO of FIPROS.

Private Label powders will constitute a new offer

Besides specialties, FIPROS Nutrition now also offers the possibility to acquire recipes for private label productions. "Small or start-up companies that have a great idea or a request for a product,

can postpone or avoid the investment in their own production facility. Maybe they do not have the know-how or the resources to develop the product," explains Conny Twisstmann. "To those companies we are now offering finished blends." FIPROS will of course continue to work under a hundred percent confidentiality and otherwise not engage in product development or marketing of own brands.

Production on three floors

The construction of FIPROS Nutrition's blending and packing plant began in spring 2019, and approval was granted by the Danish Food Inspectorate in June 2020. The goal is in the near future to reach three-shift operation six days a week, which means a processing capacity of 6,000 t/y. The plant is designed as a three-floor



FIPROS Nutrition's new production plant in Ebberup, Denmark, is equipped with state-of-the-art technology.



Conny Twisstmann, Managing Director, and Morten Duch, Innovation and Sales Director, have reorganised FIPROS Nutrition

facility, with the raw materials being fed in at the top, mixing below and packing on the ground floor. All in all, this results in a very sustainable and robust production flow with no impact on particle size, functionality and providing considerable energy savings without the risk of de-blending.



FIPROS Nutrition relies on the highest possible level of automation for its packaging.

Well thought out food safety concept

"At FIPROS Nutrition we guarantee the highest food safety and hygiene standards throughout the entire production process. Regular HACCP analysis checks, well designed hygiene zones and access control, an advanced sluice system with natural disinfectants, separated visitor walkways and quality control plans build the cornerstones of our well-designed food safety concept", explains Conny Twisstmann. "But also, automatization and digitalization play an important part."

Two Ruberg precision batch blenders with capacities of 8,000 liters, a Jørgensen Engineering filling line and robot technologies ensure an efficient and automated processing performance.

At the moment, FIPROS Nutrition packs in cans with a diameter of 99 and 127 mm, allowing for packaging sizes from app. 400 to 800 grams. But Conny Twisstmann is already thinking about the future, planning the acquiring a bagging line, space for which has been left in the space planning, as well as a line for filling in sachets. IDM will report on the further development of the new plant.

A bunch of innovation

Chr. Hansen at Fi Europe

Chr. Hansen introduced a number of innovations at the past Fi Europe show. Here's a summary of the most important developments:

FreshQ bioprotection extended to plant-based

The new FreshQ DA culture combines Chr. Hansen's 145 years of expertise in food microbiology with a focus on fermentation solutions for plant-based products to help keep them naturally safe and fresh for longer. At a time when fermented plant-based products are experiencing increasing popularity, Chr. Hansen launches FreshQ DA, the food culture selected to help strengthen fermentation of these products, providing better protection against the spoilage caused by yeasts and molds.

FreshQ DA consists of lactic acid bacteria selected for its ability to out-compete contaminants through fermentation. It works in a variety of plant bases to help keep products fresh for longer.

- » Fermenting with FreshQ DA can help improve the robustness of fermented products against spoilage throughout the value chain, maintaining top quality for longer to optimize consumer satisfaction
- » Improve supply-chain sustainability and reduce waste in the value chain. It also gives consumers a longer window during which to eat the food.
- » FreshQ cultures can help extend shelf life without extending a product's list of ingredients.

Next-generation Premium cultures for fresh dairy

YoFlex Premium and nu-trish Premium are The Perfect Partner for creating high-textured yogurt with fewer additives and a healthier profile. The cultures help yogurt producers achieve their strategic goals, whether they wish to offer indulgent, high-texture yogurt with fewer additives; improve margins by reducing the need for expensive skim milk powder; or create healthier, premium yogurts with the optimal amount of probiotics.

Three new nu-trish Premium cultures include the world's most-documented probiotics linked to immune and digestive health, Bifidobacterium, BB-12 and Lactobacillus rhamnosus, LGG. 70% of consumers in Europe and 77% in the United States associate probiotics with helping to boost their immune health.



This newest generation of Premium cultures mark the beginning of a new chapter in Chr. Hansen's ongoing collaboration with dairy producers to ensure their products remain relevant amid a shifting competitive landscape.

Next generation of FreshQ food cultures

The new FreshQ culture range is a game changer in terms of low impact on post acidification, which allows a wider segment of dairy producers, retailers and consumers to benefit even more from the fermentation technology. These cultures were specifically developed to unlock the benefits of bioprotection for producers who may experience challenged cold chains, long fermentation, and in-process holding times. The special food cultures can be applied to a broad range of fermented dairy products, such as yogurt, white cheese and tvorog and offer several benefits:

- » Less post-acidification impact at accelerated temperatures during distribution, or in circumstances involving long holding times or slow cooling
- » Improved sensory fit compared to other food cultures with bioprotective effects
- » The same best-in-class bioprotective performance producers expect from the FreshQ range.

VEGA Culture Kit for fermented plant bases

With the VEGA Culture Kit designed for optimal results across the full scope of plant bases, Chr. Hansen aims to enhance its support of plant-based innovation. The VEGA Culture Kit is comprised of customizable starter cultures, probiotics and bioprotective strains. With its comprehensive kit of solutions, VEGA delivers simplicity with robust performance while offering producers the flexibility to create customized and differentiated features for their products in terms of taste, texture, health and sustainability.

Because the composition of plant bases is more varied than traditional dairy products, it is particularly important to utilize cultures expertly selected to meet the performance demands of dairy-free applications. The VEGA Culture Kit is simple to use while still offering the flexibility to create differentiated products that satisfy the primary consumer drivers that power this growing category.

Chr. Hansen – the photo shows the HQ in Hoersholm, Denmark – is the world's most sustainable biotech company (photo: Chr. Hansen)



YoFlex Premium and nu-trish Premium allow for creating high-textured yogurt with fewer additives and a healthier profile (photo: Chr. Hansen)

The VEGA Culture Kit offers producers also probiotic support with VEGA nu-trish blends of cultures enabling consumers to enjoy the benefits of the world's most-researched probiotics.

Sugar reduction

The next-generation SWEETY culture enables producers to maintain the enjoyable level of sweetness their customers love, all while reducing added sugar by up to 1g for every 100g of yogurt.

SWEETY culture works by converting lactose to glucose, naturally enhancing the sweetness perception in yogurt and enabling organic and VLOG labelling. The concept builds on the previous generation by offering thicker, more indulgent texture capabilities.

Chr. Hansen also offers NOLA Fit and Ha-Lactase, both of which use enzymatic activity to reduce lactose and optimize the natural sweetness in dairy.

FreshQ DA offers bioprotection for plant-based fermented dairy alternatives (photo: Chr. Hansen)



Healthy lifestyle trends

The Russian dairy market grows

Author: Vladimir Vorotnikov, Moscow, Russia

Changing consumer tastes and rising export supplies push Russian dairy companies to expand and adjust product range in order to stay on top. Since the introduction of the 2014 food embargo, Russia managed to boost milk production by 4.1 million tonnes, estimated Artem Belov, general director of the Russian union of dairy producers Soyuzmoloko. In 2020, Russia produced 32.2 million tonnes of milk – the highest figure since 2008. For instance, this is just 1.3 million tonnes lower compared to the all-time record set in 2002, which seems to be just within grasp now.

However, Russian dairy companies have had to deal with new challenges in the past few years. The dynamics of the domestic demand remain flat while its structure keeps changing. Russians are purchasing more cheese every year while cutting the consumption of some other milk products, Belov said, citing the official government statistics. In particular, this concerns kefir – a popular Russian fermented dairy product, the popularity of which goes downhill in Russia but is reportedly on the rise in some European and American countries.

The main challenge Russian dairy producers have to reckon with is gaining popularity of healthy lifestyle trends. Almost all dairy companies experience its influence.

"During the Covid-19 pandemic, the trend towards healthy, proper nutrition grew stronger. People began paying more attention to their health, choosing food more carefully, looking for products with added value – with vitamins and probiotics. People also began caring about the balance of fats and buy foods with less sugar. That is, demand has shifted towards more functional value-added [dairy] products," said Elena Kipeneva, head of the Russian branch of Valio.

Marketing research conducted by, a Russian cheese producer, Unagrande Company showed that as much as 39% of Russian customers during the past several years to some extent switched



Traditional dairy products lose popularity in Russia

from dairy products to vegetable alternatives: coconut, almond, and oatmeal juice. In most cases, Russians switch to milk alternatives due to various health issues.

Lactose-free milk in the spotlight

For dairy producers in Russia, healthy lifestyle trends bring not only problems but also opportunities, especially in the lactose-free segment, Unagrande Company claimed.

"The development of lactose-free product lines is a global trend in the dairy industry. People are increasingly suffering from discomfort after consuming cow's milk, so they are looking for a replacement option. According to research by the Vavilov's Institute of General Genetics, now on average, 30% of the Russian population suffers from lactose intolerance," commented Elena Kondashova, marketing director of Unagrande Company.



Lactose-free milk is a new trend in Russia

Sales of Eila lactose-free milk in 2020 grew by more than 50% compared to 2019, Valio said in a statement adding that customers in Russia are showing booming interest in both lactose-free, and this also concerns vegetable "milk".

As explained by the Russian food industry consultant Mikhail Lachugin, the rise in demand for lactose-free cow's milk as well as vegetable "milk" promises to shape up the Russian dairy industry in the coming years.

"Manufacturers of classic dairy products are already working in this direction. For example, Danone is steadily losing its share of the Russian dairy market, so hastily began to work on the production of vegetable alternatives under the Alpro brand in Russia," Lachugin said, adding that some juice producers and even grain companies are also mulling development plans in this segment.

"The [huge] incomes of large agricultural holdings enable them to purchase technological lines and began manufacturing these [lactose-free] products. One agricultural holding is putting a lot of effort into such a project right now. The competition in this segment is expected to intensify, with foreign players are likely to see their shares of the Russian market significantly reducing," Lachugin added.

In addition, the Russian dairy industry seems to recognize bright opportunities offered by the advanced milk processing segment. The production of milk powder and whey powder is expected to become one of the most promising segments of the Russian dairy industry in the coming years, said Marina Petrova, deputy chairman of the Moscow Trade and Industry Chamber. The companies that would opt to developing in this direction could seriously improve their positions on the market, she added.



Russian dairy companies have to adjust their product range due to new trends

"This is because the Russian dairy industry is undergoing profound changes related to both the decrease in real incomes of the population and the consequences of the Covid-19 pandemic," Petrova said.

Russia imports 38% of milk powder and 21% of milk whey. Import-dependence in these segments is believed to be the highest in the entire Russian dairy market. To achieve self-sufficiency on these products, at least four processing plants must be built with an overall investment value of 32 billion rubles (\$450 million). More importantly, milk, whey, and powder will offer bright export prospects in the future.

"Although the Russian dairy market is considered to be conservative, changes occur every day, even if they are not noticeable at first glance. In the near future, they will lead to a significant redistribution of market shares. As small and medium-sized processors find it increasingly difficult to compete with the leaders, they will be forced to change their product range from a classical line to niche dairy products," Petrova said.

One of the first projects in the field of advanced milk processing has already been rolled out by RM-Agro. The company harbors plans to build a plant to process 2,000 tonnes of milk per annum to obtain micellar casein, whey proteins, isotonic concentrates, lactose, and dry cream. As explained by Artem Belov, 80% of the world trade in the dairy industry accounts for dry dairy products, but in Russia, this segment remains significantly underinvested.

By allocating some additional state aid to investors willing to pump money into advanced dairy processing, the Russian government could secure the inflow of investments worth 50 billion rubles (\$800 million) in this segment in the next few years, Belov estimated.

Advanced milk processing is believed to be among the factors promising to push the Russian dairy export up in the coming years. In 2020, Russia exported 872,000 tonnes of dairy products for \$361 million. In physical terms, export climbed by 24%, compared to the previous year, the Russian Federal Customs Service estimated. So far, Russia exports primarily cheese, sour cream, and some fermented products to the CIS countries. Milk powder and whey open bigger export opportunities in the Middle East and Asia, market participants are confident.

Old habits die hard

Some dairy products in Russia are predicted to die out gradually. The main outsiders are so-called cheese-like products – those not containing milk fat. Before the pandemic, the demand in the segment had been seen falling, but tides changed in 2020, when their production increased by 9%, reaching 190,000 tonnes.

Belov explained that the resumption of growth in this segment was associated with a drop in the Russian population's purchasing power. A similar opinion was expressed by Anatoly Losev, CEO of Molvest, who admitted that Russians switch to cheese-like products at times when they have to increasingly spare money on food.



The Russian milk market experiences a rising demand for alternative products

This trend pushes companies to expand cheese-like production capacities, even though most companies prefer to keep a low profile in this segment so their names would not be associated with cheap cheese surrogates.

In a similar way, the demand for ice cream in Russia is set to rise in 2021, against all odds. Quite a few analysts predicted the healthy lifestyle trends to hamper ice-cream sales, but this doesn't happen. On the contrary, the summer trends showed that Russian ice-cream consumption is set to climb by 1% to 448,000 tonnes in 2021 – the highest figure over the past decade estimated the Russian state bank Rosselhobzbank.

In 2020, Russia produced 445,000 tonnes of ice cream, 8% up compared to the previous year. The rise in demand is associated with a very successful tourist season, as most Russians preferred to not go to Turkey, Egypt, or European resorts and stayed on the Russian resorts instead. Just like in other niches, dairy producers responded to market trends by expanding their range with healthy ice cream.

"The ice cream market has responded to this trend with low calorie, low sugar, high protein, and vegan ice cream products. Although for the Russian consumer, who perceives ice cream as a delicacy, this direction still remains a niche, taking into account international experience, we expect an increase in demand for healthy ice cream in the next couple of years," commented Andrey Dalnov, director of the Rosselhobzbank's analytical department.

Technology & automation

KALT and STAEDLER join

Kalt Maschinenbau AG and staedler automation AG are joining. Kalt, a specialist in cheese-making, dairy and process technology, and staedler, a provider of industrial automation solutions, want to act as a full-range supplier. The previous owners of staedler, Lukas Städler and Thomas Fäh, are taking a stake in Kalt. staedler offers process controls and robotics solutions as well as industrial machines for cooking and cooling food.



(photo: Kalt Maschinenbau)



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Also complete dairy factories

Broad-based research cooperation



Fermentative solution to problems associated with plant-based raw materials

Plant-based products are now experiencing unprecedented popularity. Many companies, including those in the dairy industry, are investing in R&D to develop products that appeal to consumers in terms of taste and texture. Recently, a large-scale development collaboration between NIZO as project leader, Wageningen University & Research, the Free University of

Amsterdam, HAS University of Applied Sciences, Bel, DMK, General Mills, Glanbia, IFF and Ruitenberg Ingredients, which aims to solve problems associated with plant-based raw materials in a fermentative way, attracted attention. IDM spoke to Nel Zoon PhD, CSO at NIZO, and Dr. Ralf Zink, Director, Head of Research & Technology, DMK.



NIZO together with renowned partners is in a large-scale development collaboration that will lead to superior plant-based product quality (Photo: NIZO)





(left) Nel Zoon PhD, CSO at NIZO is coordinator for developing improved plant-based milk alternatives

(right) Dr. Ralf Zink, Director, Head of Research & Technology, DMK: The end result may be combined processes with filtration and fermentation steps

IDM: Who had the idea for this joint project? How came the partners involved together?

Zoon: NIZO initiated this joint project. In recent years we have seen growing interest from governments, industries, and consumers in plant-based food options, leading to a (partial) transition from animal- to plant-based proteins. However, the increased use of plant proteins comes with several challenges as plant-protein ingredients often contain compounds that can cause unpleasant flavours, textural issues or have antinutritional effects in end products. An example of a flavour issue is the presence of hexanal from legume-based proteins, giving a noticeable "beany" flavour. Dr. Herwig Bachmann, principal scientist and Expertise Group Leader in Fermentation at NIZO, proposed to investigate whether unwanted components could be removed by fermentation.

The idea is analogous to a concept called bioremediation where microbes are being used to remove unwanted molecules from the environment and on our expertise to remove aldehydes in soy-based yoghurt alternatives by tailor-made fermentation.

We discussed the idea with industrial parties (e.g. the german dairy company DMK) and research groups with additional expertise and proposed to set-up a consortium and request for a subsidy in the Netherlands. This effort resulted in the NIZO-coordinated consortium project in which NIZO, 3 other knowledge organisations and 6 food companies (e.g. the german dairy company DMK) collaborate. This project received a grant from the Dutch Topsector Agri & Food and as well financial and in-kind contribution from the industrial partners. Within this Topsector companies, knowledge institutes and government work together on innovations for safe and healthy food for 9 billion people in a resilient world.

Zink: This joint project is unusual in several respects. It is an international community of companies from France, Ireland, Germany and the USA. These companies focus on very different raw materials. In addition, the university institutions complement each other in their expertise. The project will deliver results in late 2022/early 2023 and is funded with €1.4 million, 50% of which will be contributed equally by the industrial partners.

IDM: Will the results be made public in the end? There's State funds in it after all ...

Zoon: Scientific and precompetitive results will be disseminated, which is a pre-requisite of the Dutch Topsector Agri & Food subsidy authority for granting the subsidy, and is as well in the interest of the participating industrial partners.

IDM: What microorganisms are in the focus for fermenting plant-based material?

Zoon: Natural, food-grade micro-organisms, such as lactic acid bacteria and yeasts that are known to be able to ferment milk and/or plant materials, will be used. By carefully selecting the cultures and controlling the fermentation process, the aim is to remove as much as possible unwanted components, while limiting the production of other (unwanted) metabolites.

Zink: We work with different microorganisms depending on the raw material that is the focus of the research partners. The target is to use quite normal starter cultures, such as those used for milk and plant-based raw materials. Our research is currently working out which organisms are best suited for a specific task.

IDM: Will normal dairies be able to run that fermentation processes or will it be for specially equipped plants and manufacturers of plant-based foods will have to buy all this as ingredients?

Zoon: Dairies should be able to run the fermentation processes to remove these investigated and defined unwanted components. Fermentation is a well-known activity for dairy companies that produce fermented products, such as cheese, yoghurt, butter milk, etc. Removal of unwanted components from the plant protein ingredients could probably mean an additional operation unit in the production line of such dairies: a pre-treatment step to remove the unwanted components. Also, in-situ fermentation might be an option in fermented products: removal of unwanted components combined with the "regular fermentation" in one unit operation, e.g. removal of hexanal and the "regular fermentation" of e.g. lactose in yoghurt type products. In such cases we can search for strains that are capable to perform both "jobs" (removal of unwanted components as well as performing the regular fermentation). The alternative is a mixture of strain(s) that can remove unwanted components and strain(s) that execute the "regular fermentation".

Zink: We might come to combined processes with fermentation and filtration steps. Multiple fermentation with different cultures could also lead to the desired removal of interfering compounds. We are not only concerned with off-flavours, but also with other substances that we define as undesirable for nutrition.



Playing it safe

Grated cheese is automatically checked for foreign bodies made of plastic

Since 2017, Heinrichsthaler Milchwerke has been using optical inspection processes for the packaging of grated cheese, which make it possible to detect foreign plastic bodies even before the product enters the packaging. The process, for which SWAT Automation has meanwhile filed a patent application, has been continuously developed over four years. On the mechanical engineering side, Groba was the partner of choice, because the Dutch specialist has been a regular supplier to Heinrichsthaler Milchwerke for 20 years. The "ShredScan" in the fourth cheese-making line installed a few months ago at the Radeberg plant offers maximum safety against foreign bodies in cheese products. IDM was on site.

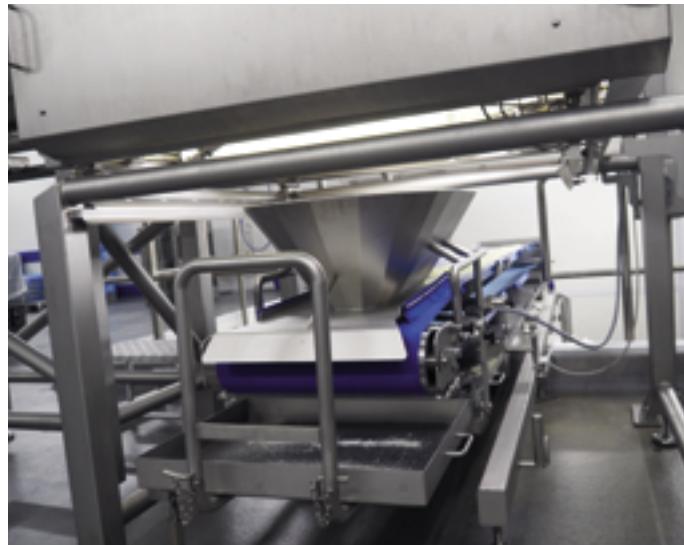
"Before we introduced optical inspection, we were constantly in danger of having foil residues and other contaminants in the product that could not be detected with the metal detector. In the worst case, this could have led to product recalls, which would not only have been expensive, but would also have jeopardised our reputation as a manufacturer of high-quality products," explains Uwe Lammeck, Managing Director of Heinrichsthaler Milchwerke. The cheese dairy spent some time looking for a mechanical solution, which became more and more important the more the final packaging was automated. This is because it eliminated the last inspection step, namely that an employee picks up the product again during cartoning and can discover a package with impurities.

ShredScan from Groba

Due to a lack of offers on the market, the solution to the problem had to be developed by the company itself. For this, Heinrichsthaler Milchwerke worked together with SWAT Automation, a company that takes on automation tasks for the cheese dairy as a permanent partner. After some experimentation, SWAT Automation, under Managing Director Michael Jurisch and Maxim Gorte, the Technical Manager of the project, developed a concept that works with high-speed cameras. Here, the lens is aimed at a free-falling stream of grated cheese, and a picture is taken every 20 milliseconds. To get more contrast, the optical inspection is done in front of an illuminated contrast plate. If a film shred is detected (particles of 2 mm² or more can be detected), the conveyor belt to the



Have developed the ShredScan (from left):
Clemens Richter, Technical Manager Heinrichsthaler Milchwerke, Robin de Groot, Groba, Michael Jurisch, SWAT Automation, Maxim Gorte, technical project manager SWAT Automation (Photo: IDM)



The cheese stream lands on a conveyor belt after passing the drop section (Photo: IDM)



multi-head weigher stops and the operator can then intervene manually. In the version of the ShredScan that has just been installed, which like its predecessors was realised together with Groba, the conveyor belt can also be put into reverse so that the affected part of the grated cheese stream can be discharged. The first two versions of the control process still throw the grated cheese through

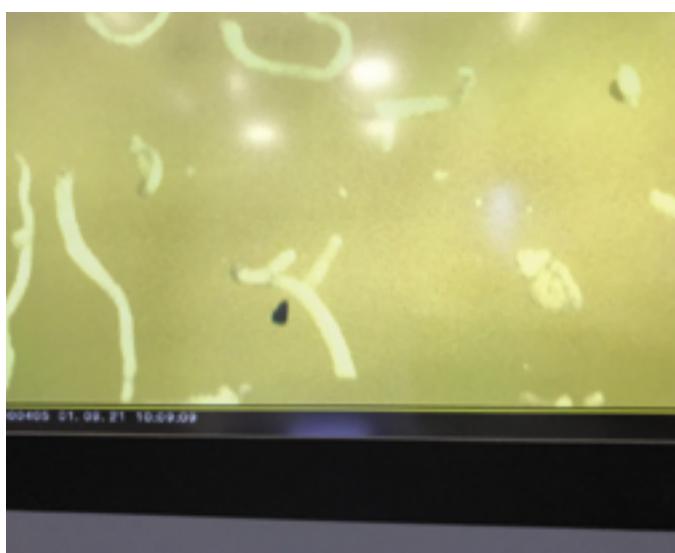
the camera channel via an overhead conveyor belt; the two more recent lines already work with a vibrating conveyor that enables a finer and more even distribution of the product over the drop section. Among other things, this is what Groba contributed to the project from its experience as a supplier of grated cheese lines.

Reliable monitoring

Despite the high line output of 2,500 kg/h, the ShredScan works so reliably that the complaint rate for grated cheese from the Radeberg plant has dropped to almost zero. Clemens Richter, Technical Manager of the cheese dairy: "We can rely on the ShredScan around the clock in our production. Since we started using it, I sleep better". Any foreign objects found are precisely documented: the photo from the ShredScan is saved with date and time information so that batch allocations can be traced in the event of a complaint later on. The removed foreign bodies are physically archived in accordance with the IFS standard with the corresponding information.

Heinrichsthaler Dairy Works

Heinrichsthaler Milchwerke processes around 800,000 litres of milk a day into cheese at its plant in Radeberg. Including bought-in products, the total sales volume is 50,000 tons, of which about a third is marketed as grated cheese. All cheese is portioned and packed in-house. The range of hard and semi-hard cheeses is marketed under both trade and own brands, and 30% is currently exported to third countries. The 320 employees of Heinrichsthaler Milchwerke generate a turnover of € 250 million.



Foreign bodies in the grated cheese are clearly visible on the picture
(Photo: Groba)

Increasing productivity

The influence of the 5 M's on value creation in semi-hard cheese



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"If you stop getting better, you have stopped being good."

Philip Rosenthal (Porzellan Manufaktur Rosenthal, Germany)

Every day, and in each cheese, dairy cheesemakers work hard to obtain and improve productivity. But the dairy industry and the specific product conditions make this mission complicated. The raw material, milk, that is processed varies in physical, chemical (milk components) and microbiological (germ flora) proportion 365 days a year. The cheese to be produced must nevertheless consistently meet the specification and at the same time give nothing away. Keeping the expensive plant technology assets in the optimal range is a constant challenge in the cheese process. Right in the middle of this challenging environment is the cheesemaker, who has to control all of this, to correct, to adapt and furthermore to optimize – who can master all of this? It is stated that what you can measure, you can also improve. Accordingly certain parameters and their measurement are part of the cheesemakers job to ease his work. The challenge lies in the details of the measurement, the quality and quantity of the data, the validity and the systematics behind. This ultimately leads to the measurement method itself. In other words, how reliable, precise and very importantly how well it can be applied in production reality.

In order to lay out all of these aspects, and to show a central starting point for increasing productivity in semi-hard cheese dairies, the cause-effect diagram originally developed by the Japanese professor Ishikawa is a good starting point (**cf. Figure 1**).

The selection of the 5 M's reflects the previously presented essential environment of cheesemakers and classifies them: material, machinery, (cheese) maker, measurement and method. The focus here is quite deliberately on the cheesemaker as the middle point. How can they be supported to improve the productivity of the cheese dairy in the given environment of the 5 M's? Following the flow logic of the diagram, the starting point is measurement and the methods.

The right cutting time of the curd

Central to the cheese process – and at the same time the variable that has a direct influence on productivity – is the time at which the cheese curd is cut. If this takes place at a defined firmness the chances are good that the milk component recovery into the cheese and whey, dry matter in the cheese and losses of fines are, to a large extent, in the expected range. Chr. Hansen, together with Rheolution, have developed a new method for precisely supporting this purpose: the CoaguSens™.

CoaguSens to balance and stabilize cheese making

CoaguSens is an innovative answer to the dairy industry's need for better control of curd coagulation. The device was developed by and for cheesemakers. Basically, this measuring device can be used to optimize automatic procedures and to collect production data

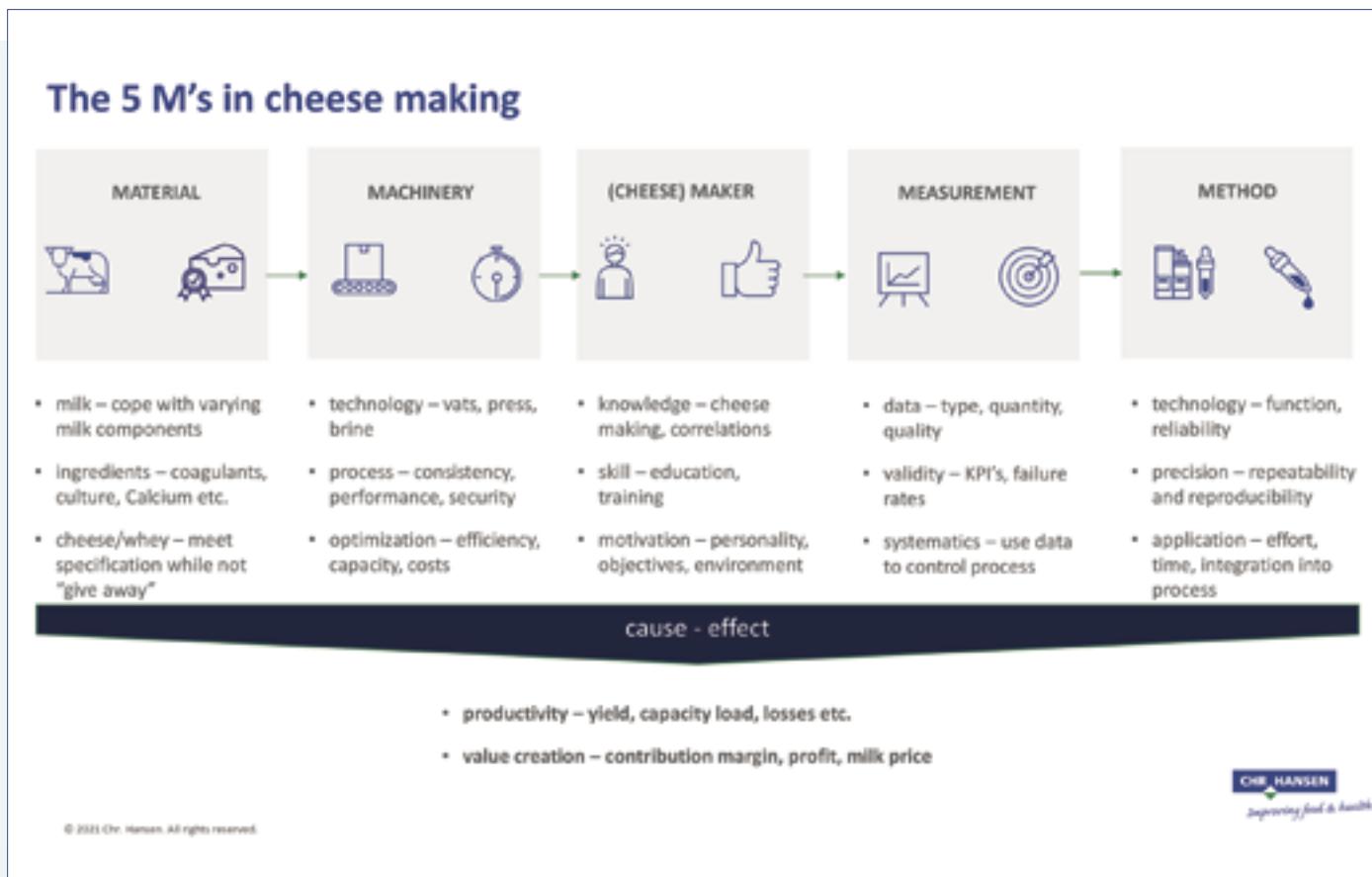


Figure 1: Representation of a cause-effect diagram for 5 M's in semi-hard cheese production.

online. By collecting and using this data the dairy industry shows it can increase efficiency, yield and product quality.

CoaguSens helps improve yield and moisture content in cheese by monitoring coagulation. In cheese production, many factors influence the coagulation of milk:

- » Milk composition and origin,
- » pH,
- » temperature,
- » heat treatment,
- » coagulant and culture activity,
- » protein addition,
- » seasonal variations, etc.

The real-time data obtained helps to understand and control the influence of technological parameters on coagulation kinetics and consequently on yield.

Figure 2 shows how CoaguSens was used to measure the coagulation kinetics of the same milk under different conditions, such as pH.

The diagram illustrates how minor changes in these technological parameters affect the flocculation time of the milk, the speed of coagulation and the final firmness of the gel. Accurate and comparable measurement will help to identify the control levers to manage coagulation.

Variability taken into account and how to master this

As these factors vary naturally they lead to significant variations in terms of flocculation time, coagulation rate and the firmness of the curd. Maintaining a fixed cutting time for the start of whey removal from the curd does not take into account the natural variability of coagulation. In practice maintaining a fixed cutting time results in the curd being cut at varying and uncontrolled firmness, increasing the variability of both yield and milk component recovery, as well as cheese moisture.

The measurement with the CoaguSens is carried out in 3 phases (**cf. Figure 3**):

Phase 1 - Learning

The aim of this first phase is to understand how variable the current coagulation and curd firmness are. Food technologists or cheesemakers operate their production as usual and proceed to cut the curd according to the standard methods of the plant. The CoaguSens measuring device is used in parallel to record the coagulation kinetics and curd firmness.

Phase 2 - Stabilization

The aim of this second phase is to stabilize the curd firmness at cutting. This is calculated as an average from the batches monitored in phase 1 and used as a target value for further batches. This stabilizes the firmness of the curd considerably and influen-

Figure 2: Effect of pH on milk coagulation

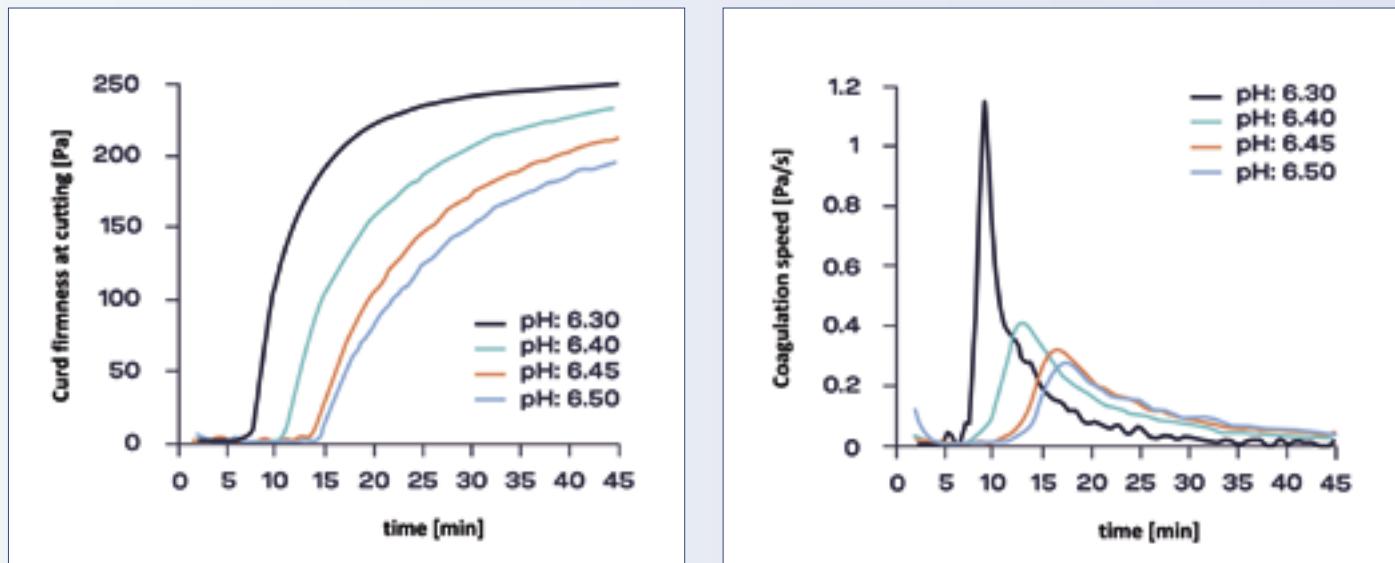
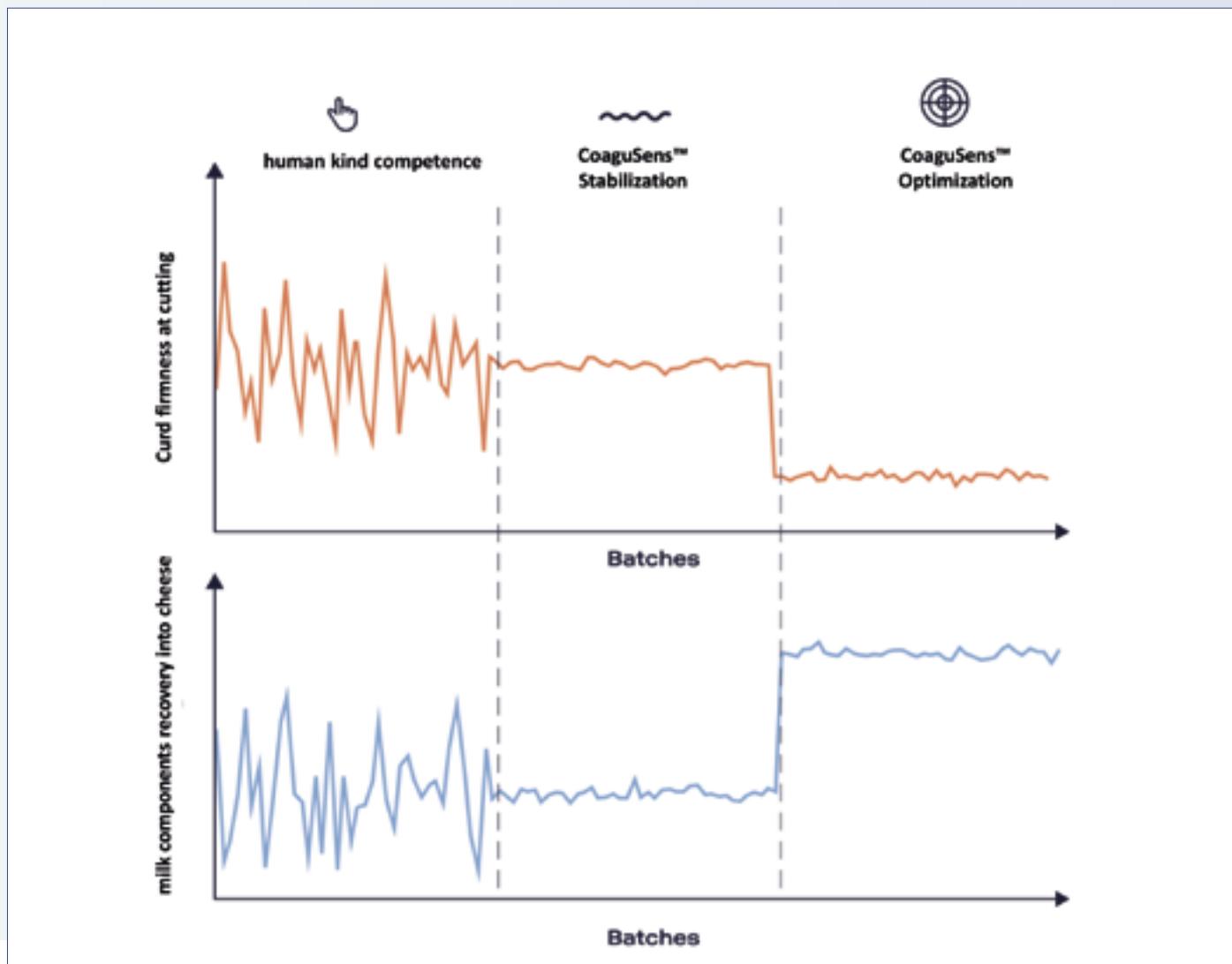


Figure 3: Steps to improve the coagulation process



New Business Unit

MULTIVAC

MULTIVAC has set up a new Business Unit, called Corporate Training & Innovation Center and Partner Products (CTIC PP). The expansion of the Corporate Training & Innovation Center includes Partner Products & Consumables, particularly films and trays.

The range of products and services of the new Business Unit extends from packaging development and consultancy on packs and materials right up to packaging application technology, including sample productions and customer trials with suitable materials.

es the variability of the milk components recovery, as well as the cheese moisture. With the reduction of fluctuations in the firmness of the cheese curd during cutting, the final phase of optimization can begin.

Phase 3 - Optimization

In this third and final phase, the curd firmness at cutting is shifted up and down compared to the average firmness from phase 1, while the changes in milk components recovery and cheese moisture are recorded as well as analyzed. In this way, the appropriate curd firmness at cutting can be determined for a given cheese recipe, giving the best milk components recovery and cheese moisture.

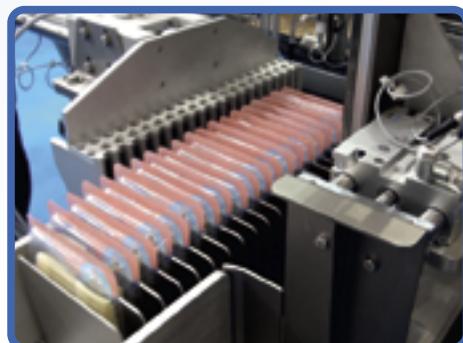
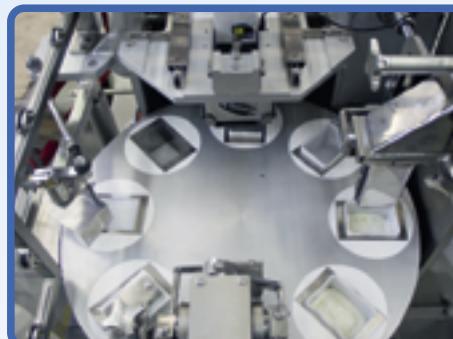
Turn the 5 M's in to 5 Win's

From the perspective of the 5 M's presented at the beginning, one can now "put the cart before the horse". It starts with the high-precision method of CoaguSens, which in turn provides easily applicable valid and comparable measurements for coagulation kinetics. The cheesemaker at the vat is actively supplied with figures, data and facts. He can always cut the curd at an optimal firmness despite variations in the coagulation process. The cheesemaker does not simply react but acts actively and safeguards his actions. As a result the entire cheese process is run more consistently which secures a better use of the capacity load of the machinery. Furthermore, the efficiency of cheese production can be increased by focusing on improved yields (milk component recovery). In combination with modern, high-performance coagulation enzymes and direct starters more can ultimately be extracted from the starting raw material. The 5 M's become 5 W's: Win for the material, Win for the machinery, Win for the (cheese) makers, Win for the measurement and Win for the method.



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Water in the Food Industry

1st IFC Water Congress in Herning, Denmark



About 80 participants from several countries visited the 1st IFC Water Congress

About 80 participants from a number of countries were present at the IFC Water Congress that was held on 6 and 7 October 2021 in Herning, Denmark. The event informed about the state of the art in water saving, water management and water stewardship with a special focus on dairy and food. IDM took part in this very interesting and well organised congress.

William Sarni, Founder and CEO of Denver-based Water Foundry, proposed that companies should make their water management/water stewardship into a business model for growth and added value moving it all beyond footprint focus. The climate change puts food security at risk, he said, and simply paying more for water will not work. Sarni presented a large number of startups and established firms that can help food manufacturers in defining their water strategy. First help may very well be given by WWF and other NGOs that have built solid knowledge in water issues.

FrieslandCampina's perspective

Gerrit Westhoff, Business Group Technology Director, FrieslandCampina, presented the water perspective of an international dairy co-op. In average, FrieslandCampina needs 4.81 m³ of water

to manufacture one metric ton of product. Westhoff confirmed that saving water is an important subject but given the cheap price of well water in many places, priorities sometimes change. FrieslandCampina has chosen to optimise processes, especially CIP, and to build best practice solutions that are shared company-wide. An international paper on water re-use is in preparation so that the about 70 plants operating in 38 countries may benefit from well-proven concepts in the group. Besides re-use of water from bio-reactors, FrieslandCampina also opts for smart CIP processes and caustic recovery. Overall target is to reduce water consumption by 2% every year and in the end get to a fully circular water use.

"Technical water"

Thomas Lauritsen (photo), Senior Project Manager, and Anders Harpøth, Project Manager Arla Foods Ingredients, explained a brand new project at Danmark Protein (DP, part of AFI) in Videbæk, Denmark. So far, the plant has been re-using 58% of its total water intake. Together with technology and engineering suppliers, DP has built a plant that can turn up to 500 m³ from a daily total of 900 m³ of clean water into what they call technical water. The 900 m³ flow from the waste water treatment plant used to be



William Sarni, Water Foundry:
Make water a model for
added value



Thomas Lauritsen, Arla Food Ingredients, explained how the plant in Videbæk uses former effluent water as technical water



Niels Osterland, MMS Nordic:
Technical water can be brought exactly to a quality that is required for a well defined process

discharged into a nearby river. Now it is subjected to a cascade of membrane filtration followed by UV disinfection (and the addition of growth inhibitors) making the water suitable for cooling purposes. The new technical water plant is highly automated and will reduce well water consumption by 13%. At a later stage the new plant's capacity will be expanded so that DP may come to a 85% re-use of water.

Water re-use increases the carbon footprint

According to Veolia, a specialist in water recycling, only 3% of fresh water is consumed by the food industry worldwide. The biggest gains therefore can be made when water saving efforts are targeting the supply chain. Recycled water can be used for cooling or CIP means but never in a product said Kris Lambert, Managing Director, Veolia Water Technologies, Belgium. Veolia does not recommend to install a second loop for recycled water in food plants as this is expensive and prone to error by operators. When water is recycled, processors should know that one m³ of re-used water adds 0.402 kg of CO₂ emissions to the footprint of a factory. The cost of 1,000 liters of technical water range about 50 Euro cents. This cost tends, however, to decrease as membrane lifetime increases and membranes have become cheaper anyway, Lambert said. Given the

cost explosion of caustic, there is a new trend in food plants to recover chemicals. Here, the ROI is often less than a year. Overall, the trend towards plastic recycling makes water re-use sometimes secondary as budgets are re-allocated in companies.

Making technical water in practise

Niels Osterland, Managing Director, MMS Nordic, explained technological features of the DP project. It is important to notice, he said, that it is not about re-used water entering the production environment. The technical water never gets in contact with the product. And it is brought exactly to a quality that is required for a well defined process. The DP plant designed by MMS Nordic has a low energy consumption, for instance CIP is made at room temperature. The plant produces also its own water for membrane flushing and UF backwash. Nils Osterland will publish an article in IDM that describes the processes in more detail soon.

Nestlé's regional approach

Nestlé has joined the Alliance for Water Stewardship and aims at having all factories worldwide certified according to the standards of this group by 2025. Some 35% of the Nestlé plants are located in water stress areas, Carlo C. Galli, Technical Director Water Resources, Nestlé, told



Kris Lambert, Veolia: Re-use of water increases the carbon footprint of a plant

the audience. Financial resources are allocated to those plants where it matters to invest in water saving, he added, while the group also looks on to the communities where the plants are located. Nestlé knows about the psychological barriers of customers when it comes to re-use of water. Although, depending on the area, technical water in plants has sometimes a higher quality than fresh water, the group does not allow recycled water to contact products.



**Prof. Hans-Jørgen Albrechtsen,
Technical University of Denmark,
pointed out to bacterial growth in
recycled water that limits the
storage time**



**Prof. Lisbeth Truelstrup, Technical
University of Denmark, said, it can
be ruled out that the composition
of the final food will altered
if water is properly treated in
advanced filtration plants**

at technical water. Food makers, she said, are free to use any water provided they can convince authorities that it poses no hazard for food. Industrial water, she said, does not need drinking water quality. Milk water for instance is not covered by any regulation and may be used for a number of purposes if the food factory has a HACCP approach. Reenberg Skov pointed out to an industry guideline on re-used water that is currently in preparation in the Danish dairy industry.

Safety first

Prof. Lisbeth Truelstrup, Technical University of Denmark, explained the risk assessment of the use of treated process water for cleaning purposes in the food industry. She pointed to the risks associated with the use of process water after advanced treatment. In any case it must be made sure when using technical water that no carry-over to food can happen. Truelstrup's statement looking at recycling of CIP water was that given a cascade membrane filtration incl. UV irradiation and several loops of the water through the system, it can be ruled out that the composition of the final food will altered.

Finally, Leif Brandt Iversen, Lyras, explained a new concept of milk "pasteurisation" using UV light. The process can save up to 60% water compared to conventional pasteurisation in heat exchangers.

portant for their processes. Then there are questions about how to produce, maintain and monitor the desired water quality and where the non-technical obstacles are (i.e. re-used water and food contact?). Albrechtsen pointed out to bacterial growth in recycled water that limits the storage time.

The authorities' view

Christina Reenberg Skov, Msc in Agriculture, Danish Veterinary and Food Administration, explained how an authority looks



**The IFC Water Congress offered
the chance to visit a brand new
facility for treating water for re-use
at Danmark Protein in Videbæk,
Denmark (photo: Sande)**

Focus on taste and texture

GLANBIA Nutritionals advice to customers

According to Glanbia Nutritionals, plant-based dairy alternatives no longer seek to mimic classic dairy products but rather are developing into categories of their own. Yves Vatomme, Product Strategic Manager, Plant Nutritional, EMEA at Glanbia Nutritionals, told IDM that even only 2 years ago product development tended to copy taste and texture of conventional dairy products but now manufacturers convince consumers with plant-based foods that really are different.

"The raw material base has broadened significantly," says Vantomme. "10 years ago we just had soya, now we have oats, almond, grain and many more. It all started out with milk-like drinks but now we have yogurt-analogues and cheese alternatives are crossing the horizon." As plant-based develops, manufacturers are now aiming at producing foods that are low in salt or sugar or rich in fibre. In all these cases, Glanbia Nutritionals is here to help with its portfolio of ingredients.

"We focus on a limited number of ingredients, though," Vantomme adds. At the core of Glanbia Nutritionals offering is oats, flax, linse and chia seeds

as well as pea protein. For making oat drinks, the company has developed a gluten-free flour that allows for making real drinkable products. Changing functionality is the key here as well as it is when pea protein is used as untreated pea protein has negative impacts on taste and texture. The company is increasingly able to supply local sourced ingredients and aims at processing Canadian oats for sale to US customers from 2022. This avoids high transport costs and also solves lead time issues. To all who work in R&D on plant-based products, Vantomme has one advice: "Focus on taste and texture and keep it as natural as possible".



Plant-based products are developing away from classic dairy profiles (photo: Glanbia Nutritionals)

Continued CO₂-neutrality through biogas

PALSGAARD

Palsgaard has started to build a biogas facility, named Palsgaard Bio Energy A/S, which will produce biogas from the treatment of wastewater from Palsgaard's production. The energy will be used for heating. Partner in the project is the wastewater treatment



Kim Bøjstrup, COO Palsgaard, Ole Pedersen, CEO Hedensted Spildevand, and Anders Brix, CEO of the Schou Foundation at the groundbreaking of the new biogas plant (photo: Palsgaard)

facility Hedensted Spildevand. The key to developing the biogas facility was for the partners to change their mindset and see wastewater as something other than just waste. Instead, they considered it a useful material that could become a vital part of a circular system. The development of the facility will ensure that Palsgaard's production in Juelsminde remains CO₂-neutral as the production of emulsifiers and stabilisers expands significantly towards 2030, which is expected to increase the volume of wastewater by 8 percent annually. By producing biogas in the wastewater treatment process, annual emissions of about 1,200 tons of CO₂ can be avoided. At the same time, the facility will provide 50 percent better wastewater treatment than previously.

The facility will be able to treat a maximum of 350 m³ of wastewater a day and generate 70 m³ of biogas, which means Palsgaard can cut their consumption of natural gas and supplement it with biogas instead.

Carbon zero food processing

Opportunity, implementation and reality



Authors:

(left) Dr Wayne Martindale, Associate Professor, Enterprise & Food Insights and Sustainability at the University of Lincoln's National Centre for Food Manufacturing
 (right) Chris Brooks, Development Chef, OAL

The dairy sector is experiencing pressure from governments publishing decarbonisation strategies alongside consumer demand for carbon zero products, set against a backdrop of increasing producer, energy and labour prices. All this has resulted in a pressure point where innovation to reduce costs and provide market advantage is needed to survive. Here, we report on our recent research, which explores how reducing energy and improving the quality of dairy products can be achieved while delivering real net zero outcomes.

17% reduction in energy consumption

A research paper centred on the novel Steam Infusion technology that heats food materials and reduces the energy required for heat processing soups, sauces and foods by at least 17% has been published in the high impact research journal *Foods*. The focus of this innovation is the heating that occurs within OAL's In-Tank Vaction™ Pump (see <https://steaminfusion.oalgroup.com/>, accessed on 21 April 2020), which reduces processing energy, helping manufacturers reach their carbon zero targets. The Vaction Pump device directs steam into the food material within a much reduced volume compared to traditional steam injection, decreasing the use of steam and processing time required. As well as processing energy consumption, the device can cut production time by 278 hours and reduce the carbon footprint of processing by 8.7 tonnes of Greenhouse Gas emissions per heating kettle production line each year. This all provides a commercial advantage, as well as alignment to the UN Sustainable Development Goals, specifically SDG12, Responsible Production and Consumption.

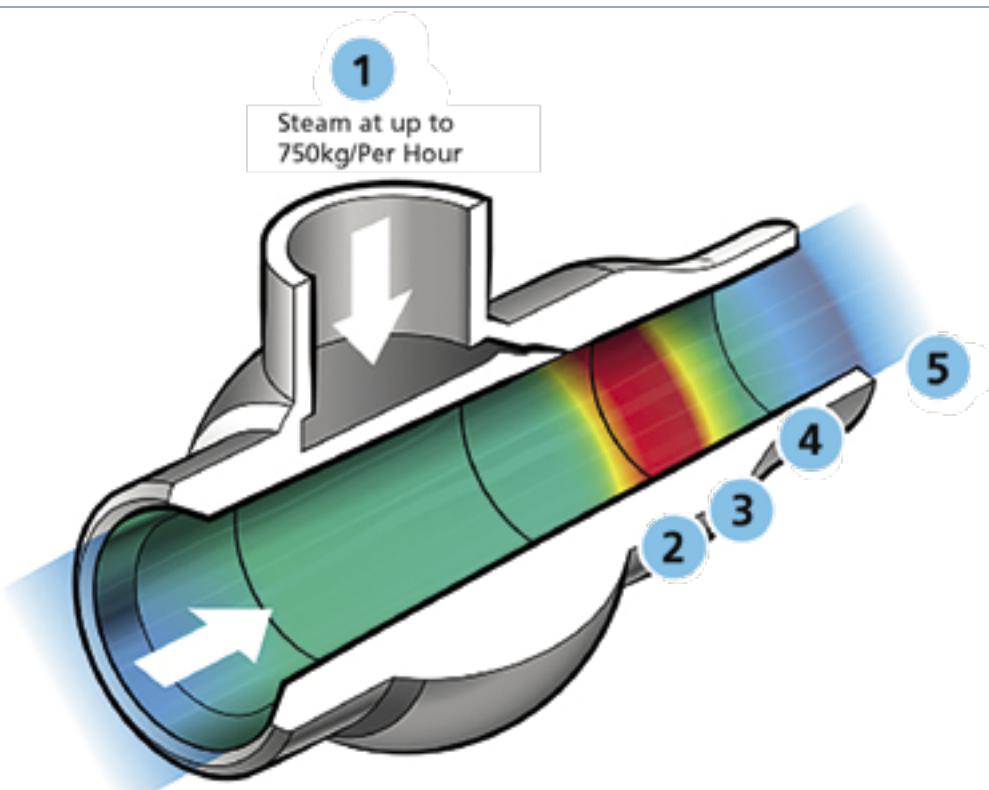
The main direct energy consuming processes in the dairy industry are involved in creating complex mixtures and emulsions with ingredients like cheese, cream and whole milk. The Vaction

Pump technology delivers heat directly to food mixtures rather than through a steam jacket, effectively dispersing and mixing ingredients all while achieving a much more efficient heat transfer (Figure 1), cooking the recipes faster. The research study reported also considered how this technology improved flavours and stability of the resulting products, identifying possible improved nutritional value of products.

Although the increased rates of processing decrease, it was the heating intensity experienced by a product through improved heat transfer that was most important. This is because it resulted in lower burning risk than can be associated with applied heat indirectly through a steam jacket and scraping or mixing system, especially important in dairy products where discolouration and 'burnt' flavours can drive away consumers.

Steam Infusion vs steam jackets

The comparison of the In-Tank Vaction Pump heating and mixing technology with steam-jacketed vessels was carried out at the National Centre for Food Manufacturing, UK, where there is a permanent factory demonstrator. Figure 1 shows how the Vaction Pump provides heating and dispersion of food during processing. Multiple cycles through the In-Tank Vaction Pump provide an overall temperature gradient up to 95 °C where the product can be held at this temperature using an insulated covering so that the food materials are pasteurised and are cooked through to the required texture/consistency. The processing prevents uncontrolled Maillard reactions and the resulting burn-on that can occur more readily with steam jacket heat transfer. Figure 2 shows the Steam Infusion Vaction Pump system data log for a 400 kg batch of chocolate sauce, while Figure 3 demonstrates the results of a panna cotta and Béchamel sauce.

**Figure 1**

(1) The Vaction Pump is flooded with product as culinary grade steam is introduced via the steam lance that has no moving parts and uniquely uses steam to simultaneously heat, mix and pump the product.

(2) Steam accelerates to velocities of 1,000 m/s, above the speed of sound passing into the mixing chamber through an annular nozzle disrupting the fluid flow to form small droplets as a vapour phase. This creates a partial vacuum of -0.7 barg within the unit.

(3) As the steam condenses into the fluid droplets, the pressure rises creating a condensation shockwave that generates a pumping effect. The small droplets also offer a significantly increased product surface area for the steam to condense into, typically resulting in a near instantaneous temperature gradient of 10-15 °C.

(4) The very short residence times and partial vacuum within the unit prevent exposure to excessive temperatures with no hot contact surface areas preventing uncontrolled Maillard reactions and the resulting burn-on.

(5) An unrestricted Vaction Pump pumps at a rate of 50,000 kg/hr on water at 20 °C through an uninhibited bore of 47 mm enabling particulates to freely pass through the unit with no damage.

Steam Infusion operational efficiency

Energy reduction at point of use compared to steam jacket vessel cooking (% reduction)	17.3
Production time saved by Steam Infusion cooking method related CIP reduction (cleaning time hours reduced per year)	277.8
GHG reduction due to decreased energy use (CO _{2e} reduction per year)	8.7

The Vaction Pump system has efficiency benefits that are shown here for a vegetable soup that contained butter, cream and milk with a specific heat capacity of 3.9 kiloJoules per kg per °C at a starting temperature of 12 °C and a final cooked temperature of 90 °C (Table 1). The initial mass of the Steam Infusion cooked batch was 900 kg, and during the heating time of 14 min 49 s, the addition of 104.4 kg of water as steam (through the heating process) occurred. In a typical cook-chill food soup/sauce manufacturing operation supplying retail and food service outlets, the number of batches cooked each year by each kettle is estimated at 2500. Table 1 shows the expected efficiency improvements in terms of costs and greenhouse gas emissions for the Steam Infusion batch cooking over this period. The energy saving from each cook and CIP process was £1.13 for each

Table 1

The efficiency of Steam Infusion cooking of vegetable soup compared to conventional steam jacketed vessel cooking.

cooked batch, an annual saving of £2828 per year. A conventional cooking process using a steam jacketed kettle will typically require 60-90 min to cook 400 kg of soup and sauce food material and will hold at 90 °C.

Quality benefits

The research also showed that the reduced thermal process time and minimal exposure of a product to hot surfaces in the Steam Infusion cooked batches results in improved retention and generation of flavour and aroma volatiles. The Steam Infusion cooking process has been shown to provide advantages in milk processing, where results show milder flavour profiles with more volatiles coming from the ingredients. The research extends the potential

of Steam Infusion flavour retention, being applied to recipes with herbs, spices, fruits and chocolate.

This research demonstrates the potential for Steam Infusion to reduce the greenhouse gas emissions of production. This is an important intervention if the food and beverage industry is to follow current route maps for carbon-zero production that are not only reliant on off-setting greenhouse gas emissions using mechanisms external to the business enterprise and manufacturer. This is proving transformative for an industry that must build in carbon saving to product development and one that is experiencing increased energy costs with a requirement to deliver greater carbon disclosure for food products.

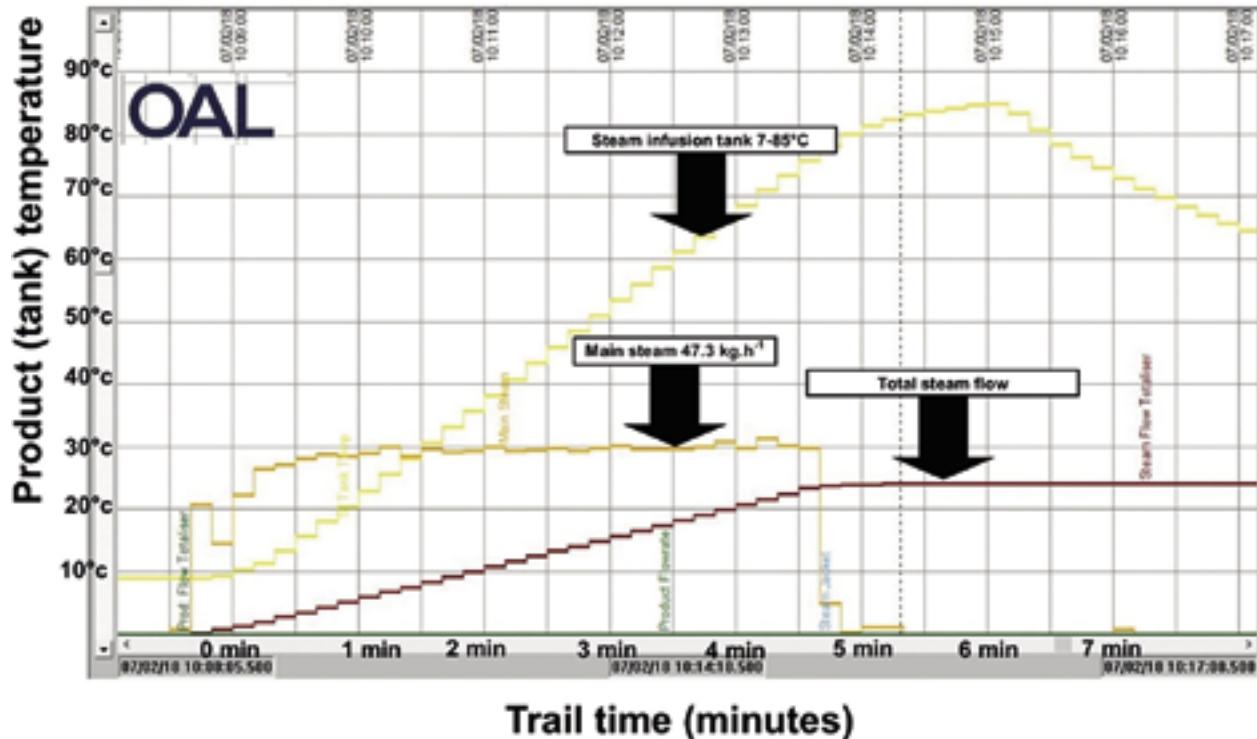


Figure 2

Steam Infusion Vaction Pump data for heating 400 kg of chocolate custard. The temperature in the Steam Infusion heated kettle starts at 9 °C and finishes at 85 °C during cooking time of 6.5 min.

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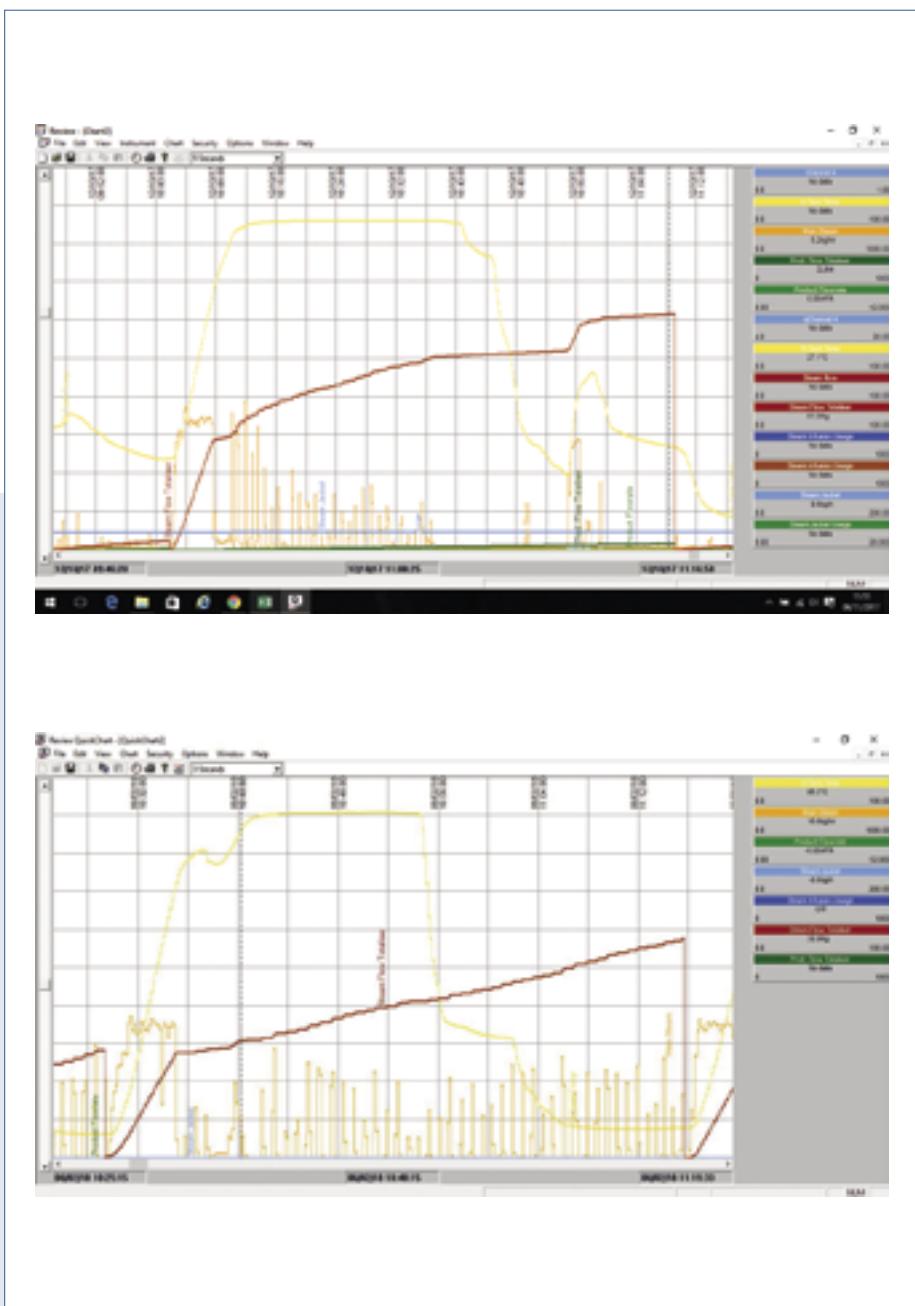


Figure 3

The Steam Infusion Vaction Pump data for heating panna cotta and Béchamel sauce during production for in-line data collection system used by operators.



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IDF publishes 4th update on Inventory of microbial food cultures



Author: Aurélie Dubois-Lozier, Science and Standards Programme Manager,
International Dairy Federation

The International Dairy Federation (IDF) announced the publication of the updated inventory of microbial food cultures (MFC), with demonstration of safety of use in fermented foods. As food science in the fermentation process is ever evolving, this initiative has been ongoing for 20 plus years. This is presently the fourth bulletin of this topic to be released, replacing the ones published in 2002, 2012 and 2018.

As a demonstration of the safety of microbial food cultures, the 2022 update of this publication provides an inventory extended to other food matrices beyond dairy products, as well as an updated taxonomy.

The aim of the inventory is to provide a "positive list" of food cultures used in food fermentation. The bulletin presents a "rationale for the construction of this list and a transparent process of inclusion" with a chapter focusing on a set of steps to achieve this action, as well as analyzing new submitted species and/or food usages.

This edition observes the changes in taxonomy, lists the additions and deletion of species, as well the observation of cross-over

fermentations, which are processes in which a food cultures from one fermented food matrix is introduced onto a new food matrix. The bulletin explains this technological beneficial role for the development of new fermented food products.

Readers will find a table inventory listing the species of microbial food cultures categorized by several elements like their food usage and reference, type strain and taxonomy down to the sub-species level eventually, reference for taxonomy, providing a detailed insight into over 300 live microorganisms.

François Bourdichon, Action Team Leader of the IDF bulletin states:

"The inventory should be used as a support for decision making by either food business operators or regulatory and supervisions authorities for the rationale of introduction in the food chain of a microbial food cultures used in a fermented food products".

The Bulletin of the IDF n°514 is now available to download on the IDF website.

Alternatives are no threat

US DAIRY CONSUMPTION DOES NOT DECREASE

Since the US Department of Agriculture started tracking per-capita dairy consumption in the 1970s, US American dairy consumption has grown for about 50 years, resulting in a total growth of 21% since 1975. Corona has pushed demand for butter, cheese and ice cream and even liquid milk consumption, which had been declining over the past 20 years, is now above pre-pandemic levels.

Despite the growing number of dairy alternatives, dairy products are popular among consumers. 72% of adults who consume dairy do so several times a week, compared to 28% who say the same of non-dairy alternatives.

Older adults have the strongest preference for dairy, with 80% of those of age +55 saying they consume dairy foods or beverages multiple times per week, compared to 66% of 18- to 34-year-olds and 73% of those 35- to 54-year-olds. This were the findings of a survey conducted by the International Food Information Council last April in the US. 10% of adults age +55 consume plant-based alternatives multiple times a week, compared to about one-third of younger people (34% of those 18 to 34 and 31% of those 35 to 54). Half of adults age +55

never consume non-dairy alternatives, standing in stark contrast to just under 8% of 18- to 34-year-olds.

When the results are broken down, most Americans prefer cheese made from dairy over plant-based versions. 74% said they always choose the dairy version of cheese while 20% sometimes choose non-dairy.



Despite the growing number of dairy alternatives, dairy products are popular among US consumers (photo: Colourbox)

Safe anti-caking ingredient

OMYA launches non-nano Omyafood 120



Omyafood 120 is a new non-nano anti-caking agent (photo: Omya)

Omya has developed an anti-caking agent for safe and easy powder handling and processing. Omyafood 120 is based on functionalized calcium carbonate (FCC) particles that have undergone a patented recrystallization process to create a new mineral composition and structure. The advanced non-nano mineral offers high porosity, high moisture-binding capacity and reduced mechanical interlocking. As such, it provides a nano-free alternative to traditional flow aids such as silica, which have to be declared as nano particles on the label.

European dairy walks the talk towards sustainability goals

The 'European Green Dairy Deal' is our EU-wide commitment to achieve the Green Deal objectives in a completely new policy framework



Giuseppe Ambrosi, EDA president

On March 2021 I was elected president of the European Dairy Association (EDA), a challenging position that I embraced after 20 years of chairmanship of Assolatte, the Italian EDA member.

With the new Common Agricultural Policy (CAP), finally approved by the end of 2021, my first year of mandate was marked by the opening of this new chapter for European agriculture. We have been an active part in the discussions from the very beginning of the process and ensured, especially also in the last phasis, the so-called trilogue negotiations between the European institutions, a good outcome for European dairy.

When these trilogue negotiations were concluded, we celebrated that the new CAP will deliver a transforming policy tailored for an evolving world, mobilizing synergies to integrate European agriculture into the European Green Deal and its goal of making Europe climate neutral by 2050. Now, it is time to ensure

that the national strategic plans, one of the new CAP instruments, are 'dairy-operational'. And here, we call upon the 27 EU member states, which elaborate these plans according to their priorities and specificities. The role of the European Commission is to make sure to have a balanced overall picture across Europe and hence a level playing field for the dairy sector within the EU Single Market.

When starting my EDA presidency mandate, I took stock of our work on the challenges ahead and the achievements accomplished so far, and focused on the opportunities arising on the horizon for the European dairy sector, in times when sustainability is at the centre of politics and policy-related discussions.

European dairy: where tradition meets evolution

Since I stepped in my new role, my mission as president of EDA has been to reinforce the image and reputation of European milk and dairy, a symbol of Europe's rich cultural and culinary heritage.

'Uniting dairy excellence and ambition' is the EDA motto that I introduced under and for my presidency. However, it is not only our motto – it is also our *raison d'être*, the essence of our industry. This is true for the iconic European cheeses, like Italy's Parmigiano Reggiano, France's Gruyère, Greece's Feta or Denmark's Havarti, but also for the overall European dairy excellence beyond cheese. Our dairy excellence is recognized in Europe and worldwide and is the thriving force of our ambitions.

Although tradition constitutes a reference in our daily work, the European dairy sector is constantly evolving to meet society's demands for safe and nutritious food, acquiring the latest techniques to ensure resource-efficient dairy processes. We are the spearhead of dairy innovation, not only in the field of dairy ingredients.

We are also the connection between the rural and the urban worlds, enabling common understanding between both and helping to create the cohesion needed in society.



When it comes to sustainability, we are not only fully aware of the importance of sustainable and future-proof production – we are the frontrunners. Building a more sustainable production model has always been part of our business, with a wide range of actions taken, from ensuring animal welfare to safeguarding environmental resources or preventing food loss and waste, fostering this way sustainable circular production. In this sense, all dairy processors, regardless of their size and structure, have their environmental sustainability strategy in place and are investing heavily in their implementation.

Looking ahead: the European Green Dairy Deal

Milk and dairy are part of the daily diets and lifestyles of the vast majority of Europeans. Dairy is a pillar in European agriculture, and also a key ally in the path towards the European Green Deal goals and the new CAP.

Therefore, we are currently working on our European Green Dairy Deal, an EU-wide assessment of our role in achieving the environmental ambition of our political masters and the European Green Deal to make Europe the first climate neutral continent by 2050.

Building on our dairy excellence and the savoir-faire of our farmers and processors, we can also assure within our remit the social and economic sustainability of all actors across the dairy value chain, from farmers to consumers.

Next to the implementation of our long-standing company-specific sustainability strategies, we have to adapt to the completely new European policy framework, shaped by the European Green Deal, the Farm to Fork Strategy and the Biodiversity Strategy – to name only the most prominent pieces.

With our European Green Dairy Deal, we will strengthen our position in the upcoming decades as the global reference for food safety, food excellence and sustainable production. We will keep offering the unique and naturally high nutritional quality of our milk and dairy products, and we will do it in the most sustainable and efficient ways.

In order to map and continuously improve the European dairy sector's efforts to progress on our long-term environmental sustainability, we have developed, together with the European Commission, the Dairy PEF (dairy product environmental footprint), a methodology that measures the environmental footprint of our products considering a broad array of environmental criteria to achieve a harmonised approach.

As the European dairy sector, we have the tradition from the past, the skills from today and the sustainability ambitions for the future to successfully adapt to the new market realities, to the expectations of citizens and to the climate goals – and with the European Green Dairy Deal, we are here to walk the talk.

Cheese cutting machines



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Cheese technology



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Conversion work on a used GASTI Dogaseptic 82 (photo: IMA Gasti)

New division for used machinery

IMA DAIRY & FOOD

IMA DAIRY & FOOD has expanded the range of products to include used machines and has created a new division 'IMA DAIRY & FOOD Used Machines' at GASTI. Used Fill Seal (FS) machines can be offered and sold in addition to the well established new machine business.

The division actively buys used GASTI and Hamba filling and sealing machines, overhauls them, brings them up to date and then sells them as used machines. Customer-specific wishes for the machine, such as new cup formats, the use of sustainable packaging materials or additional applications such as cup leak detection, are taken into account.



(photo: Arinotec)

State-of-the-art technology for a traditional creamery
Technology/IT



(photo: Fühler)

Not a drop wasted
Technology/IT



(photo: Brazzale)

Robotised cheese ripening warehouse
Technology/IT



(photo: DSM)

Better cheese, together
Ingredients

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