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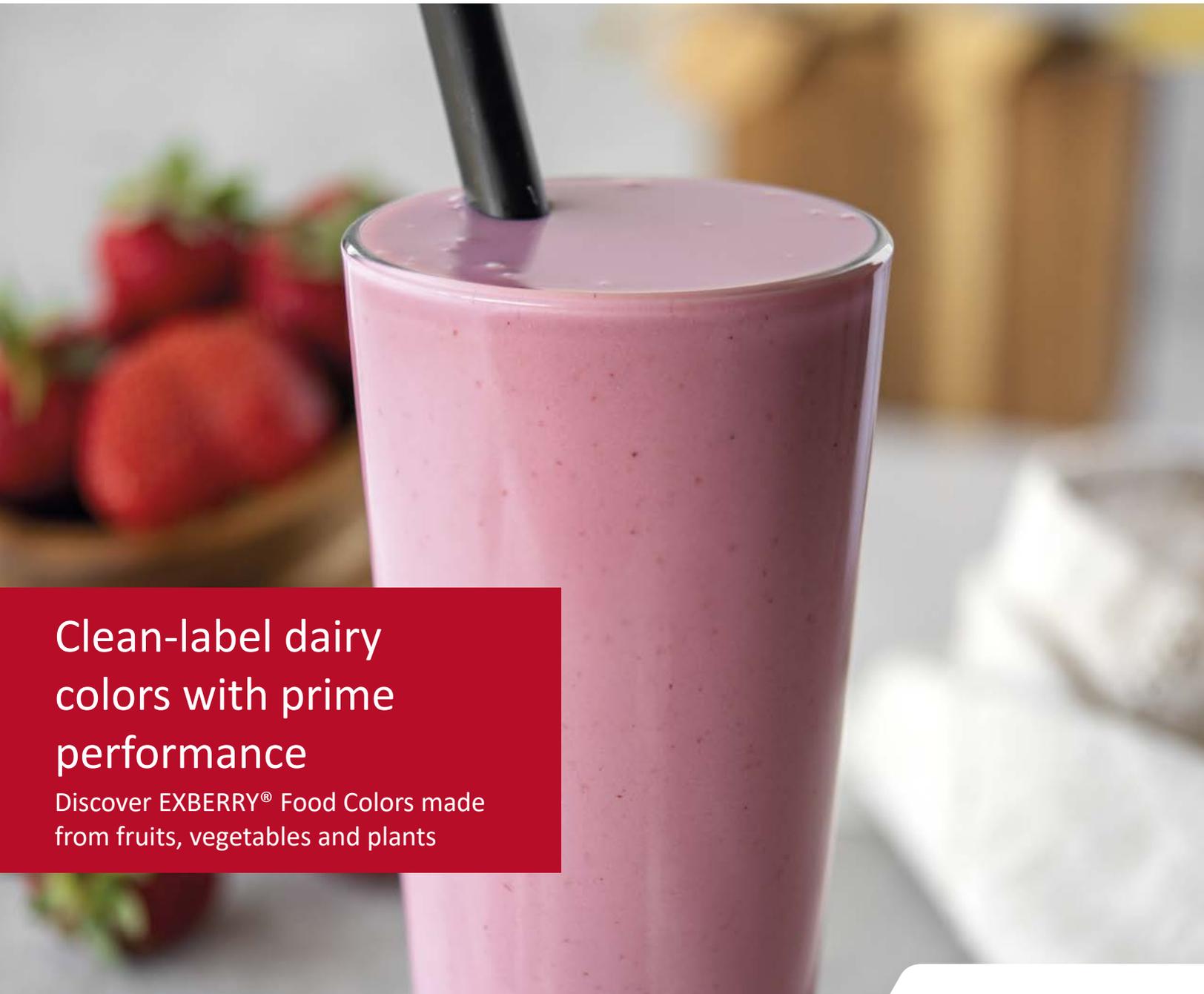
DAIRY

November/December 2022

magazine

PROCESSING | INGREDIENTS | PACKAGING | IT | LOGISTICS

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Energy security?

A solution must be found urgently



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Once again Peter Stahl, Chairman of the German Dairy Industry Association, has appealed to politicians to ensure the supply of energy to milk processors. At the annual meeting of the association at the end of October, Mr Stahl reminded the audience of the industry's obligation to take in and utilise milk on a daily basis, highlighting the high perishability of raw milk. If one then considers the importance of the dairy industry as by far the largest sub-sector of the food industry, it should be clear to Brussels and the governments of the European Union that the dairy industry is not an expendable branch of the economy that can simply have its energy cut off.

However, there is not a single country where the respective government sees the basic supply of its inhabitants as a real priority. Apart from some lip service, little or nothing is heard on this urgent issue. Of course, the security of energy supply also varies greatly from country to country. But there are deficits everywhere. These are not so much in electricity, but much more in gas. Since supplies from Russia will not arrive for a long time and not enough gas can be brought in from overseas (lack of transport capacities, lack of terminals), 2023 will be a fateful year, especially for the dairy industry. It is possible that the new year will bring structural disruptions of unimagined proportions, unprecedented even in and after the Second World War.

Anyone who wants to prevent this – and unfortunately it does not currently look as if anyone on the political stage cares about the supply of dairy products to the population – would have to officially declare the prioritisation of the dairy industry in energy supply now. And he would have to ensure that the supply of gas increases as quickly as possible. Otherwise the industry is threatened with Armageddon, fears Roland Sossna.

EMMI**New cheese dairy in Emmen**

Emmi has commissioned its new, resource-saving cheese dairy at the traditional Emmen site. CHF50m was invested. The state-of-the-art facility is geared towards long-term growth plans in the area of speciality cheeses.

Emmi is relying on renewable energy for the new cheese dairy. In addition to the existing woodchip and photovoltaic system, additional photovoltaic modules positioned on the roof of the new cheese dairy expand the production of renewable energy.

Furthermore, the state-of-the-art production facilities enable more efficient process flows and resource-saving



CHF 50 million was invested in Emmi's new cheese dairy in Emmen (photo: Emmi, Patrick Rust)

manufacturing processes for a planned volume of around 10,000 tons of cheese. With water savings of up to 70m litres per year, the new cheese factory operates in a practically water-neutral manner.

WEBER WEPACK 7000**Safe and sustainable packaging**

Weber's first thermoform packaging machine wePACK 7000, developed and manufactured completely in-house, has undergone a further development. No other thermoformer on the market has a more robust stainless steel frame, which brings advantages especially with regard to the harsh conditions in the production environment.

The servo-driven lifting systems was developed especially for the requirements of the food industry. In addition to energy-efficiency, the servo-driven lifting systems optimize process times – even with different package depths. Built 100% from stainless steel, the lifting systems includes the Weber hygienic design as well as an unbeaten speed of motion, maximizing output. The lubrication-free stainless steel design makes the system highly rigid, and enables long service life without maintenance, even with heavy use. Weber also uses servo-driven technology for the cross-cutting function of the wePACK 7000 in order to reduce the operating costs through energy efficiency and increase output.

With weMARK, Weber presents another technical innovation in the thermoforming space – the fastest transfer unit for continuous ink jet print heads on the market. The integrated x/y moving unit can be combined with conventional ink jet printers for printing on the top foil. With this execution, the display of the printer control panel can be mirrored conveniently into the WPC interface, facilitating ergonomic friendliness, reducing the need for opera-



The thermoformer Weber wePACK 7000 comes with a number of improvements (photo: Weber)

tor movement, and providing a single point of operation for operators. Naturally the new Weber x/y transfer unit comes with a standard "no product, no print" function, in order to reduce running costs.

Film and product losses are avoided thanks to camera assisted inspection of the top film, inspecting, and comparing against the stored recipe data. Moreover, the camera inspection contributes to a significant increase of production reliability.

Regardless of customers film preference, with the Weber wePACK, all thermoformable and heat-sealable packaging materials that are common in the market today, as well as those that may be required in the future, can be processed. The new requirements of food retailers are also fulfilled and minimization of plastic machine driven and use waste are also thoughtfully considered. The wePACK is also capable of forming fiber-based packaging materials without vacuum, facilitating the integrity of base material. Different films can be processed on one machine, ensuring that the line is also equipped for future requirements.

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Siemens

The intelligent factory



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Every day, large amounts of data are generated in industrial production. This data is the key to mastering the challenges that modern factories will have to face in the future: delivering even better products, producing even more efficiently, and doing so under high cost pressure.

This is especially true for the food and beverage industry, which can significantly influence its competitiveness in the coming years with the following factors:

- » Plant availability and resource utilisation to reduce unplanned downtime
- » Agility and flexibility to deliver increasingly customised products to consumers
- » Sustainability as a differentiating factor
- » IT security – the number of connected devices in industrial networks is increasing rapidly, and with it the vulnerability to cyber-attacks.

To collect data in the production landscape, vendor-independent connectivity is crucial, linking heterogeneous production landscapes such as those common in dairies. This allows flexible systems to be installed that communicate openly with each other, both horizontally between the machines at production level and vertically from the sensor to the cloud. This networking in turn forms the basis for a variety of different applications that can decode the data and thus generate added value. Seamless interaction creates an intelligent factory, a smart factory, with which competitiveness can be maintained.

With edge computing, these factors can be addressed in equal measure.

Edge Computing – using the full potential of data

Edge computing involves collecting local data from sensors and actuators at production level, processing it at field level and evaluating it in such a way that the information generated delivers decisive added value. Edge computing can help manufacturing companies to connect machines, plants and automation systems even better in the future by transporting and accumulating unused process data, as yet unused process data from the devices to the decisive points, for example to production control or cloud systems, and thus utilising it better than today.

Increasing efficiency in production

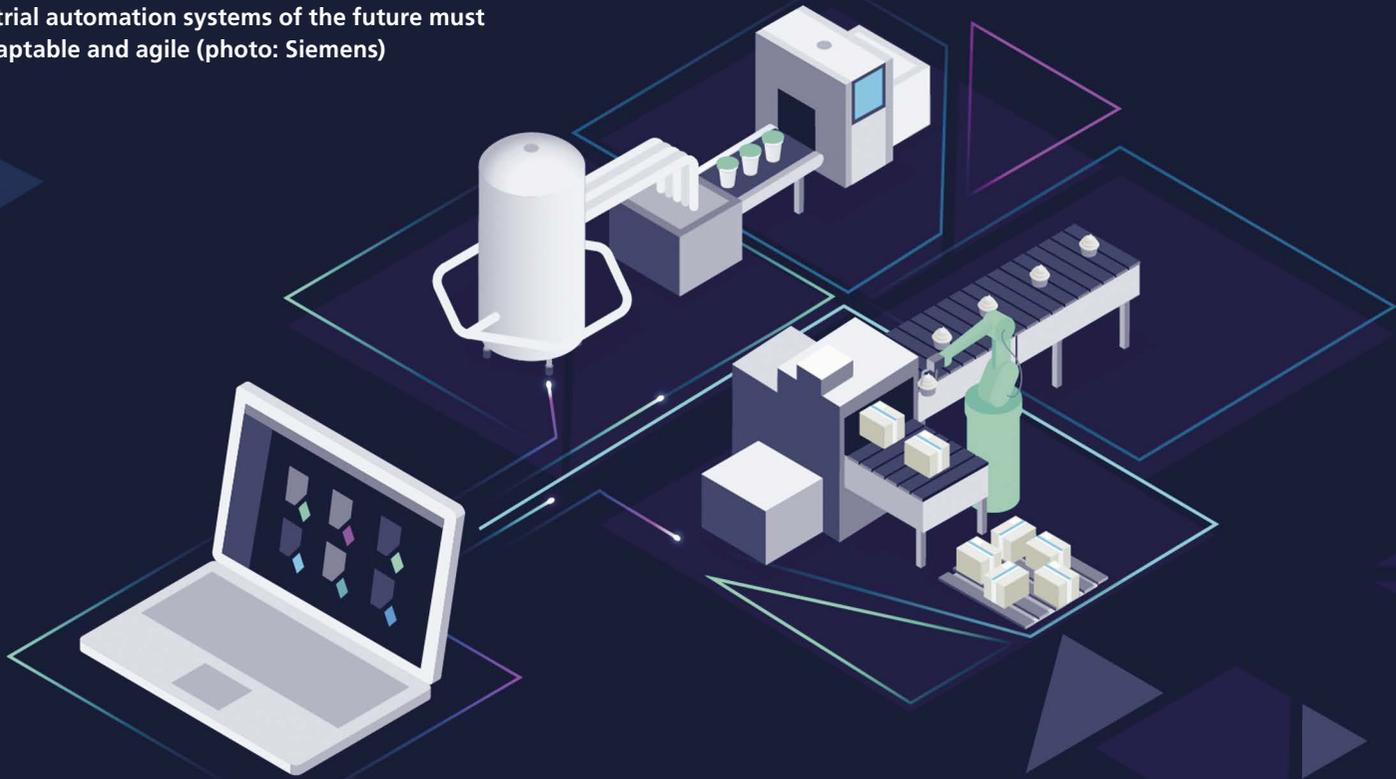
Industrial automation systems of the future must be adaptable and agile, with edge computing as a key technology. As the next generation of digital automation, it offers new freedoms and creates new fields of application that were previously not possible due to limitations such as insufficient bandwidth and excessively long latency times.

Typical applications in which real-time decisions are also necessary in the food and beverage industry are, for example, when serious malfunctions endanger plant availability and should be remedied immediately or when problems with product quality become apparent. Production parameters can also be adjusted more quickly in real time and with closed control loops, and sources of error can be minimised.

More flexible and sustainable with edge solutions

Edge computing also helps to increase agility by enabling software solutions, including data interfaces, to be updated and adapted

Industrial automation systems of the future must be adaptable and agile (photo: Siemens)



flexibly and centrally. Manual interventions on site at automation and PC systems are no longer necessary or are significantly simplified. The right application to increase productivity can thus be implemented in less time than ever before. This also applies to energy management systems or other solutions for conserving resources. If regulations or market requirements change, it is possible to react quickly.

Security for OT and IT

Regarding IT security, edge computing offers enormous added value as a supplement for automation systems, for example in the form of solutions for the inventory of automation systems or for network detection as well as their monitoring and diagnosis.

New providers on the market offer intelligent apps that can be operated on an edge computing platform and with which it is possible, for example, to detect anomalies and intruders (intrusion detection) in industrial networks.

In addition, network and inventory data can be retrieved and evaluated centrally from the corporate IT via the management system. Necessary security patches are then managed and rolled out centrally for edge devices or connected IT and automation systems via asset management solutions.

Optimum use of machine data

Decentralised data processing and analysis on production-related edge devices or integration into the automation system via so-



Decentralised data processing and analysis on edge devices close to production has major advantages, especially for the food industry (photo: Siemens)

called edge apps has several additional advantages, especially for the food and beverage industry, such as secure on-site data storage and additional security when processing business-critical data. In addition, it is possible to specifically control how often and in what form data should be transferred to the cloud in order to reduce costs.

Ideal combination: hybrid solutions

Edge is targeting not only on itself but also to strategic goals of the company. This is achieved by understanding the requirements of companies. Cloud and edge computing are not mutually exclusive



In terms of IT security, edge computing offers enormous added value as a supplement for automation systems (photo: Siemens)



Edge computing applications are versatile and range from preventive maintenance to anomaly detection and recipe management (photo: Siemens)

in this context but can complement each other in an optimal way. When deciding on one of the two approaches or – as it often is the case – on a hybrid solution, it therefore depends on the framework conditions and the business goals of the deployment.

Especially in the food and beverage industry, with its partly historically grown production facilities and carefully considered investment funds, a step-by-step approach to the implementation of edge computing makes sense. At the same time, due to the low initial costs compared to strategic cloud projects, edge computing is a good first step towards making even better use of production data with the help of applications.

Edge computing applications are versatile and range from preventive maintenance to anomaly detection and recipe management.

Applications for monitoring the condition of machines (condition monitoring) or for predictive maintenance are increasingly finding their way into classical automation technology. Via mobile devices, employees learn about malfunctions or necessary maintenance

in real time and can prevent major breakdowns of machines or systems.

An open platform

With Industrial Edge, Siemens offers an open edge computing platform that covers all necessary areas of production, from devices for data acquisition to apps for analysis, visualisation and much more, all the way to platform services.

A key feature of Industrial Edge is decentralised data processing and analysis on a software basis, either directly integrated in the automation portfolio thanks to so-called edge-enabled devices, such as the already available SIMATIC HMI Unified Comfort Panels, or as a dedicated edge device. The optional combination of hardware and software within the Industrial Edge portfolio increases flexibility and openness for manufacturing companies with guaranteed IT security in industrial automation.

More flexibility through connectivity

By integrating common data acquisition standards, even for legacy systems, users with existing solutions can easily switch over. This creates an open environment on which machine and plant manufacturers and technology providers can develop useful edge applications as part of the Industrial Edge ecosystem and publish these apps as certified partners via the Edge App Store. These application programs enable users to visualise and analyse data, perform complex control loop calculations and communicate with the machine. Users can easily port existing software and applications to Industrial Edge and benefit from integrated security and connectivity to automation and the cloud.

Siemens offers useful and highly needed apps in its portfolio. In Industrial Edge Management, they can be selected for specific purposes and used on end devices in a very short time, for example Performance Insight for visualising productivity and Notifier for reducing downtimes.

Explore more options in our Industrial Edge marketplace
Link: [siemens.com/industrial-edge-marketplace](https://www.siemens.com/industrial-edge-marketplace)

Top performers during Covid

Strengths and Weaknesses

The European dairy industry has grown at an average annual rate of 4.0% in 2020, according to the latest publication on the 300+ largest European dairy companies of data-analysis company A-INSIGHTS. This is a drop of almost 2% in comparison to last year's growth rate. Overall, the European dairy sector was able to weather the impact of the pandemic, contrary to many other food industries. Strikingly, margins in the European dairy industry went up in 2020 to 2.7% EBIT. Still several dairy companies managed to stand out with their performance. How were they able to maintain their position in the market? And what are their main strengths and weaknesses?

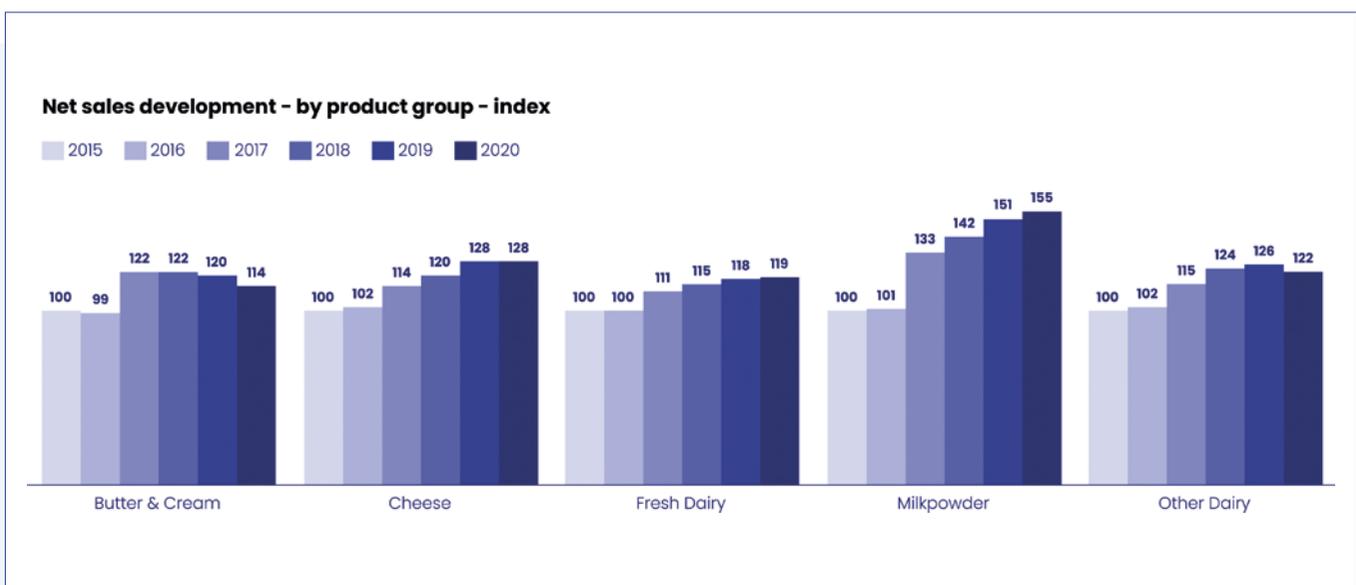
Dairy maintains growth during COVID

The maturity and longevity of the dairy sector have enabled many dairy companies to weather the market disruption COVID-19 caused. As the overall demand for dairy kept up during the pandemic the European dairy sector managed to remain relatively sta-

ble throughout. Especially export driven milk powder traders were able to continue their growth in 2020, making it the only growing product segment. This is due to a combination of milk powder's long shelf life and increased exports to for example the Chinese market, which remained stable during COVID-19. In contrast, the butter and cream segment experienced a sales drop while fresh dairy and cheese remained relatively stable.

Who are the top-performers in the dairy industry and what are their strengths?

Despite the crisis of the last two years, several companies within the dairy sector performed remarkably well throughout 2020. These include many of Europe's largest dairy companies. Impressive performance was identified by some of the industry's major players, including Royal Friesland Campina, Arla, and Galbani. This impressive performance was largely due to two factors: economies of scale, which provided a greater opportunity to shift sales across



#	Company	% EBIT 2020	Dev. vs 2019
1	Latteria Montello	21,2%	4,2%
2	Deliziosa	17,1%	6,2%
3	Galbani	13,6%	3,8%
4	Credition Dairy	11,3%	5,2%
5	Danone	10,5%	-0,8%

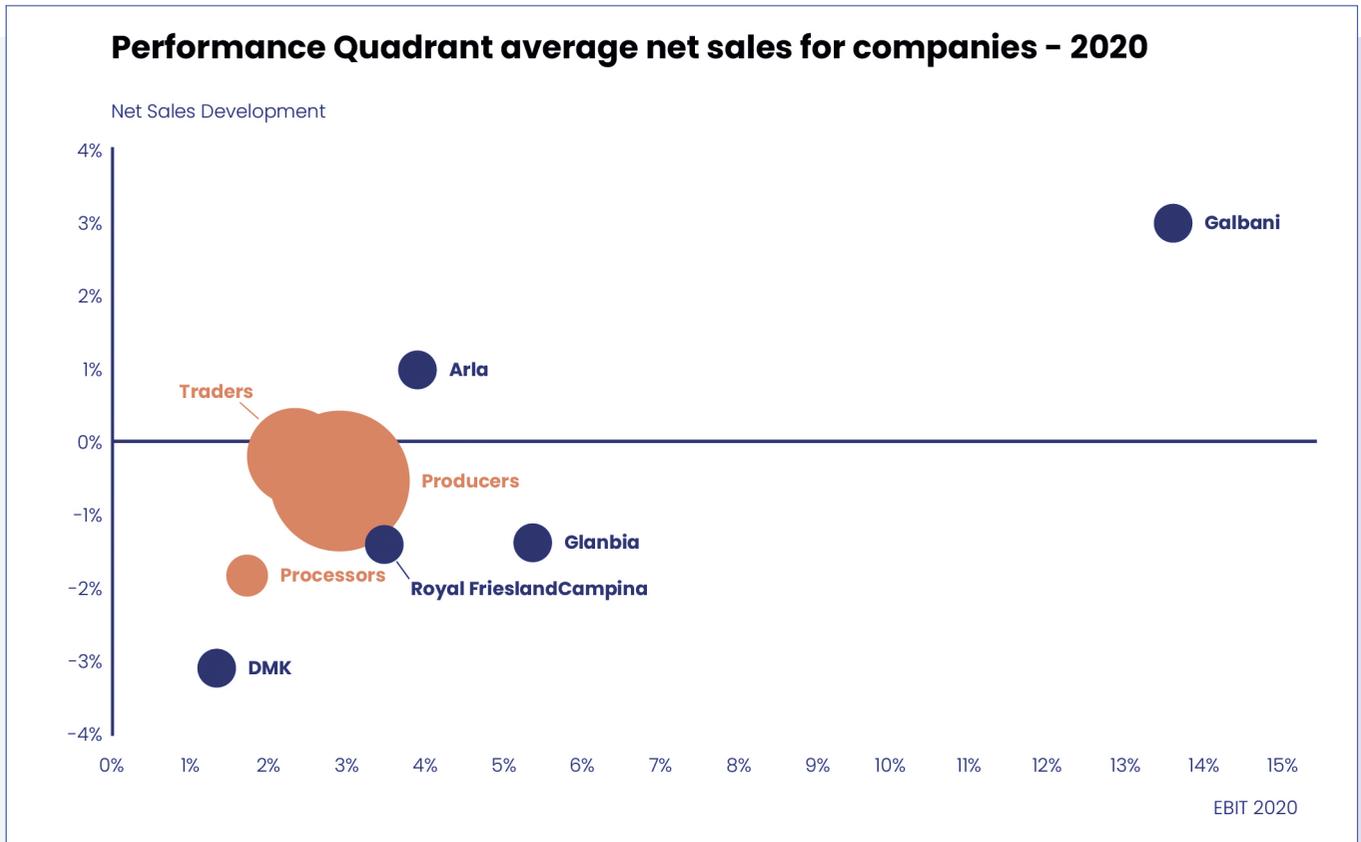
channels during the pandemic and retail focus to compensate for the loss of sales in the food service sector. Interestingly, Galbani’s performance was noteworthy due to the way its strong branded retail position was leveraged during a time when people had more money to spend on high-quality retail products. This helped the company to achieve record performance. In comparison to 2019 Galbani grew by 3.8%. Similarly, Royal Friesland Campina managed to offset lost out-of-home sales with increased retail sales.

During the pandemic, focusing on added value was a better way of maintaining profitability rather than selling bulk products. In line with the strong performance of Galbani, one of the larg-

est producers of mozzarella and other Italian cheeses, other producers of Italian fresh cheese like Latteria Montello and Deliziosa were also able to record strong levels of profitability by producing high-quality products with protected origins. Danone, meanwhile, benefitted from the diversity of its product range.

Weaknesses?

Despite their scale and established position in the market some dairy companies demonstrated vulnerability during the pandemic. Companies that predominately focused on the food service sector and were not able to shift sales to retail outlets were hit hardest. DMK for instance saw a sales decline of 3.2% and Glanbia’s sales



dropped by 1.4%. For Glanbia this can be ascribed to the reduced demand for sports nutrition, which used to be a main driver of growth, after sporting facilities reopened the cooperative reported a 19.4% sales increase in the first half of 2021. For DMK however this is both due to a loss of sales in the foodservice industry and their focus on cheaper bulk products. During the pandemic, focusing on added value was a better way of maintaining profitability rather than selling bulk products. Thus, a lack of added-value strategies and retail focus showed to be the greatest weakness of big players in the dairy industry.

Overall, dairy processors were hit hardest by the pandemic. They are generally more specialized and have less grip on the market due to their position in the value chain. Because of that they are more dependent on both consumers and producers.

Added-value strategies, the key to weather upcoming storms?

Scale and a balanced portfolio have contributed significantly to protecting net sales and profitability in 2020, strengthening the position of large, integrated dairy players. Together with value-added strategies, these are the two key success factors in the current and future European dairy industry. More importantly the creation of value in dairy products seems to be the key to prepare for future crises. There is an unrivalled foundation for creating value from European dairy, both within and outside of Europe: French cheese, Dutch Gouda, Italian Parmesan and Mozzarella, and also infant nutrition, functional ingredients – to name a few. Utilizing these could be crucial in tackling future disruptions like the current supply chain shortages and cost inflation.

Read more about this and other trends and developments in the dairy industry in A-INSIGHTS' trend report.



About A-INSIGHTS

Since 2009, A-INSIGHTS has been collecting and analyzing large amounts of public data on Food & Agri companies from sources such as annual accounts, industry publications and news reports. The insights from these data are presented in a one-stop-solution via an always up-to-date online platform: The Performance Monitor.

Once a year A-INSIGHTS publishes a trend report in the four major fresh produce sectors (Bakery, Meat, Dairy and Fruit & Vegetables), in which more than 1,000 leading companies in these industries are examined. The European Dairy industry is an important focus market for A-INSIGHTS, as a large number of our clients are in this area.



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Koch Separation Solutions/ RELCO

Dryer upgrade enhances production at Lakeland facility



Lakeland Dairies' Baillieborough plant benefits greatly from a retrofit by KSS/RELCO (photo: KSS/RELCO)

In 2015, a RELCO wide-body dryer with an integrated fluid bed and vibrating external fluid bed was commissioned at Lakeland's Baillieborough facility. This dryer has a capacity of 7,000 kg of powder per hour and operates around the clock for more than 7 weeks at a time without interruption. Upon installation of the dryer, the Baillieborough site saw a 45% increase in annual production, equivalent to about 50,000 tons of milk powder, as compared to previous years. It also allowed the facility to process a wider variety of powders such as fat-filled, skim, and instant whole milk powder.

In 2019, a retrofit was needed for an existing evaporator at another facility. The upgraded multi-pass evaporator gained

the ability to operate as a milk pre-concentrator and finisher, and featured a new pre-heating infusion system for improved product bacteriologic quality. The final result was greater evaporator flexibility, increased production variety, and higher-quality final products.

When an existing competitor's dryer at the Baillieborough facility was not meeting Lakeland's standards in 2021, they again turned to the KSS/RELCO team for an innovative solution.

Objective

The existing spray dryer's performance paled in comparison to that of the RELCO wide-body dryer commissioned in 2015, so Lakeland sought a complete design up-

grade. The spray dryer was struggling to switch between production of one product type to another, limiting the product variety output from the Baillieborough facility. It also required more frequent cleanings and was prone to fluid bed blocking, leading to shorter run times, process upsets, and overall poor product quality.

Solution

The RELCO team worked closely with the customer on a design proposal to retrofit the spray dryer to meet the processing performance of the RELCO wide-body dryer. The design included the addition of an internal fluid bed to offer more control over production, as well as sanitary thermal insulation panels for greater energy efficiency.



Following the retrofit, the spray dryer at Baillieborough is now able to turn around a variety of products at increased performance efficiencies and fewer production upsets (photo: KSS/RELCO)

Achievements

Following the retrofit, the spray dryer is now able to turn around a variety of products at increased performance efficiencies and fewer production upsets. The complete project started with a conceptual design, that the competitor was unable and unwilling to provide, and ended in on-site execution. Close cooperation with the customer allowed the team to understand their needs in-depth and in turn provide the most cost-effective solution.

The newly upgraded spray dryer and the wide-body dryer are expected to significantly increase annual production volumes and allow for broader product varieties at this facility. Lakeland now benefits from longer run times, greater product output, fewer product quality issues, and reduced process downtime.

Takeaways

After having built trust with Lakeland through successful project execution over

the years, the RELCO team was able to become the best choice to carry out a unique solution in this instance. KSS proved itself to be a preferred partner to customers such as Lakeland by remaining committed to meeting specific needs and driving innovation through separation technologies and decades of industry experience. This project enforces the team's ability to tackle system upgrades and retrofits through careful design considerations and attention to cost-effectiveness and sustainability.

Lakeland Dairies

Lakeland Dairies is a co-operative operating across the northern half of Ireland, producing about 1.8 billion liters of milk annually, making them one of the largest dairy co-ops in the country. They process fresh milk into a variety of highly functional powdered ingredients as well as value-add consumer dairy products which are sold both domestically and internationally.

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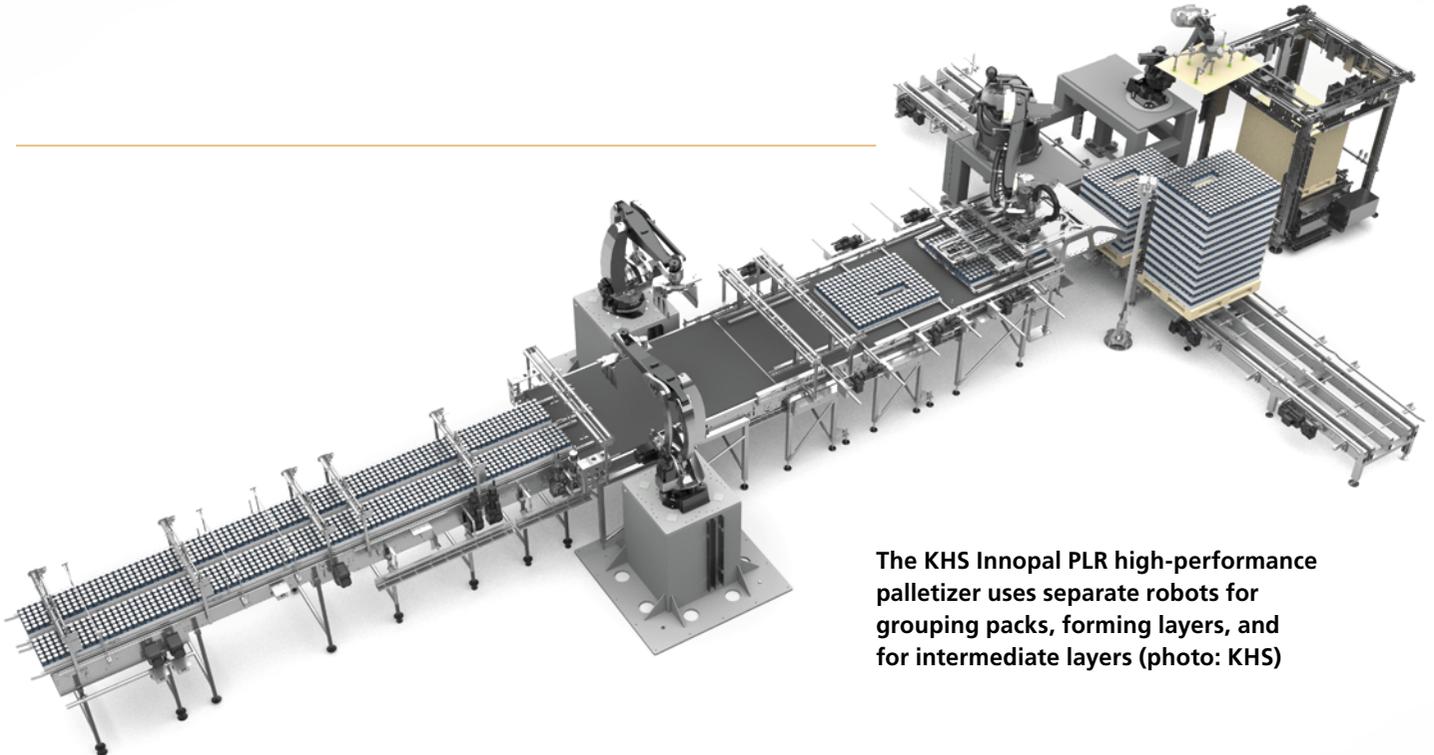
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Koch Separation Solutions

Koch Separation Solutions (KSS) offers innovative separation technologies for the food, beverage, and dairy industries. Together with RELCO evaporator and dryer technology, KSS's capabilities include concentration and purification of milk ingredients, whey protein, and lactose & permeate, as well as caustic recovery and water & wastewater treatment. KSS offers complete, integrated solutions utilizing advanced membrane filtration and thermal processing to achieve high-quality products while meeting customers' unique processing needs at improved operating efficiencies and lower costs.
www.kochseparation.com

KHS at drinktec

Focus on the circular economy



The KHS Innopal PLR high-performance palletizer uses separate robots for grouping packs, forming layers, and for intermediate layers (photo: KHS)

In line with the philosophy of a circular economy, KHS wants to use resources for as long as possible. Even the design of new machines now takes special account of their service life. 2021/22 incoming orders are very good, sales grew by more than 3% to about € 1.2 billion. This was reported by KHS CEO Kai Acker at the drinktec trade fair.

For the near future, the line and machine manufacturer from Dortmund expects a further positive development, driven by growth in packaged sensitive beverages and liquid foods to 1.124 trillion units worldwide (cans, PET, glass). Milk is expected to grow by 5% overall, with 90% of the market dominated by other packaging.

At the show, the company displayed a number of innovations, including:

The holistic PET container concept KHS Loop LITE describes a fully recyclable PET container for highly carbonated beverages that significantly reduces the use of plastic over the entire life cycle. The newly developed weight-reduced bottle is made of 100 percent

rPET and, thanks to its ultra-thin glass inner coating FreshSafe-PET (SiOx), offers freshness and quality protection without affecting the recyclability of the PET material.

Thanks to its design, the rPET packaging for highly carbonated beverages enables a material reduction of up to 25 per cent compared to conventional CSD brand bottles on the market.

Automated line changeover for the InnoPET TriBlock from KHS enables time savings of up to 70% compared to manual changeover. Robots take over the mould changeover in the stretch blow-moulding module. There is also automated adjustment to the label's adhesive height and the bottle diameter, while the format changeover in the filling module takes place within a few seconds.

Essential for the functioning and exploitation of the potential of iflex is the InnoLine Flex Control line control system. It takes over the tasks of line and order management from the beverage producer's ERP system and orchestrates the automated changeover of the machines. The basic idea is to support the operator in doing

exactly the right thing at all times: by integrating the Innoline Flex Control web interface into the HMI, the contents are displayed on the machine screen. The operator sees which processing program has to be selected when and which materials are required where.

The new high-performance Innopal PLR palletiser from KHS significantly increases line efficiency. It can be used for can, glass and PET lines. The machine processes up to 625 pallets per hour at low infeed – in all common formats. The high output is achieved through optimally placed robot technology. Newly defined motion descriptions allow for higher speeds. In addition, the movements are coordinated with a second robot that inserts intermediate layers.

Conversions increase efficiency and sustainability

KHS Services include, among other things, anticipatory discontinuation management and technical upgrades. In addition, the systems provider advises on compliance with statutory environmental requirements and the implementation of sustainability targets. A wide range of digital services for improving machine efficiency rounds off the portfolio.

According to Armin Wille, Head of Service Sales at KHS, existing machines are on average 18 years old – some have even been in use for more than 40 years. "Worldwide, our machines are considered to be particularly durable. By regularly upgrading and integrating the latest solutions, users also increase efficiency and sustainability over the entire life cycle." To this end, KHS proactively develops new components on an ongoing basis that are adapted for existing machines. The electronic conversion catalogue from KHS comprises around 140 standard conversion options.

KHS intends to build on the digitalisation boost from the corona pandemic and expand its range of services. "Retrofits in the form of system retrofits and upgrades have numerous advantages for beverage bottlers, such as additional functions, safeguarding of operational technologies, and an overall increase in efficiency," emphasises Wolfgang Heßelmann, Innoline MES Product Manager at KHS. For the modular Innoline MES production control system, KHS offers the option of upgrading the Innoline BLM (Basic Line Monitoring) software to increase line efficiency, as well as an expansion with the automated Innoline Flex Control line control system.

KHS MDs at drinktec (from left): Martin Resch (CFO), Kai Acker (CEO) and Dr. Johannes T. Grobe (CSO) (photo: IDM)



BENEO

News

Prebiotic effect evidenced for chicory root fibres

A new systematic literature review with meta-analyses, conducted by Dávid U. Nagy et al., demonstrates that chicory root fibre intake (starting at 3g/day) promotes significant growth of Bifidobacteria in the gut microbiome in all age groups and improves bowel function parameters.

It is the first study of this kind, based on randomised control trials, that has investigated the effect of inulin-type fructans derived from chicory root on Bifidobacteria abundance in gut microbiota and health-related outcomes.

The systematic review with meta-analyses also demonstrates that chicory root fibre is a prebiotic that complies with the ISAPP (International Scientific Association for Probiotics and Prebiotics) definition of prebiotics. The researchers further reported that the bifidogenic effects of the chicory root fibres were accompanied by improved bowel regularity.

BENEO's prebiotic fibres, Orafit Inulin and Oligofructose, are inulin-type fructans. They are natural, non-GMO, clean label prebiotic fibres that are derived from chicory root via a gentle hot water extraction method, unlike some other fibres that are artificially or chemically made. They can be used in a wide range of food and beverage applications including baby food, according to national legislations.



A new systematic literature review has evidenced the probiotic effect of chicory root fibres (photo: Monstar Studio shutterstock)

Hach BioTector B3500c

Water savings through TOC monitoring

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Patrizia Isabelle Graef, Sales Development Management (patrizia.graef@hach.com)

For the processing of milk and whey at the Zapfendorf site, BMI wanted to monitor the permeate of the reverse osmosis plant online for organic contaminants. The existing monitoring by sampler and hand samples was to be replaced. A test with a UV probe failed because the windows of the probe became dirty too quickly and the measured values were therefore not reliable.

Solution

A Hach BioTector B3500c is now used for TOC monitoring of the permeate and has been working largely trouble-free for years. Based on the TOC readings, a decision can be made as to whether the permeate can continue to be used.

Advantages

Online TOC monitoring with the Hach BioTector B3500c enables the company to save about 180,000 m³ of fresh water per year. Due to the robustness and 99.86% certified measured value availability of the B3500c, a reliable decision can be made as to whether the water is suitable for rinsing purposes, for example, or needs to be further treated. Resources for monitoring with hand samples are thus not required.

Background

The progressive and far-sighted striving for sustainability was particularly noticeable in discussions with the environmental and energy manager of the Zapfendorf plant. This became visible, among other things, in the projects already implemented to optimise the plants and save resources. For example, a Hach BioTector B7000i Dairy monitors the TOC load at the wastewater channel of the larger part of the plant (dry milk production) and allows efficient material flow management. It is also possible to react immediately

to product losses. Before the installation, it took a long time to detect a problem. In the event of a leak, the wastewater can now be stacked and slowly fed to the treatment plant in a controlled manner so that it is not suddenly overloaded.

A BioTector B3500c was tested instead of the UV probe. The fact that the BioTector B3500c performs its work robustly and with low maintenance and reliably delivers plausible TOC measured values was convincing: "It has now been there for more than six years and works largely trouble-free."

An important feature of the Hach BioTector B3500c is the automatic cleaning of the reactor and sample tubes after each measurement. It prevents biofilm formation and measurement carry-over. This eliminates the need for frequent manual cleaning and recalibration of the device. With the BioTector, the reagents only need to be changed every 6 months as part of maintenance. BMI has concluded a service contract with Hach for this purpose. Overall, the Hach BioTector has a certified measured value availability of 99.86 % (Mcert). This corresponds to a plannable downtime of 12 h/year in total.

A step towards sustainability

With the Hach BioTector B3500c, it is now possible to use the TOC content to decide in real time whether the permeate can be reused or whether it must be further processed by the UO plant. This can save between 10,000 and 20,000 m³ of fresh water per month. Every year, about 180,000 m³ less water is taken from the wells. The burden on the sewage treatment plant is doubled, since without recycling both the permeate and the rinse water would be produced as wastewater. All in all, this is a huge step towards sustainability.



The BMI plant in Zapfendorf



**TOC analyser
Hach BioTector
B3500c at BMI in
Zapfendorf**

BMI is considering installing another B7000i Dairy for product loss monitoring of the smaller plant section, in order to achieve optimisation here as well and to be able to give the wastewater plant advance warning.

Recycling of UO permeate

Further savings potential was recognised in the use of permeate from reverse osmosis as rinse water. A large proportion of the raw materials, almost 70 %, are used to produce dry milk products. In one of the first process steps, whey is concentrated in a reverse osmosis (RO) plant. While the thickened whey is further processed in the production process, the permeate, the water that is a by-product of this process, is considered waste water. However, if the TOC content of the permeate is low (< 20 mg/l), it can be used to rinse tanks and pipes or to operate a steam boiler.



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Sidel at drinktec

The new Aseptic Predis X4

At drinktec, Sidel introduced a new generation of the Aseptic Combi Predis, the Aseptic Predis X4. An evolution of Sidel's existing range, the new system has been developed to continue to help customers service the growing market for healthy and nutritious drinks with a long shelf life, such as juice, nectar, soft drinks, isotonic, teas (JNSDIT), and liquid dairy products (LDP). The new system combines the highest food safety standards, unprecedented ease of use, maximum flexibility and a best-in-class environmental footprint. As Guillaume Rolland, Sidel's VP PET and Sensitive Products, explained at drinktec, digitalisation has improved ergonomics and maintenance, while making operator's life easier.

The Aseptic Predis X4 has a new digital feature for quality performance measurement and reporting; inbuilt IT collects a large amount of data that is used to monitor consumables and improve the overall quality of end-products. The digital innovations also include lab management functions such as a sampling plan, Hazard Analysis Critical Control Point (HACCP) procedures and quality assessments and status reports. Video tutorials guide operators helping them to manage the system and each bottle has a digital code that can be scanned to access information detailing all parameters of its production that helps with batch control.

The Aseptic Predis X4 comes with optional robotic mould changeover functionality and a new human machine interface, (HMI). The Q-Sense Filling Technology is based on a magnetic filling valve allowing for pre-defined, low foam filling processes that are tailored to the requirements of the product.

The Aseptic Predis X4 was presented to customers at drinktec 2022 and will now be launched gradually through a progressive deployment plan across applications and regions.

Sustainability achievements

Sidel has given itself ambitious targets in terms of sustainability. As Francesca Bellucci, Sustainability Director at Sidel, explained at drinktec, Scope 1 and 2 emissions are to be reduced by 50% by 2030 and scope 3 by 25%. Depending on the individual area, significant savings have been made already. For instance, the



Francesca Bellucci, Sustainability Director at Sidel: As a company we have already made significant reductions in our emissions (photo: IDM)



Guillaume Rolland, VP PET and Sensitive Products at Sidel: Sidel is pushing the boundaries again in the aseptic packaging market (photo: IDM)

environmental impact of Sidel's stretch wrapping is, compared to standard shrink wrapping machines, down by 60% thanks to 90% less use of energy and 50% less plastics; Cap feeding's impact has been reduced by 85% without the use of pressurised air; and the pasteuriser model Swing claims 15% less energy, 25% less steam and 60% less water usage.

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Stretching the limits of plant-based cheese

Taking plant-based cheese development to the next level to improve product characteristics



Authors: Christoffer Skovgaard Jensen and Michiel Fokkema

Christoffer Skovgaard Jensen is a designer for IFF, based in Brabrand, Denmark.

Michiel Fokkema is a senior designer and specialist in cheese flavours at IFF, based in Hilversum, NL

Consumer interest drove triple-digit growth in plant-based cheese in select European markets in recent years¹. As the market continues to expand, consumer expectations for plant-based cheeses are also growing. It's not enough for plant-based cheeses to be free of animal-based ingredients any longer. Consumers want to see more types of plant-based cheese, and they also want its taste, texture, and nutritional value to be more reminiscent of its dairy ancestry.

While the European market for plant-based hard cheeses may still be in its nascent stages, product development is being pushed beyond current standard starch-based formulas toward fermentation to achieve more product complexity and to increase the nutritive value. Although starch-based products are relatively simple to make from a technical aspect, there are flavour, texture, nutritional, and sustainability benefits to be gained by using fermentation to make plant-based cheeses.

Cheese is considered an indulgent product with taste and texture being key drivers of quality. Today, the product experience is more important than its nutritional value, but that is changing. There's a growing desire to have plant-based products containing protein and other positive nutrients. People also want the performance and formats of dairy-free cheese to match their traditional counterparts – slices for sandwiches, grated cheeses for pizza and block cheeses to eat on crackers.

Next gen plant-based cheeses

How do we get more nutrition and the taste, texture and performance (meltability, stretchiness, slice-ability, etc.) in plant-based cheeses that consumers crave? Making the next generation of plant-based cheeses through fermentation can start to address these challenges.

As mentioned, the first generation of plant-based cheeses has generally been made using vegetable fat, starch, flavour, colour, and salt. When using fermentation, as in the dairy production of cheese – protein and fibre – are introduced, which can help build structure, stretchiness, and meltability with the bonus of boosting nutritional values. In addition to the starter cultures used in the fermentation process to develop flavour, plant-based food protection ingredients (HOLDBAC VEGE protective culture, GUARDIAN Natural Extracts) are added to inhibit yeast and mould, prevent oxidation. Food protection ingredients contribute to more sustainable products.

The functional properties of conventional dairy cheese are governed by casein and the ability of casein to interact in a three-dimensional network during fermentation. Substituting dairy proteins with plant-based sources while imitating the application dependent functionalities (e.g., meltability and slice-ability) is a challenge. The protein incorporation is limited by processing challenges and the organoleptic impact. To successfully simulate



(photo: IFF)

the application-specific functionalities of dairy cheese, a combination of functional plant proteins, fats and texturing agents are needed. IFF provides a selection of ingredients – starter cultures, enzymes, emulsifiers, and stabiliser systems – that allow for tailor-made fermented plant-based cheese alternatives. By choosing the right combination of ingredients, the functionality and the organoleptic properties (e.g., meltability, slice-ability, shred-ability) may be customised to suit consumer needs.

One ingredient system is not optimal for every type of cheese. When designing an ingredient system for a fermented plant-based cheese with protein, cultures, stabilisers, flavours, and colours, it's imperative to know its end use. Is it going to be sliced or shredded, melted – a firmer or softer texture? Different ingredient systems will give you different results.

Eye-catching

Although people expect plant-based cheese to have colour similar to dairy-derived cheese, most have little colour or no colour at all. Before colour adjustments, starch-based cheeses are generally white – sometimes very white. In fact, colour is often added to starch-based cheese to tone down the brightness of the white. Products made through fermentation with a vegetable protein base tend to have a grey hue. In either case, a natural colour like beta carotene can be used to adjust the colour as desired by cheese type.

IFF has a complete range of natural colours for use in plant-based cheeses. The clean label BRIGHT'N'FREE line is E-number

free and offers quite a few natural colour options from pale yellow to deep red. Customised colour formulations can mimic the hues of well-known dairy cheeses in various plant-based matrices.

Flavour building

The IFF team has a deep knowledge of dairy-based cheese production and flavour development through fermentation. This expertise guides and inspires their plant-based cheese flavour development to achieve more dairy-like taste profiles.

When fermenting plant protein to make plant-based cheese, flavour development is more complex and will vary depending upon the type of protein used. Fermentation can be a natural way to introduce flavour into the cheese matrix. In fact, some of the beany notes inherent in vegetable proteins are suppressed during fermentation.

Consumers want real dairy-like flavour in plant-based cheese, but flavour does not develop in the same manner in plant protein during fermentation that it does in dairy protein. So, the dairy notes and umami flavour expected in hard types of plant-based cheeses needs to be built in.

Salt and umami taste are especially important in hard cheeses. During the ripening of hard cheeses, enzymes are breaking down the proteins into smaller peptides of which glutamic acid is responsible for the umami taste like in Parmesan cheese. Because plant-based cheese is not ripened at all, and the fermentation only brings back some of the umami, the umami has to be brought



Figure 1: People expect plant-based cheese to have colour similar to dairy-derived cheese. Before colour adjustments, starch-based cheeses are generally white. Products made through fermentation with a vegetable protein base tend to have a grey hue.



Figure 2: When designing an ingredient system for a fermented plant-based cheese with protein, cultures, stabilisers, flavours, and colours, it's imperative to know its end use.

back through the use of flavours. If a lower salt product is desired, flavours that can increase the salt perception of the end-product can also be used.

IFF takes an innovative approach to product design, combining advanced insights, recipe development, and taste expertise. A plant-based cheese taste toolbox to develop authentic dairy cheese flavour is used in a three-step process. With the help of the toolbox, IFF can recreate the base, middle and top flavour notes of dairy and cheese ingredients and mask any unwanted flavours and enhance others. Because every base and product is different, the toolbox is an excellent way of customising the flavour mix for each. The main chal-

lenge is to bring back the intensity, complexity and upfront taste of dairy cheese. After extensive research, IFF has managed to overcome this challenge.

The same flavour development techniques are used with starch-based cheeses. Typically, flavour masking is not necessary in these products, but umami and base notes need more attention. Fine-tuning with specific tonalities, though, can impart flavour types – Emmentaler, Cheddar, Gouda, Mozzarella, etc., the same as in

fermented plant-based cheeses – into the product, increasing consumer satisfaction.

No matter the ingredient makeup of a plant-based cheese, these tools provide the ability to create indulgent dairy-like plant-based cheeses that satisfy consumers and stimulate repeat sales.

1 Nielsen MarketTrack – Smart Protein Project, Oct. 2017 – Sept. 2020, Markets: Denmark, Germany, Italy, Netherlands, UK

Plant based cheese alternatives Ideal taste

- » Slightly salty
- » Preferably creamy
- » Somewhat smoky or with a certain character
- » Intensity is key
- » Real cheesy profile, mimicking dairy taste
- » Combined with some vegetal note if harmonious
- » No sweet taste or too sweet smell
- » No bitterness
- » Some acidity/fermented notes
- » Add inclusions to enhance taste: spices, herbs, dried fruit

Ideal texture - Block/Hard cheese analogues Appropriate per use:

- » Easy to slice
- » Easy to grate
- » Easy to melt (not dry when grilled)

Plant -based cheese alternatives must be:

- » somewhat elastic
- » slightly compressible
- » not feel or look like plastic
- » No granular structure (unless attributable to inclusion – peppercorn, etc.)



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Krones at drinktec

Evoguard is going digital

Individual QR codes are now being printed on the identification plates of all new components. And with that, plant operators will have an even easier time of accessing the entire range of information about their Evoguard pumps or valves, at a glance, with a single scan. But what makes using the Evoguard Data Viewer so easy? Maintenance personnel don't need a special app or user account. All they need is a smartphone with an active internet connection – they can simply scan the QR code with the phone's integrated camera.

In a matter of seconds, the smartphone then navigates directly to an overview of the product information with the corresponding serial numbers and specifications as well as all information on all spare parts. In case a part needs to be ordered, the quantity

and the exact part numbers for the spares are likewise listed. Additional documentation such as operating manuals and technical drawings for the components are also available online. The often-time-consuming process of leafing through binders or other printed documentation will now be a thing of the past.

For some valves and pumps, videos have also been made available for operating personnel to learn about maintenance and upkeep of the components. This is just another advantage of the Evoguard Data Viewer since – unlike printed manuals and such – the data can be updated, added to, and made available with very little time or effort. That means the information online is always up to date.



With the new Evoguard Data Viewer, all product-specific data can be read out via a QR code directly on the valve or pump (photo: Krones)



The site also offers interactive options: With just a few clicks or taps, information can be shared directly with colleagues or the associated link sent to them by email – for example, if it needs to be opened on a company computer. And if there are still open questions about the components, all it takes is a click or tap on the dedicated button to be connected directly with someone from Evoguard Customer Support.

Plant-based drinks

Krones is focussing also on the production of oat drinks and can offer three different process variants, based on its experience in beer brewing: ready-made oat base, oat meal and whole oat kernels or oat flakes. The company provides solutions, lines and equipment for all these process variants.

Detection of hairline cracks

Krones made a quantum leap in inspection technology two years ago with the development of Linatronic AI. For the first time, an inspection machine used deep-learning software for the automatic detection and classification of damage and contamination – with great success: Linatronic AI is able to distinguish between anomalies and, for instance, water droplets with a reliability rate of 99.9 percent. These high marks are only possible because the system uses deep-learning technology that is based on an artificial neural network.

Linatronic AI is now in service and proving its capabilities daily – reliably detecting defects that had previously gone unnoticed or are simply invisible to the human eye.



Krones' main focus in plant-based drinks is on the production of oat-based beverages (photo: Krones)

ELOPAK

First tethered caps solution

Announced in 2021, the tethered cap is one of the latest innovations launched by Elopak. The Pure-TwistFlip has been designed so that the closure remains attached to the carton throughout its entire lifecycle, thereby reducing the risk of it being littered. It complies with the EU's Single-Use Plastic Directive, which was introduced as part of efforts to reduce the impact of certain plastic products in the environment and tackle marine littering.



First dairy in Germany to use the new Pure-TwistFlip closure is NordseeMilch (photo: Elopak)

The Pure-TwistFlip 29i is also Elopak's lightest screw cap to date, helping to reduce the use of plastics. It can be combined with any Pure-Pak carton to create an original packaging solution that prioritises the environment, safety and consumer convenience. The cap itself is produced by United Caps.

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Getting started is easier than expected

Advanced plant documentation



Authors: Dipl.-Ing. (BA) Martin Dubovy, Head of Plant Solutions at Rösberg Engineering GmbH, and Dipl.-Betriebsw. (FH) Evelyn Landgraf, Marketing at Rösberg Engineering GmbH

Digitized plants or processes can only be reliably managed if there is also documentation that depicts the current status of the production plants. In many places, the reality is still far removed from plant documentation 4.0, although it forms – along with all the necessary communication technology and safety concepts – an essential foundation for successful Industry 4.0.

We live in a time of constant change. This is also reflected in industrial production. Production processes are continuously adapted and optimised, production runs are becoming smaller. This is not new, because production facilities have also changed continuously in the past. Nevertheless, this trend is accelerating and processes are becoming more dynamic.

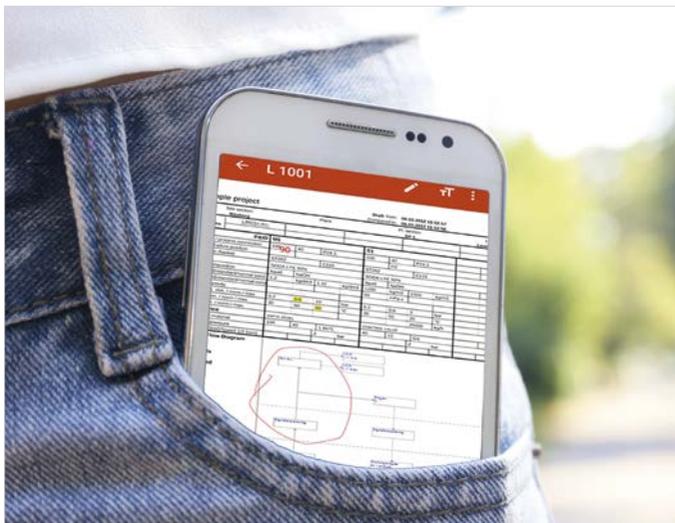
Reliably documenting as-built status

It is true that as-built documentation, i.e. documentation that reflects the current condition of a new plant, has always been required at the time of handover. In reality, however, the effort to create corresponding documents is immense. And checking whether the documents supplied actually correspond to the plant reality is only feasible with a great deal of time. For this reason, the documentation is usually only spot-checked during handover. Often enough, plant documentation does not correspond to reality right from the start. The larger and more complex a plant is, the more challenging this undertaking seems. It may seem a little schizophrenic that everyone is talking about the digital twin, while in everyday practice, attempts are still being made in many places to master asset documentation with paper documents, Excel lists



Christian Stolz, Account Manager Plant Solutions at RÖSBERG Engineering GmbH: "In addition to maintenance, many other applications benefit from digital documentation: troubleshooting, major revisions, project-related documentation, loop checks and the management of assets as well as the integration of package units and know-how transfers. The fact that up-to-date and legally compliant documentation is available at all times pays off, not least in audits." (photo: Rösberg)

ProDOK is the PCT-CAE system for planning and operational support of process control equipment in process plants. It enables rational, consistent project planning and documentation. ProDOK ensures an integrated planning process according to uniform rules. (photo: Rösberg)



LiveDOK makes distributed documentation of large plants digitally available to engineers and operators: All relevant documents, plans and records structured on a uniform, intuitive user interface – regardless of format and medium. Plant data can be managed, searched and corrected in real time. From planning to operation, always and everywhere. (photo: Rösberg)

or complex folder structures. But this is precisely where plant documentation 4.0 can make an essential contribution, especially if it can also easily manage changes.

Knowing not only the current status of all installed components

Rösberg Engineering developed digital solutions many years ago to keep track of the flood of information. Christian Stolz (Fig. 1), Account Manager Plant Solutions at RÖSBERG Engineering GmbH says: "With our plant instrument design system ProDOK (Fig. 2), we primarily document the planning and construction of plants. At the same time, however, it is also important to know the current status of the plant and the installed components during operation. Our software tool LiveDOK (Fig. 3) helps with the administration and documentation of changes. One focus of the tool is to be able to make changes to the documentation very easily and make them available to everyone."

Various use cases benefit from Plant Documentation 4.0

Those who think of plant documentation 4.0 probably first have in mind the benefits that it will bring to maintenance. Here, of course, it is very valuable to know the current status of the plant and to be able to easily document changes that have been made. "For this purpose, maintenance staff can simply enter changes on the tablet using a pen (Fig. 4) and these are saved with the information about who made them and when," says Stolz. "Various stored mechanisms then ensure that the original documentation is regularly adjusted and thus remains clear."



Redlining - Changes can be easily noted by handwritten note, e.g. on the tablet. (photo: Rösberg)

Besides maintenance, however, many other areas benefit from digital documentation (Fig. 5). These include, for example, troubleshooting, major overhauls, project-related documentation, loop checks and the management of assets or package units section, as well as the integration of packaging units and the transfer of know-how. Last but not least, it pays off during audits that up-to-date and legally compliant documentation is available at all times.

Management of assets or package units

Digital documentation also brings advantages in the management of assets, e.g. when a manufacturer discontinues assets and the information is needed on how often and where the respective component is installed in the system, or an overview is to be cre-

ated for which components there will no longer be supported in the near future. Only those who have such lists can keep production running reliably. The use of package units, i.e. the division of large plants into smaller units, is a trend in the process industry that also demands digital documentation. It raises the question of how the documentation supplied with a functional unit can be transferred as easily as possible to the existing plant documentation.

Project-related documentation and the transfer of know-how

Even with more extensive conversion measures, plant expansions or testing procedures, it becomes necessary to have a large number of project-related documents ready to hand. If these only exist in paper form or different file formats in various sources, compiling them is laborious and not very efficient. With consistent, digital documentation, knowledge can also be secured; it does not remain solely in the heads of experienced employees. Knowledge retention and transfer to new employees is made much easier.

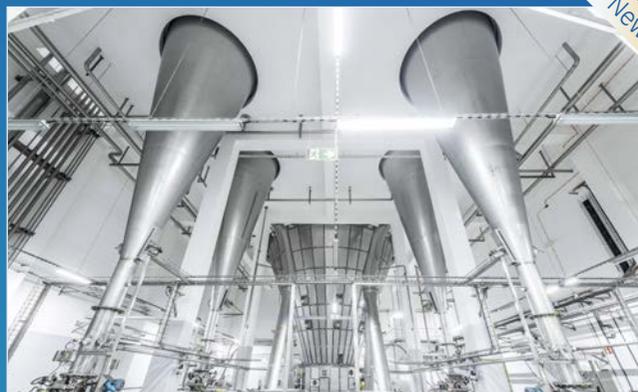
GEA

50% less fossil fuel consumption in spray drying plants

GEA has developed an air heating system for spray dryers that more than halves a plant's consumption of fossil fuels and its associated carbon footprint. Based on high-temperature heat pumps, GEA AddCool is a patent-pending solution that can be integrated into an existing powder spray drying process. By cutting the plant's overall heating requirements and costs, it makes production processes more sustainable.

The new GEA technology uses CO₂ heat pump technology to recover waste heat from the exhaust air or other plant cooling processes. That energy is upgraded and used to warm the air in the spray dryer up to 120°C before feeding it into the dryer's conventional heating setup.

Since the GEA AddCool heat pump system works as an addition to the native spray dryer air heating system with-



GEA AddCool reduces fossil energy consumption in spray drying by 50% (photo: GEA)

out impairing plant throughput, final powder properties or quality, it can be easily retrofitted into conventional plants. Additionally, the option of reverting to the original setup during routine maintenance means that the spray dryer can continue powder production uninterrupted.

Very different use cases benefit from the use of LiveDOK. (photo: Rösberg)

- Project documentation
- Transfer of know-how
- Maintenance
- Asset management
- Package unit management
- Troubleshooting
- Major revision
- Loop checks

Rösberg Engineering GmbH

Rösberg Engineering GmbH, founded in 1962 in Karlsruhe, Germany, with 150 employees at five locations in Germany and China, offers customised automation solutions for internationally operating companies in the process industry.

Today RÖSBERG is an internationally successful automation company and developer of software solutions. The range of

tasks includes basic and detailed engineering for the automation of process and production engineering plants as well as the configuration, delivery and commissioning of process control systems. In addition, the company has extensive project planning and user experience in the use of safety-related control systems, is an expert in functional safety and offers industry-specific software solutions in the field of information technology.

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Post-show reports

drinktec
Grow with the Flow

drinktec 2022 was a highly successful and interesting event. Delayed by Corona, the world's most important show for beverage and liquid food technology went live after a 5 year's break. Visitors were truly international and there was abundance of innovation presented at the booths. Here's in a glimpse what IDM found when walking across the show.

Bericap: Solution for tethered caps

Closure manufacturer Bericap presented a solution to a widely ignored problem with closures that are firmly attached to packages (tethered caps). Capillary ribs, i.e. small ribs that are worked into the inside of the cap in the shape of a ring, prevent the cap from being wetted with product. In conventional tethered caps, when a bottle is shaken, product sticks to the top of the cap, which then drips from the side of the cap when drinking and can stain the consumer's clothing.



Capillary ribs prevent product from wetting the inside of the cap (photo: IDM)

Emerson: Compressed air monitoring

Emerson presented intelligent solutions for improving sustainability, overall equipment effectiveness (OEE) and production flexibility. The highlight was the AVENTICS AF2 series airflow sensor. Sensors of this series help to save energy and reduce costs. This series of advanced sensors has improved the energy efficiency of beverage and liquid food production equipment in a variety of applications, including packaging, and now includes the AF2 high flow model. The AF2 for high flow enables compressed air monitoring not only for individual machines, but also for larger compressed air lines and systems. These enhanced capabilities allow operators to optimise energy consumption throughout the packaging plant and improve overall plant sustainability.



The AVENTICS airflow sensor is now also available as the AF2 model for high flow (photo: Emerson)

Domino:
Machine vision systems reduce risks

The Domino R-Series – a range of intelligent vision systems for the automatic inspection and verification of product codes, including date codes, batch numbers, barcodes and 2D codes – has been specifically designed for use with Domino printers and coders, eliminating the need for manual code inspection and verification. This significantly reduces the risk of an incorrect code leaving a production facility unnoticed, while enabling more efficient use and distribution of resources. Designed for use with Domino printers, the R-Series vision systems integrate seamlessly into existing production lines without the need for customised fixtures or special add-ons.

"Coding errors pose a significant financial risk to manufacturers – and this goes far beyond the risk of production waste and the need to rework faulty goods," says Andy Barrett, Portfolio and Requirements Director at Domino. "Incorrect code, if it enters the supply chain, can necessitate a product recall, which is not only logistically costly, but can also damage the long-term value of a business," Barrett continues.



Intelligent vision systems check and verify product codes, including date codes, batch numbers, barcodes and 2D codes (photo: Domino)

GEA: Low-sugar juice processing

GEA and Israeli start-up Better Juice conduct product tests on behalf of beverage manufacturers looking to lower the sugar content in drinks. To provide the service, the new GEA Better Juice Sugar Converter Skid, which the industrial systems supplier developed based on the Better Juice process, has been installed at the GEA Test Center in Ahaus, Germany.

Thanks to a patented enzymatic process, this is the world's first solution that naturally reduces the sugar content of fruit drinks by up to 80 percent, without affecting its nutritional value or authentic taste. The juice flows continuously through a bioreactor containing GMO-free, immobilized microorganisms which convert simple sugars into prebiotic, non-digestible molecules that benefit the intestinal flora. As a result, the GEA Better Juice Sugar Converter Skid succeeds in removing up to 80 percent of the sugar in natural fruit juices, concentrates as well as fruit-based mixtures, such as purees. At the end of 2021, the partners won their first commercial order from a company in the U.S. where, once integrated into production, the system will create juices with much less sugar.

GEA and Better Juice have started development for applications of the GEA Better Juice Sugar Converter Skid in the dairy industry.



The GEA Better Juice Sugar Converter Skid succeeds in removing up to 80 percent of the sugar in natural fruit juices, concentrates as well as fruit-based mixtures, such as purees. (photo: GEA)

GERNEP: Combination machines

The new generation of GERNEP combination machines integrates different gluing systems on just one machine. A new suspension allows the combination of different modularised units that can be operated intuitively via an improved HMI. The machines are designed to be freely accessible for easy cleaning and maintenance. All main components are servo-driven. The label inspection allows the integration of third-party camera systems.

GERNEP now supplies pre-modular combination machines (photo: IDM)



Dairy colors that deliver

Author: Steven Taylor, Head of Sales UK at GNT Group



In today's highly competitive dairy market, manufacturers need to offer products with strong visual appeal. The effective use of color indicates quality and freshness and can help generate a sense of excitement. Color can also boost consumers' enjoyment of the product, influencing perceptions of sweetness, flavor intensity, and overall acceptability¹.

The choice of coloring ingredient is every bit as crucial. Mintel research shows clean labels are rapidly becoming the new normal across the dairy industry, with consumers seeking out products that are free from artificial ingredients². Innova, meanwhile, has reported that health credentials and naturalness are among the most important consumer demands in the modern dairy market³.

Clean-label concentrates

EXBERRY Coloring Foods are plant-based concentrates made from edible fruits, vegetables, and plants using traditional, physical processing methods. The crops are non-GMO and grown by farmers working in GNT's vertical supply chain. As a result, EXBERRY colors support the completely clean and clear label declarations that modern consumers want to see. In fact, they are considered to be food ingredients rather than additives within the EU and many other parts of the world.

EXBERRY concentrates are available in shades from across the whole rainbow and can be used in almost any food and drink application. Nonetheless, dairy brands may consider it an insurmountable task to introduce plant-based colors while still meeting production and storage requirements. Dairy products including yogurt, ice cream, and frozen desserts present a wide range of coloring challenges. These include color migration; storage demands such as ultraviolet light or high temperatures; the need to maintain stability throughout the supply chain; and high fat levels hindering the color's ability to interact successfully with the product.

Such challenges mean technical and application support is vital to achieve optimal results. GNT has vast experience delivering effective coloring solutions in dairy and can provide support throughout the entire product development process.

Spirulina-based concentrates can be blended with other EXBERRY products to achieve a broad spectrum of hues including blues, greens, and lavenders (photo: GNT)



Replacing carmine

EXBERRY colors are plant-based and fulfil both halal and kosher requirements. As such, they can provide an ideal replacement for the insect-derived red colorant carmine in dairy applications.

Our black carrot-based EXBERRY Coloring Foods, for example, can provide an excellent solution for dairy and plant-based dairy products including ice cream and yogurt. These concentrates contain stable anthocyanin pigments that provide a red hue with a hint of blue and no off taste. Our new range of sweet potato-based reds, meanwhile, is well-suited to applications including UHT milk, yogurt, ice cream, sorbet, and fruit prep. They deliver yellowish-red shades with no raw material taste in the final application.

Beetroot concentrates can also provide an effective choice for pinks in refrigerated and frozen high-pH dairy and plant-based dairy products.

Natural blues

The popular superfood spirulina is the only natural blue Coloring Food. Our spirulina-based concentrates can be blended with other EXBERRY products to achieve a broad spectrum of hues including blues, greens, and lavenders. With the right approach, spirulina can provide a perfect replacement for artificial colorants such as brilliant blue, patent blue, and Green S, delivering spectacular visual results without compromising on the label.

Performance can be system dependent, but our dedicated team of food scientists and culinologists have the know-how to make the best recommendations on a case-by-case basis.

EXBERRY Coloring Foods are plant-based concentrates made from edible fruits, vegetables, and plants using traditional, physical processing methods (photo: GNT)



Sunshine shades

Orange and yellow shades are used in dairy products to showcase a variety of fruit flavors as well as emerging flavors such as turmeric, pumpkin, and carrot. EXBERRY products made from carrot, pumpkin, turmeric, apple, and paprika can deliver everything from beautiful sunshine yellows to bright oranges in dairy applications such as milkshakes, ice cream, and yogurt.

Orange and yellow are also used in processed and plant-based cheese products to deliver a finished product that consumers recognize. EXBERRY can provide excellent results while supporting clean ingredient lists.

Colors you can trust

As an independent, family-owned company founded in 1978, GNT has vast experience delivering plant-based coloring solutions to many of the world's leading food and beverage manufacturers.

We are devoted to providing colors that customers and consumers alike can truly trust. Our raw materials are grown by farmers working as part of GNT's vertically integrated supply chain using sustainable methods. We invest significant amounts in long-term stockholding, too. This approach is unique and provides real advantages for customers, allowing us to offer high-quality coloring solutions all year-round while protecting against price volatility.

We have also unveiled plans to become the leader on sustainability within the food coloring industry. We have set out 17 ambitious sustainability targets for 2030, from cutting the Product Environmental Footprint for EXBERRY product ranges by 25% to reducing the intensity of factories' CO₂-equivalent emissions by at least 50%.

With demands for clean and clear labels on the rise, it is essential to offer natural ingredient lists to maximize product acceptance. EXBERRY Coloring Foods are plant-based, sustainable ingredients that can help dairy brands set themselves apart by delivering spectacular products for a new generation of consumers.



- 1 Spence, C. 'On the psychological impact of food colour' *Flavour* (2015)
- 2 Mintel 'Patent insights: innovation by dairy companies' (2020)
- 3 Innova Market Insights 'Taste, health and sustainability: How dairy consumers satisfy differing desires and demands' (2021)

EXBERRY products made from carrot, pumpkin, turmeric, apple, and paprika can deliver everything from beautiful sunshine yellows to bright oranges (photo: GNT)

The sustainability and water challenge

How Ecolab can help reach your productivity, sustainability and water targets.

Ecolab, one of the major global companies specialized in cleaning and sanitation in the food & beverage and dairy industry, has set out to partner with their customers to tackle productivity and sustainability and reduce the water footprint. IDM met Marcus Ley, VP Global Accounts – F&B Global Solutions Ecolab, for a talk at the drinktec show in Munich.

IDM: How do you approach sustainability and water in the process of beverage and liquid food production? Is there a big savings potential?

Ley: There is massive savings potential! Beyond Food Safety, at this year's drinktec, Ecolab's innovative solutions are clearly focusing on Sustainability and end-to-end Water Management.

When you look at the food, bev/brew and dairy industry, the main roadblock to economical production is cleaning and sanitation. In fact, next to production itself, CIP – Cleaning-In-Place – is the largest consumer of Time, Energy, Chemical as well as of course Water and Wastewater.

We are designing holistic cleaning solutions that free up time, provide more production capacity while using less chemicals, less energy and less water and wastewater.

IDM: What differentiates your holistic approach to cleaning and what are the key drivers?

Ley: Our methodology is always a combination of industry respective processing expertise, intelligently designed chemicals and engineering technologies as well as smart digital solutions.

The cleaning regime is based on highly formulated chemicals that significantly increase cleaning performance. This allows us to reduce



The Rubik's cube demonstrates that you always need to respect interdependencies in a system you want to change (photo: IDM)

cleaning time, water and wastewater through shortening and skipping rinse time as well as thermal energy by lowering cleaning temperature and eliminating hot water or steam treatment.

IDM: Where do digital solutions and transformation come into play?

Ley: Ecolab have invested more than US\$ 800 million in the past years in digital development. 3DTrasar is Ecolab's global digital brand with programs applied in Utilities (Boiler and Cooling), Process (CIP) and Wastewater. In CIP, we validate and monitor & control cleaning performance through our 3DT CIP digital program.

3DT CIP provides insights into your CIP operations with regards to Compliance and Performance, visualizing the effectiveness and value created by Ecolab's formulated cleaning regime and providing peace-of-mind day-in-day-out.

Furthermore, the program continuously highlights exceptions and uncovers improvement and potential optimization opportunities to further reduce viable resources. In its next development phase, 3DT CIP will be able to dynamically manage CIP which will eventually optimize every single wash realtime and create additional productivity gains.

IDM: What are other water savings opportunities you see in the industry outside cleaning?

Ley: Beyond cleaning and sanitation, our Nalco Water Division, focuses on small- and large-scale water Reduce, Reuse and Recycle projects from water treatment chemicals to full scale Design-Build-Operate-and Manage wastewater projects.

It is Nalco Water's expertise and digital technologies we are leveraging across all Ecolab Divisions and Industry segments to tackle the challenges of water cost and scarcity where we do business.

DSM Next generation plant-based cheese solutions

DSM has a new portfolio for plant-based cheese which brings together DSM's range of solutions and expertise to solve some of the category's biggest challenges in taste, texture and health. The portfolio includes dairy-type flavors and concentrates from DSM's acquisition of First Choice Ingredients as well as texture, nutrition and colour solutions that enable producers to deliver authentic, dairy-like taste experiences. The new portfolio supports the creation of plant-based alternatives that more accurately replicate the properties of consumer favourites like sliced gouda and cheddar, shredded mozzarella, parmesan and cream cheeses.

Flavor-first formulation

Creating the right flavor profile with the typical, intense and unique dairy smell and flavor is a challenge in the plant-based cheese category. DSM's new portfolio enables taste complexity to be layered through a series of four steps. First of all, masking agents are used to cover off-notes from raw materials used, that can overpower traditional cheese flavors. Next, yeast extracts build the basic savory foundation. Once the savory base flavor is complete and off-notes are masked, process flavors impart typical lactic tones which give the unique dairy taste profile. And finally, specific plant-based cheese top notes complete the desired robust, complex, dairy-like flavor. Together, these yeast extracts, masking agents, process flavors and top notes provide the product with a signature savory taste direction and umami flavor – meaning less salt is required in the formulation.

Flexible, sliceable, meltable and shredable cheeses

Gellan gums, hydrocolloids, pectins and blends form the second critical pillar of DSM's new plant-based cheese portfolio and help create compelling texture and mouthfeel. The functional properties of gellan gum are highly suitable for improving plant-based cheese texture – from flexible and soft like mozzarella and young gouda, to hard and brittle like parmesan. Using a patented technol-



DSM offers a new portfolio for plant-based cheese for making alternatives that replicate the properties of consumer favourites (photo: DSM)

ogy, the gellan gum – in combination with the application's starches and proteins – improves the slicing and shredding qualities of the plant-based cheese as well as its texture and bite.

Helping to bridge the nutrient gap

Plant-based cheese is often low in vitamins, minerals and protein when compared to dairy-based cheese. Here, DSM's nutritional premix blends of vitamins and minerals help bridge the gap, allowing producers to include micronutrients such as vitamins A, B2 and B12 as well as calcium, iodine, selenium and zinc – all prevalent in traditional dairy products.

Authentic visual appeal

Consumers expect their plant-based alternatives to mimic the shape and colour of their dairy counterparts. DSM's beta-carotene solutions add that authentic color to plant-based cheeses. Depending on the plant-based cheese variety, color solutions ranging from yellow to orange can be blended to give that authentic appeal from the first look on a supermarket shelf.

News

Data-based cheesemaking

Digital transformation of a cheese production



Author: Maximilian Backenstos, Managing Director DatenBerg GmbH

Chilenian cheese maker Lactéos Matthei has set out for digital transformation

Digital transformation always has to be a mammoth project? Chilenian cheese maker Lactéos Matthei is taking a different approach here. With small steps, the production is digitalised and the resulting data is directly transformed into added value.

Initial situation

Lactéos Matthei is a premium cheese producer based in Chile. At the beginning of the last century, the founding family went to great lengths to transform the sandy soils of southern Chile into a place suitable for farming and livestock breeding. Founded in 1952, the family business now processes 17 million litres of milk into cheese every year and distributes it in Chile. Like many manufacturing companies, production faces two major challenges: the shortage of skilled workers on the one hand and steadily increasing price pressure on the other. Many production steps are based on experience-based decisions made by the skilled workers at the plant. If this experience is missing, rejects can quickly occur and machine capacity can be lost. While occasional rejects are tolerable when margins are high, avoidable rejects are unacceptable when price pressure increases.

The value chain at Lactéos Matthei extends from the company's own dairy farm to the dispatch of the packaged cheese to the food retail trade. In the company's laboratory, a physicochemical as well as a microbiological analysis is carried out daily on each batch of product produced and processed. The test results were recorded manually in spreadsheet programmes, which were stored decentrally in various folders. A well-founded analysis of the data, for example to track quality deviations, took time and involves manual effort.



Objective: Data-based cheese production

In order to enable Lactéos Matthei to meet the challenges described, the management decided in spring 2021 to start a digital transformation towards a data-based cheese production. The goal is to produce the same quality every time, regardless of experiential knowledge and subjective decisions. Together with the software company DatenBerg, a concept for data-based production was developed. The relevant process parameters from each production step are recorded and stored centrally. An intelligent linking of the data is to ensure the cross-process traceability of quality fluctuations.

DatenBerg offers the assistance system smartPLAZA for the automated evaluation of process and quality data in production. The software is used across all industries. In addition to automated analysis, manual evaluations of process behaviour can be carried out.

The data is not only to be collected digitally as an end in itself, but also to be evaluated automatically. For this purpose, a distinction is made between two user groups. The employee at the plant is to be supported with recommendations for action in process control. In this way, a lack of experience can be compensated for, as an objective recommendation is suggested to the employee with the help of the assistance system from DatenBerg. The second user group concerns work preparation and quality manage-



ment. The data access should enable them to quickly recognise deviations and ensure that information relevant to planning and decision-making is up-to-date. In this way, rejects are traced back to critical process parameters. These can be avoided in the future or compensated for by improvement measures.

Implementation

To implement the digital transformation, the first step was to make existing data sources available centrally. These are evaluated by experts in order to identify optimisation potential in the process. In the second step, employees were supported with recommendations for action. The implementation of the first work package started in July and was completed in December 2021.

The DatenBerg cloud storage is used to store existing data. Data is collected locally and stored online in a secure and redundant manner. With the provision of the solution by DatenBerg, local server costs and personnel expenses are eliminated. In addition, maintenance work can be carried out more efficiently and a high level of service availability can be ensured. Lactéos Matthei can thus devote itself completely to its core, cheese making.

The first step was to integrate spreadsheets from the laboratory and manually recorded temperature measurements from pasteurisation. The existing recordings were standardised and formatted for automatic upload. Via a standard connector, this data is automatically transferred to the cloud once a day. There, they are linked and visualised. This allows trends to be identified and hypotheses about process behaviour to be tested.

In order to expand the manually collected data, three IoT gateways from Milesight IoT were installed. These are used for automated temperature recording in the warehouse and during the ripening process. The newly recorded data is also transferred to the cloud via the MQTT network protocol and linked to the other data sources.

Added value

The automated, standardised data storage and evaluation through smartPLAZA have a positive impact on food safety. Instead of relying on manual evaluations, the individual data streams are evaluated automatically and humans are notified in case of abnormalities. In this way, quality is monitored around the clock.

Via the central data storage, the individual production plants can be easily compared with each other and deviations can be detected. For example, in the project, individual cheese vats were compared with each other and an anomaly was identified. One vat consumed 15% more milk per kilo of cheese than the others. Through the analysis, an improvement measure could be specifically initiated.

The protein and fat contents of the individual batches are recorded daily for each cheese vat. The evaluation recognises long-term trends in order to set a correct ratio of fat, protein and dry matter. With this evaluation function, numbers, data and facts can be generated quickly and the right decision can be made.

Next steps

After completion of the first integration stage, the next steps on the way to data-based cheese production must be followed. On the one hand, the error-prone recording of manual entries in spreadsheets is to be digitised. The shift book function of Daten-Berg is to be used for this purpose. The shift books automatically check the data entry and alert the employee to potential erroneous entries. This ensures data integrity.

Along the value chain, further process steps, such as from herd management, are to be included. This would ensure an end-to-end view of the entire production cycle. In this way, the influence of the feed on the final product quality can be determined. With the expanded data basis, the process parameters in the separation can also be individually adjusted to the feed.

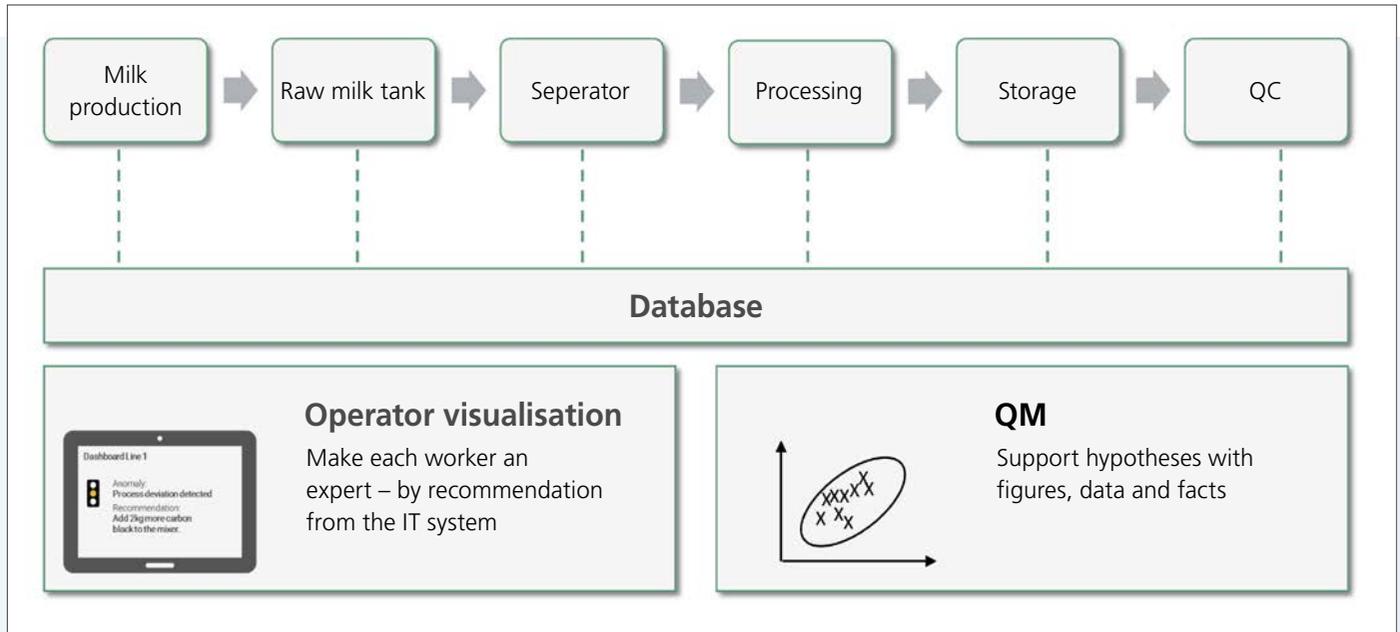
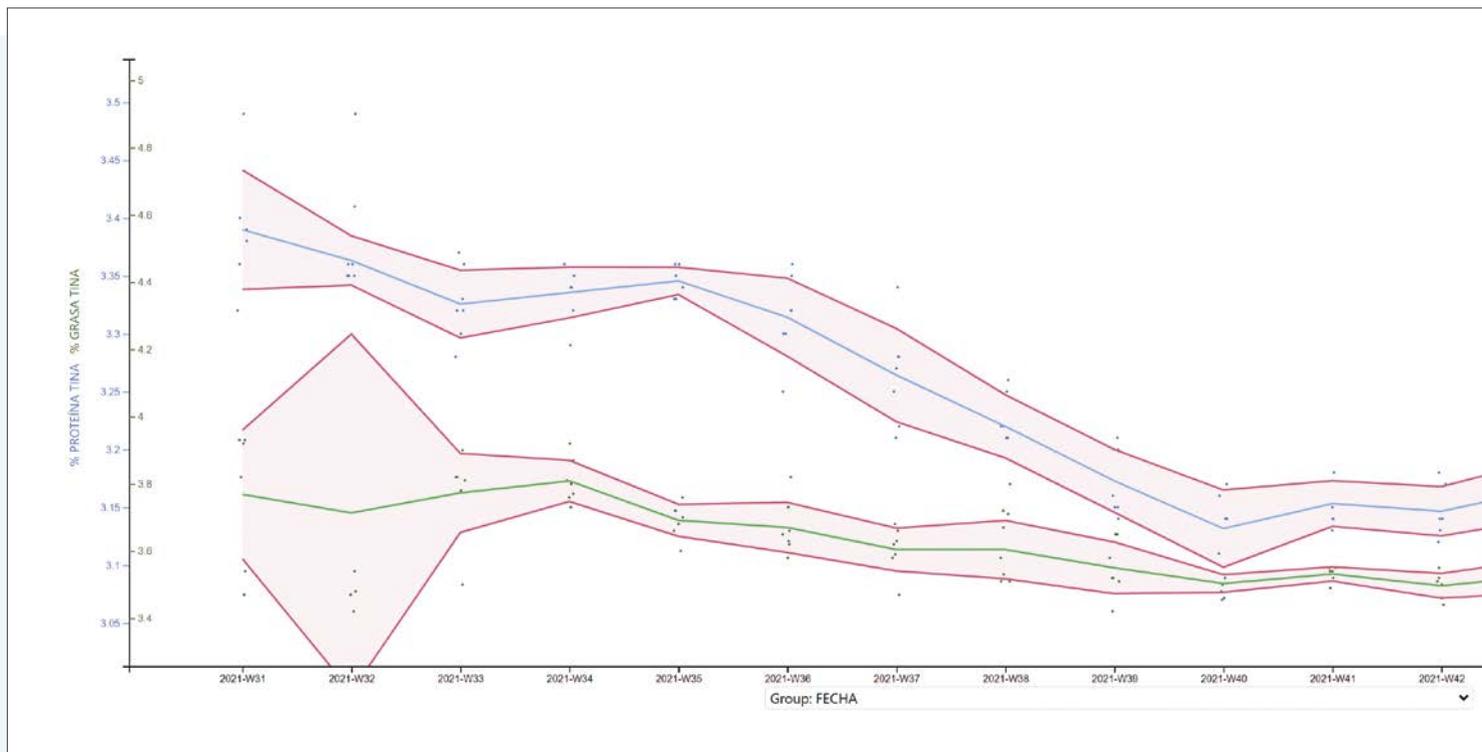


Figure 2: Target image of the data-based cheese factory



As a further step, the plant control is to be supported by recommendations for action. The assistance system developed by DatenBerg learns the interrelationships in the production process and detects deviations independently. The plant operator is then informed about deviations and provided with a recommendation for action. This can be used in the skimming process, for example.

The assistant recommends the appropriate running time and stirring parameters based on the current raw milk batch. This results in cycle time optimisation and increased product quality. Another application is the prediction of the pH value of a production batch based on process parameters. The determination of the product quality can thus be accelerated.

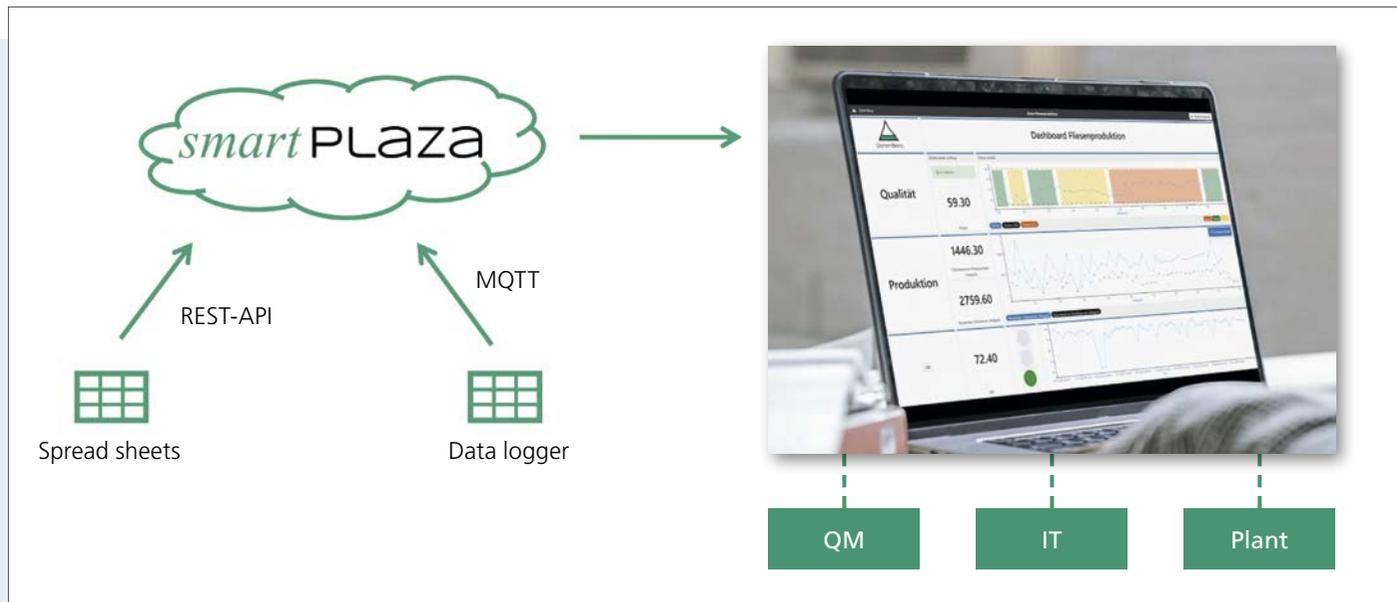
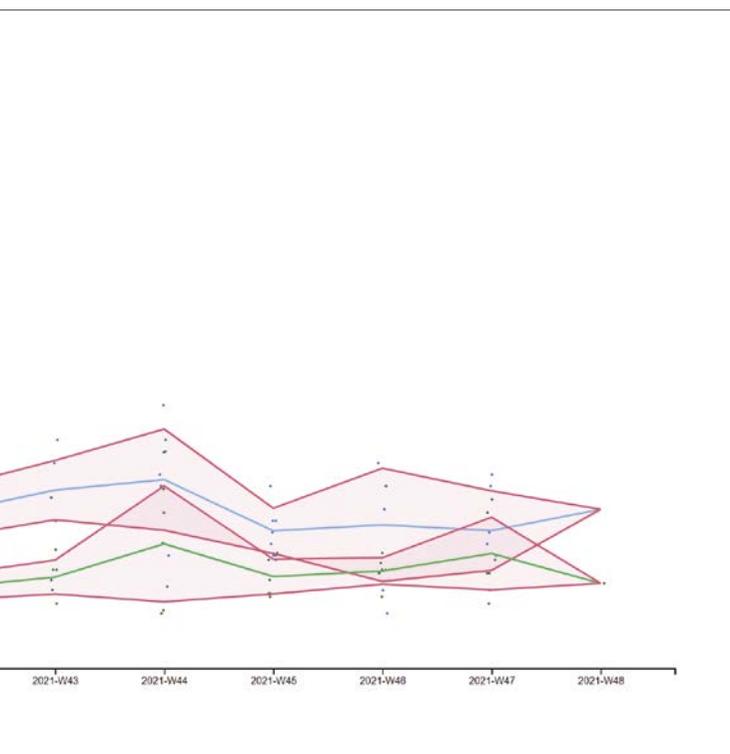


Figure 3: Data integration via various options in the cloud as well as visualisation and analysis of the collected data in the smartPLAZA software



Conclusion

The cheese manufacturer Lactéos Matthei has taken the first step towards digital transformation, digitally mapping production processes and implementing automatic evaluation. The DatenBerg software smartPLAZA enables a fast implementation of the digital transformation and a flexible integration of further data sources. After the first six-month integration phase, it was already possible to uncover optimisation potential in the production process. In the long term, the employees in the plant control system are to be supported automatically with recommendations for action.

DatenBerg is a software provider for assistance systems in production. The DatenBerg products are used in the chocolate industry and cheese production, among others.

Figure 4: Data analysis and visualisation with smartPLAZA to detect trends in the curve of the fat and protein content of milk over 16 calendar weeks

3D line design by KHS

Benefit starts during the offer phase

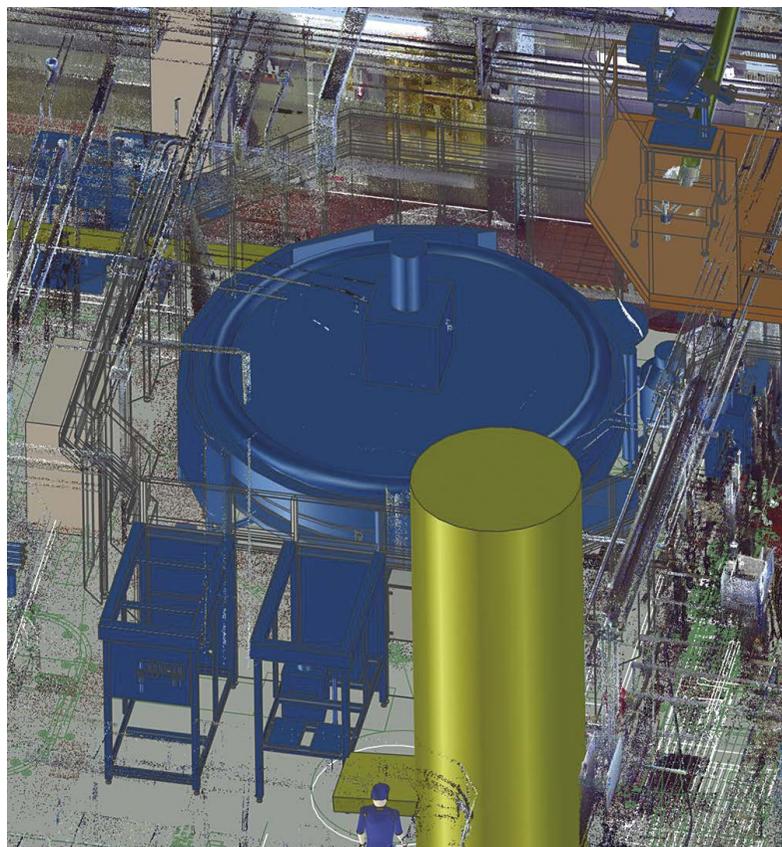
Additional security of investment: thanks to the use of 3D software the KHS Group now provides a timely virtual overview of all newly procured technologies at the offer stage. With it, the systems provider can illustrate in detail and in advance how a client's potential new line or single machine can be integrated into the production environment, taking all prevalent conditions on site into account. By making a full switch to the three-dimensional planning method, KHS is successively expanding its portfolio of reliable services.

"Depicting machinery in 3D helps customers to pinpoint any geometric interference during the early offer phase. This improves planning security, as any spatial conflicts in the production shop are recognized and corrected right from the start," says Patrick Bürger, head of Plant Design at KHS. Unnecessary loops in the planning process – and consequently additional costs – are thus avoided early on. "We show customers how the line or machine fits into their existing environment. If required, we include the operators in the advance planning process and show them how they can later move around between the machines. Their feedback is of great value to us and enables us to devise an optimum layout," he continues.

3D planning also shows machine heights

New software is used to this effect that speeds up the entire 3D planning process as it is easy to use. At the same time the system depicts the relevant machines and conveyor elements in greater detail than in the previous 2D variants. This means that production environments spread out across several floors or located in extremely confined spaces can be simply and clearly visualized. 3D line design can be applied to all machines in the KHS portfolio – regardless of the container or beverage segment.

To further improve planning security KHS offers laser scans that can be easily integrated using the new software. Here, a 360° camera set up on a tripod creates a realistic, practically consist-



ent photographic image of the relevant production environment. "These individual images are then superimposed. This creates what's known as a scatterplot that takes all geometries into account. Interferences and disruptive elements are reliably detected," Bürger explains. This is particularly advantageous when integrating new systems into parts of buildings that already contain machinery as it prevents possible collisions with existing equipment.

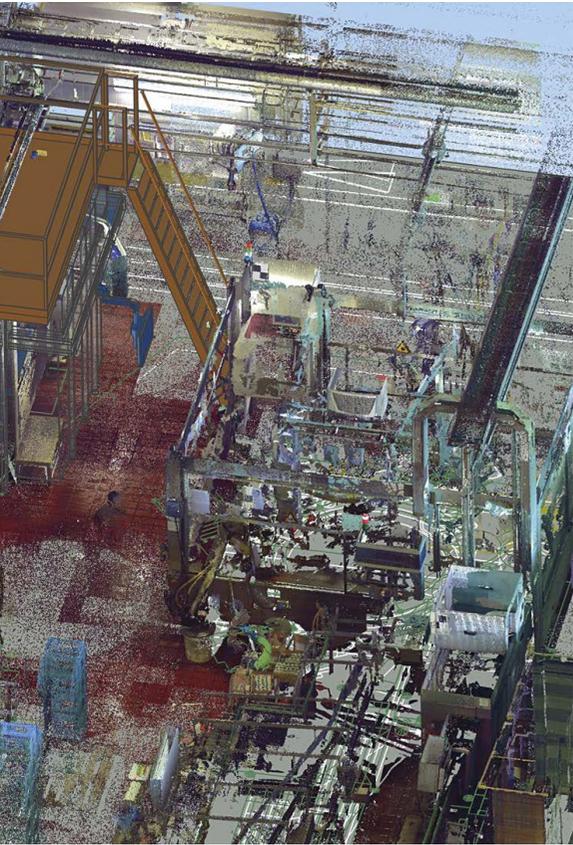
3D models for further processes

Moreover, the use of 3D models is also helpful to further processes. According to Bürger, customers are increasingly requesting rendered images for system visualization so that they can display and process live data from their MES on a production monitor. "This enables plant operators to track what's happening where on the line in real time and to see how high the current output is, for instance. We can provide these images as an option," states Bürger. 3D data can also be used for the purpose of building information

modeling (BIM). This describes a networked planning method in which all assets – from data on the building through piping and ventilation systems to the energy supply and ultimately the filling line – can be compiled and displayed in a single line design model. “We have quite a bit of experience with BIM projects. We’ve had plenty of very positive response regarding the data quality here, for example. Our optional support program not only includes the provision of this data in various exchange formats but also enables plant operators to take part in regular BIM coordination meetings,” Bürger adds.

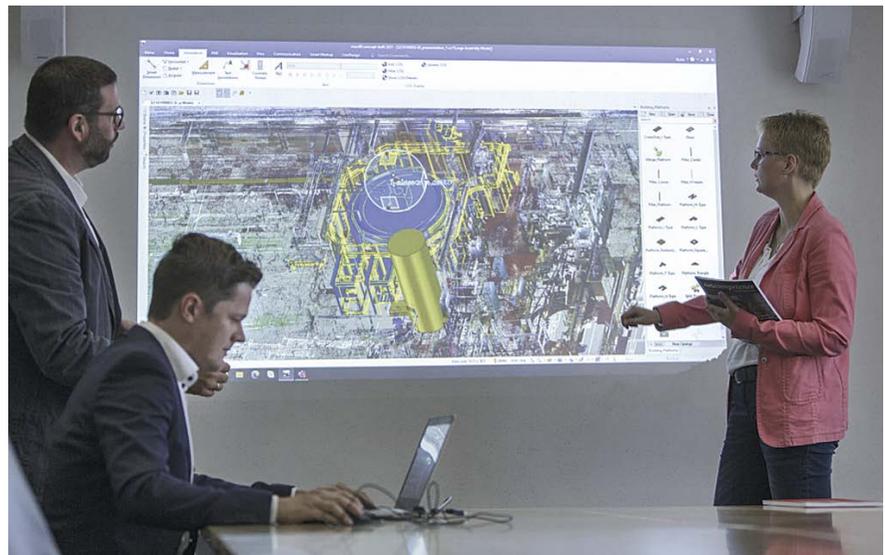
Another advance 3D planning option is to use mobile VR goggles. Bürger claims that this is particularly beneficial in confined spaces as it shows where and how operators can move from machine to machine. “VR simulation helps to provide simpler access to complex areas and to clearly visualize these. We’re hoping to find a number of prototype customers by the end of the year who we can test this form of visualization with in specific offer planning processes and present the benefits on the ‘live’ object.”

In Bürger’s opinion, 3D line design by KHS is currently setting standards on the market. “We’re moving into the future together with our customers. The feedback we’ve had so far has been extremely positive.”



Laserscan: (photo: KHS)

With 3D line design production environments spread out across several floors or located in extremely confined spaces can be simply and clearly visualized. It can be applied to all machines in the KHS portfolio – regardless of the container or beverage segment (photo: KHS)



“Depicting machinery in 3D helps customers to pinpoint any geometric interference during the early offer phase. This improves planning security, as any spatial conflicts in the production shop are recognized and corrected right from the start,” says Patrick Bürger, head of Plant Design at KHS (photo: KHS)



“Handkäse” from Birkenstock

bawaco implements process line for acid curd cheese

The Birkenstock family from Hüttenberg in Hesse, Germany, is realising a new building for €28 million in order to increase production capacities. Up to now, the acid curd cheese needed for the production of the regional cheese specialty “Handkäse” was mainly purchased from dairies in Schleswig-Holstein and Lower Saxony. In order to meet the increasing demand, the new location will now produce its own curd, which will then be processed and marketed as an additional variety.

bawaco gmbh has been awarded the contract to implement the complete process technology from milk reception to the filling of the sour milk quark in 50 kg bags.

General plant data:

- » Milk quantity: 6,250,000 l/a
- » Curd quantity: 600 t/a

The process technology includes:

- » Milk intake 30,000 l/h
- » Tank farm 2 x 65,000 l
- » Culture tank farm 2 x 4,000 l
- » Thermiser 30,000 l/h
- » Cheese maker 15,000 l
- » Dairy removal drum
- » Bagging
- » CIP system 40,000 l/h
- » Hygienic water system

The Handkäse produced by Käserei Birkenstock is a yellow cheese from the group of acid curd cheeses. Acid curd cheeses are ripened varieties that are produced from low fat curd cheese using ripening agents, salts and other additives (fat content <10% in dry matter).

At the beginning of the ripening process, there is a white curd core inside. The longer the ripening takes, the less of the curd core is left. At the end of the ripening process, the cheese is fully ripened from the outside to the inside. Depending on the degree of ripeness, the yellow cheese tastes spicy to piquant.

The engineering for the automation technology was done completely in-house with bawaco's own engineers; the control software and visualisation are also created by bawaco.

Special challenges for bawaco in the greenfield project:

- » Design of building concept
- » Determination of the required heating and cooling energy flows in a holistic concept
- » Determination of the floor drains
- » Coordination with the building works
- » Route planning
- » Layout planning in 3D

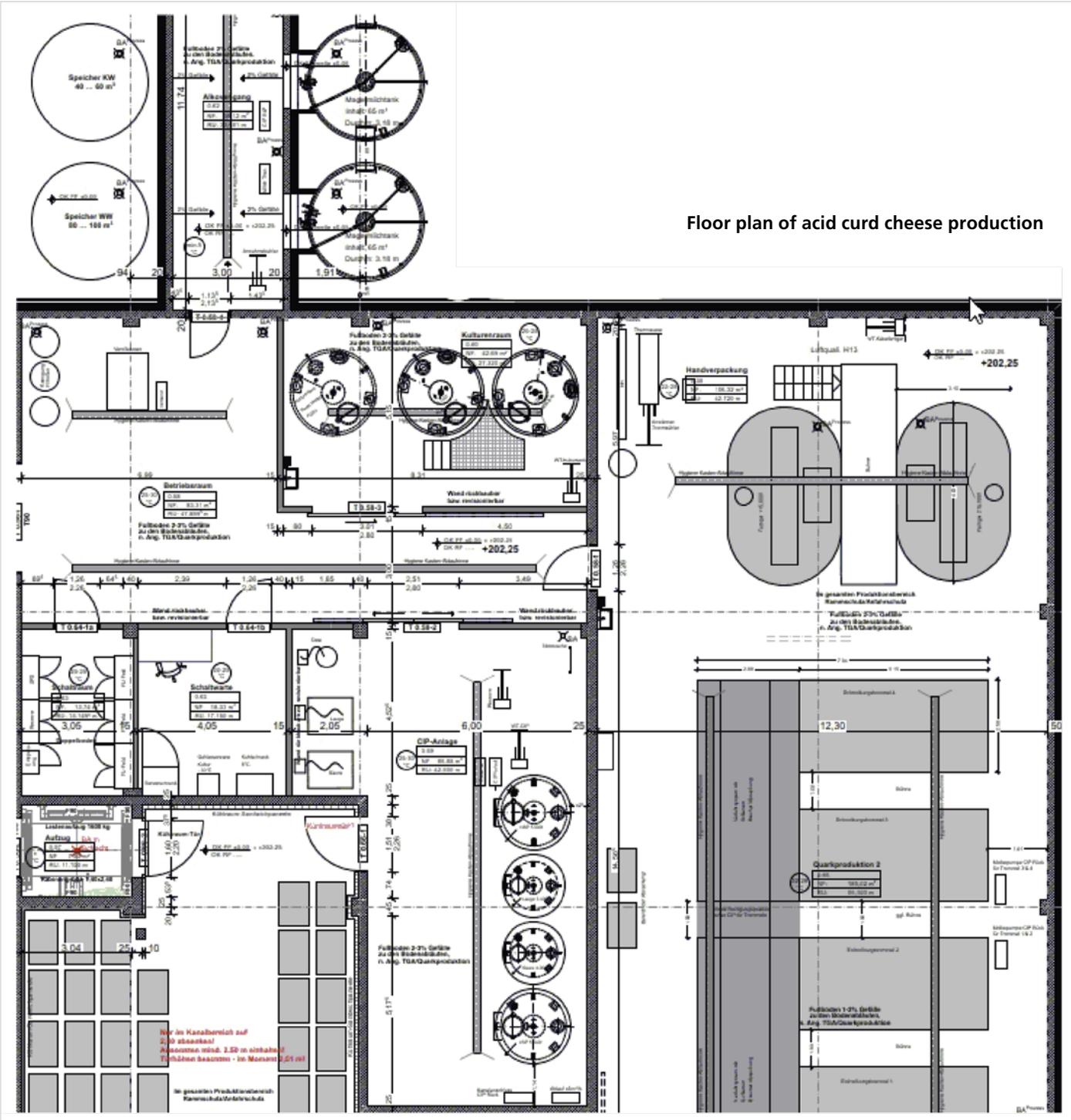
The excavators are already at work on the 3.2-hectare site in Hüttenberg, 60 km north of Frankfurt. The shell of the building will be completed at the end of the year and the cheese dairy will go into operation in 2024.

bawaco

Since 2003, bawaco has been planning and supplying complete hygienic lines and aseptic plants in the dairy industry. In addition to liquid food processing, bawaco also implements aseptic fruit cooking plants and increasingly production systems for plant-based milk alternatives.

In addition to its locations in Germany, bawaco is also on the market in Switzerland.

Floor plan of acid curd cheese production



View of the new green field Birkenstock cheese dairy

EDA Annual Convention 2022

Give up defensive communication, form a collective approach!



About 150 representatives of the European and international lactosphere gathered on 25 November in Madrid at the annual meeting of EDA (European Dairy Association) to listen to a remarkable line of high-profile speakers under the motto "Milk & Dairy – Essential for your life!". Amongst them were chief executives of renowned dairy companies and the Spanish Farm Minister Luis Planas. IDM summarises the most important statements issued at the event on the following pages.

All speakers agreed on one core message: given its importance for rural economy and feeding mankind with high-quality nutrients, dairy must be part of the solution of climate issues. And all this must be communicated in a far better way than today to tax payers and consumers. EDA president Giuseppe Ambrosi pointed out that a movement in Europe can be felt against "what some may call a too ideological approach" of the EU Commission in the Green Deal and F2F strategies, after a phase in which the arguments of those who are actually hit by the measures didn't resonate too much with Brussels. Only dialogue and concertation with and support to those who can make the change happen, i.e. the dairy sector, will lead to the desired de-carbonisation, Ambrosi noted. He also appealed to Spanish Farm Minister Luis Planas to make sure that Brussels' plans are translated accordingly into a sensible concept for EU dairy during the Spanish EU Presidency of Spain in the EU in the second half of 2023.

The power and goodness of milk

Ignacio Elola, President of Spanish dairy industry association FeNIL, seconded Ambrosi in saying that dairy which forms the middle class of rural areas needs tax incentives and investment to

continue to supply high-quality products in a sustainable way given a 45% cost increase in input materials and the rise of milk prices to historical record. This is the more important as the dairy industry consists in majority of small and medium sized companies.

Minister Planas spoke of a second green revolution the dairy sector is going through. There will be over 700m people more to be fed until 2030 while soil space and resources are limited. All this has to be achieved while increasing efficiency, sustainability and animal welfare. Planas stated that the dairy industry is doing a great job and is one of the key sectors for supplying the world with food at affordable prices.

Antoine de Saint-Affrique, CEO Danone, believes in the power and goodness of milk: "Milk is at the core of business at Danone". Consumers demand healthy and nutritious food that is made in a sustainable way. And this is opening a bright future for dairy, Saint-Affrique said. The imminent challenges are not going to leave – the global head of Danone manager pointed out to cost inflation and environment and their long-term impact – so it is better to embrace these challenges and interpret them as opportunities. The industry, Saint-Affrique continued, needs to communicate the benefits of dairy and all the achievements in sustainability much more aggressively. Defensive communication cannot win the battle, he added. The lactosphere is part of the solution of economic and sustainability challenges, Saint-Affrique said, but it must take ownership of the transformation. He also pleaded for a collective approach of the industry to mobilise support in policy, the NGO world and consumers. It is essential that a reduction of emissions will maintain social structures on the countryside, Saint-Affrique stated.



FeNIL President Ignacio Elola (centre), EDA President Gisuseppe Ambrosi (right) with Spanish Ag Minister Lui Planas in Madrid at EDA 2022



From left: José Armando Tellado, CEO Capsa Food, Peter Giørtz-Carlsen, CEO Arla Foods Europe, Gabriel Lodares, MD of large Spanish milk producer Agropecuaria Albacete and Mary Ledman, Global Dairy Strategy Lead Rabobank



Antoine de Saint-Affrique, CEO Danone: Dairy communication is much too defensive

European Dairy Systems 2030

60% of the expected growth of worldwide dairy trade (3% CAGR until 2030) will be absorbed by Greater China, Asia and Africa, said Mary Ledman, Global Dairy Strategy Lead Rabobank. Global dairy trade will, driven by demand, increase to 120m tons until 2030 but there is a gap of 20m tons of which no-one knows where it will come from. This gap is produced mainly by the EU's decision to reduce the number of livestock in its effort to cut GHG emissions. Plant-based and cellular production/precision fermentation are therefore welcome to fill the gap as „we need all the help we can get“, Ledman said. On the other hand, the retreat of the EU will from a golden opportunity for the US dairy industry. But the EU seems to be on a wrong way as GHG emissions from dairy are much higher in other world regions, f.i. five times as much per kg of milk in Africa, that might fill-in milk production.

José Armando Tellado, CEO Capsa Food, pointed out that the Spanish milk production is in danger. 60% of Spain's dairy is located in the Cantabric mountain area, the average age of Spanish dairy farmers is 51 years and 60% of farmers will retire before 2030. If no solution is found to keep farms running, a disaster for rural GDP will be the consequence. And: the Spanish population is growing (+ 17% between 2000 and 2021, mainly by immigration) while on the other hand less and less milk is produced.

Gabriel Lodares, MD of large Spanish milk producer Agropecuaria Albacete (1,000 cows in production, 900 heifers), made it clear that a message must be sent out to European tax payers and citizens: if dairy was to support biodiversity, reduce emissions and increase animal welfare, costs of production will go up. Simple economy will lead to consolidation on farm level. Lodares sees main constraints for the development of dairy in city inhabitants who know little about farming, legislation that does not take into account the people living on the countryside and confused green policy supported by media. The farmer also underlined that farming must be profitable, if this is not the case, biodiversity, f.i., will suffer dearly.

Peter Giørtz-Carlsen, CEO Arla Foods Europe, a.o. focused on the growth of world population. Until 2050 there will be a 50% calory gap when it comes to feed consumers. Maybe, he said, criticising ethics of actual policy, we can improve the climate but food security remains an issue of equal value. When it comes to sustainability, the new Arla sustainability milk price scheme is a pioneer project: "We pay the farmer for the milk delivered, for the protein and fat content, but also for his dairy sustainability actions." Drivers for future development of dairy will be consumers who demand transparency, sustainability and quality alike, industrial customers who need the dairy industry to respect their own scopes and politics that sets new standards. Pointing out to consumers, Giørtz-Carlsen said that the role of nutrition is in too much down-play while the industry is not good enough in communicating the nutritional value of its products.

Global Dairy 2030

Piercristiano Brazzale, CEO Brazzale and IDF President, called upon the audience to joining the IDF work that is more important than ever. This work is documented in a large number of high-profile publications. And IDF is also the only means of communication of the industry with Codex Alimentarius, an organisation that defines international food standards. The climate impact of dairy, said Brazzale pointing out to new scientific findings, is largely over-estimated as current measurement methods have lacks and errors.

The mission of the leading world dairy Lactalis

Lactalis' mission is enhancing our environmental and economic sustainability, but also also preserving local dairy heritage and creating tomorrow's dairy heritage, said Catherine Roux, General Manager of Lactalis Southern Europe. There is one factor that is totally forgotten in all the many discussions about food and climate, she said. And this is pleasure. Given dairy's unique nutritional profile, milk products are extremely affordable even if they become more expensive due to inflation. The emotional speech highlighted the importance of dairy in terms of culinary treasure and nutritional assets and underlined the passion for milk and dairy, that is a driving force within Lactalis.

Cheese Cutting Machines



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SIEGLING FULLSAN Solution for more hygiene

Forbo Movement Systems has added a new line for exceptionally hygiene-critical belt applications to its product range. It's offering a homogeneous conveyor and processing belt called Siegling Fullsan that's made of high-quality TPU.

Homogeneous belts are indispensable, primarily because they can handle any thermal and mechanical challenges. But they are also easy to clean and can withstand any chemicals used in the process. What's more, homogeneous belts are fully sealed so that they can't be attacked by oil, grease, moisture or bacteria. As a result, they excel when used in very hygiene-critical applications. Their superior UVC resistance also allows frequent sanitizing with UV-C radiation.



News

Siegling Fullsan was developed for hygiene-critical belt applications (photo: Forbo Movement Systems)



(photo: Gernep)

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(photo: Dolomites Milk)

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Site report



(photo: IDM)

Hardware becomes secondary
Interview



(photo: Tate & Lyle)

Getting ahead in the low-sugar rush
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