

I N T E R N A T I O N A L

# DAIRY

February 2020

magazine

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# Limits to growth?

## The milk market in the 2020s

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Author: Monika Wohlfarth,  
ZMB, Berlin, Germany

The turn of the year marked the beginning of a new decade for the dairy market, which will bring new challenges. In the 2010s, liberalisation, the end of the milk quota in the EU and volatility of prices were issues that kept market operators busy. In the new decade, other issues will probably have an impact on market developments. At the end of the decade, new buzzwords are casting their shadows like climate, soil and species protection. Animal welfare and sustainable packaging are moving more into focus. A young generation is loudly calling for a rethink and is also practising a different dietary style, with an increasing importance of vegan food. The next few years will show whether they will also convert demands into sustainable actions.

Sustainability – under which the various postulates can be roughly summarised – has the potential to change the dairy market in the coming years. It could show limits to growth and slow down a further increase in global milk production. The first effects are already visible: In the Netherlands, milk volumes have been declining since 2017, as upper limits for the application of phosphate from livestock farming to agricultural land must be respected. Proposals for new nitrate limits are currently dominating the political debate in the country. Climate change has had a firm grip on Australia for years. As a result, milk production has declined in recent years and in the last marketing year fell to its lowest level for more than two decades. The export surplus of what was once the world's third-largest supplier of dairy products to the world market is falling steadily. In New Zealand, which is currently the second largest supplier of dairy products to the world market after the EU, a legislative package for keeping water clean was recently presented. According to studies by the dairy industry, implementation of this package could reduce milk production by almost a quarter by 2050. In addition, further measures such as climate neutrality are to be introduced. German milk producers will also have to comply with more stringent requirements, such as stricter fertiliser regulations. At the same time, the path of liberalisation in international trade policy is currently not continuing in some cases, as the Russian import ban and the recent punitive tariffs imposed by the USA demonstrate.

Before structural changes might take greater effect in the coming years, the new year 2020 will start out more balanced than in previous years. It was possible to get rid of some "old burdens" in 2019 based on good international demand. After milk production in the exporting countries stagnated overall last year, the high stocks of skimmed milk powder were reduced unexpectedly quickly. At the same time, the scarcity on the butter market, which had lasted for several years, gave way. As a result, the prices for butter and skimmed milk powder have normalised in terms of their absolute level and their relationship to each other. Brexit will come; but the United Kingdom will remain in the EU Single Market until the end of 2020. The signs for the new year are therefore stable to firm.



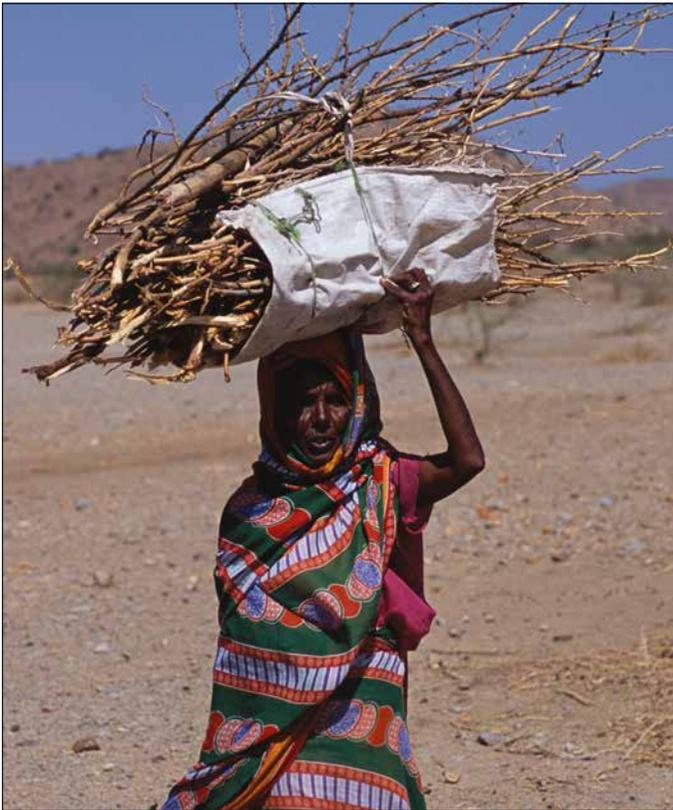
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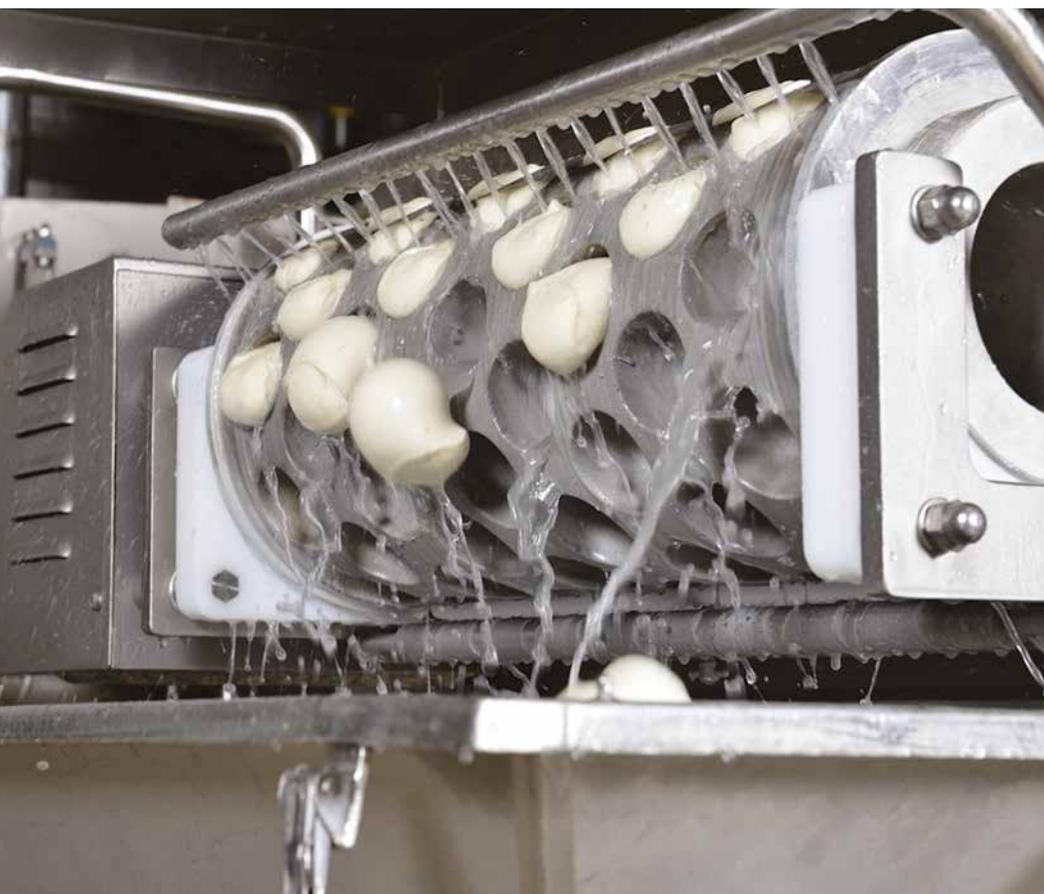


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# Back to the future with retrofit

## Brimi contracted Siemens for major project

Authors: Konrad Schneider, Senior Sales and Marketing Coordinator, and Uwe Barnewald, Solution Partner Manager Southern Germany, Siemens AG



**Brimi Mozzarella in a variety of shapes and qualities is a specialty of Milchhof Brixen. The photo shows "Rullo" – a drum-shaped machine – for producing round portions (Image: Brimi)**

**M**ilchhof Brixen is bringing its process control system, which has grown over the years, up to the state of the art to make its mozzarella and milk production fit for the future. This enables its processes to be reliably controlled, extensively analyzed, optimized and expanded yet again. Each product is traceable back to the farmer, which sustainably assures its renowned high quality. The engagement of a Siemens solution partner experienced in the industry is eliminating this innovation blockage.

Milchhof Brixen's recipe for success is to make its mozzarella from 100 percent GMO-free milk collected from cows in the surrounding countryside of South Tyrol. This cooperative agricultural company has made a name with the Brimi brand which extends way beyond its region, and it has grown into one of Italy's three most important mozzarella producers. Around three quarters of the milk is turned into Brimi Mozzarella. It takes eight liters of milk to produce one kilogram of this popular fresh cheese. The maximum output is 2550 kilograms per hour. Milchhof also produces other

fresh cheese specialties – such as ricotta and mascarpone, fresh milk and cream, butter and drinking yogurt, some of which is of organic quality.

Some 1100, mostly smaller, mountain farms supply Milchhof, which runs with perfectly organized sequences and processes – and an efficient process control system. This system grew in stages over the years, not always uniformly, and began to reach the limits of its capacity. Brimi had to take action to maintain its very high standard of quality into the future, while complying with the ever stricter regulations of the Ministry of Health. One extremely important issue is its demand for full traceability of processes and products. A non-compliant batch has to be detected and the market informed within four hours.

### Quality, traceability, future sustainability

The quality of the processing of the fresh milk delivered daily is based on annual totals of over 70 000 microbiological and some 260 000 chemical analyses. The results are archived and must remain traceable, like all production data, for at least two years beyond the expiration dates of the products. In effect, from the bag right back to the dairy farmer.



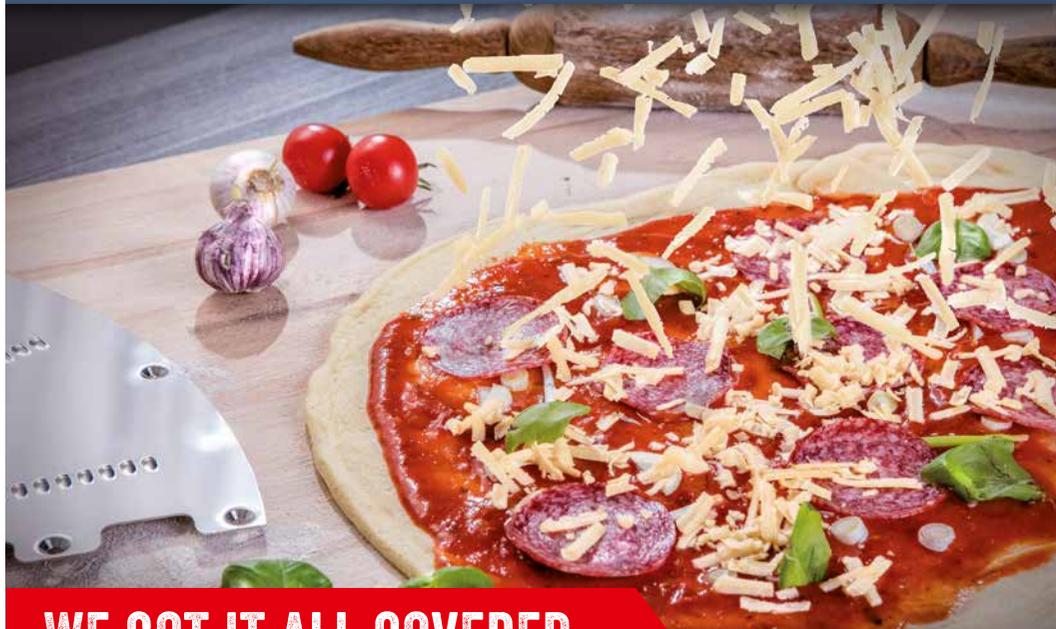
**Innovation blockage cleared** Pavis Engineering, a system integrator, has integrated a new, reverse osmosis plant automated with Simatic PCS7 into the overall process. (Image: Siemens)

The production has to run smoothly under constant supervision. For example, lengthy interruptions or faulty components could lead to losses of efficiency, poorer quality or increased power consumption. Such lapses must be detected in good time and reliably prevented. The key tasks of the process control system also include the continuous improvement of the process, which was no longer a straight-

forward possibility with the existing equipment. The production control and I/O systems, which had been separately expanded in a number of stages, had reached their limits of memory capacity and computing power, and the communication mechanisms had become obsolete and were no longer adequate. In particular, exchange and interaction with the company IT had become increasingly difficult because

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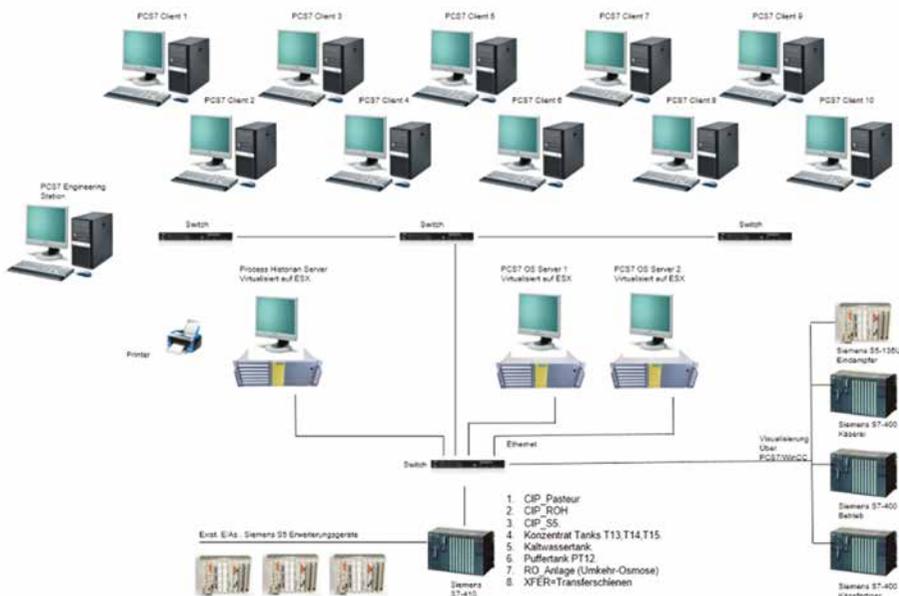
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innovation cycles were not in step. Consequently, it made little sense to continue optimizing parts of the existing installation, while knowing that this could not be a lasting state, and had blocked innovation to a certain extent. The management needed and wanted to take action and find a future-proof solution. The decision lay between a completely new construction and the comprehensive modernization of the existing process control system on the basis of earlier versions of Simatic PCS7 and Simatic WinCC from Siemens.

### Step-by-step to the state of the art

As a completely new construction would have meant a halt in production of unpredictable length, it was decided to go for the alternative of modernization. Pavis Engineering GmbH of Ravensburg, a well-known company in the dairy sector, was entrusted with the planning and implementation. Its concept of upgrading the existing partial solutions on a step-by-step basis to reach a largely integrated, uniform solution with Simatic PCS7 version 8.2



**Configuration diagram of the fully modernized automatic control equipment for milk and mozzarella production at Brimi. The Simatic PCS7 process control system from Siemens makes Milchhof Brixen fit (once again) for a successful future. (Image: Pavis Engineering)**

was found to be more convincing than six other solutions. It should not impair ongoing operations unduly and should also keep costs within budget. Pavis Engineering has been a Siemens Solution Partner – Automation Drives for many years. It has specific expertise in the fields of advanced factory automation,

industrial communication and handling the Simatic PCS7 process control system. Pavis's customers are manufacturers and suppliers in the food and beverage industry, in particular breweries, dairies, and the worldwide chemical and pharmaceutical industries. Pavis is located near Ravensburg, Germany. For its customers, it develops process technology automation solutions covering the creation of concepts, through the implementation and commissioning to the after sales service.

Markus Stecher, head of the retrofit project and IT at Brimi, said, "We deliberately looked for a mid-sized partner on a similar wavelength to ours, which acted quickly and flexibly when necessary." The existing systems and know-how of the company's employees favored a Simatic PCS7 solution. The decision was also made easier by the written assurance from Siemens that the hardware and software of the process control system could be upgraded until at least 2035, which secured the investment over the long term.

After an analysis of the actual state and with Brimi's specifications, the specialists from Pavis Engineering brought those parts of the systems that could be upgraded in several steps to a state that could be updated to Simatic PCS7 version 8.2. Individual plant sections were also reconstructed by suppliers



**From the central control station, production managers now have all the parts of the plant in view, and the uniform look and feel of the Simatic PCS7 process control system makes operator control and monitoring easy. This ensures maximum output with consistently high, traceable quality. (Image: Siemens)**

and automated by Pavis Engineering. This included a reverse osmosis plant and control cabinet construction.

The new PCS7 installation includes an engineering station (ES), two redundantly designed operator stations (OS) and ten operation clients distributed throughout the plant. The modular Simatic S7-410 automation system (AS) was chosen as the new central control system, as it could be adapted to the complexity of the tasks as required, without interrupting production. Consequently it is no longer necessary to provide large safety reserves from the start. Among the items directly connected to the system are the CIP systems for the various cleaning processes. Three distributed Simatic S7-400 master controllers – for system operation, the cheese factory and the cheese vats – have also been integrated into the visualization of the new control system, as have more than one dozen controllers for a various plant sections, such as cogeneration and water purification plants.

Markus Stecher, the head of IT, said that it was very important that the new process control system could be visualized to obtain independence from the PC hardware, achieve the highest IT security and be able to act flexibly. That also makes it future proof.

### Industrial solution from a standard library

The familiar operator interfaces and sequences for visualization have largely been retained, or reproduced to avoid time-consuming training. The Advanced Process Library (APL) now prevents the programming "individualism" that was previously possible. The standard library of Simatic PCS7 contains ready-made blocks and faceplates for easy, efficient implementation of individual automation and process control tasks. These include technological function blocks for motors, pumps, valves, measured values, controls, operator units, counters and interlocks. Consequently, it has been possible to implement all the technology-specific functions so far collected in the dairy library using standardized resources and methods, which simplifies the

engineering and unifies the operator control and monitoring throughout the plant. Herbert Boscheri, head of engineering and maintenance, said, "For example, in future, pumps in every plant subsection will look the same, and be operated and maintained in the same way." With around 30,000 process signals and an appropriate number of sensors and actuators in the milk and mozzarella processing, this makes a major contribution toward maintaining an overview and designing safe processes. This applies in particular in the milk reception section of the central control station, where all strands of information run together and must be clearly visualized.

### Always up with the processes – even when looking back

Brimi produces mozzarella in a variety of round and bar formats, which are packed in buckets or tubular bags containing brine. Every container and every process step must be documented, and be fully traceable back to the individual dairy farmer. This is now supported by the Simatic PCS7 Process Historian archiving and reporting sys-

tem. So without any extra engineering effort, process data – such as times, temperatures, tags, alarms and batch data from the Simatic Batch software package – can be transferred to long-term archiving in real-time, individually prepared, and the necessary verifications can be made easily. The analysis of historical process data, for example the frequencies of faults and alarms, also supports the continuous improvement process. An easy exchange of data with the superimposed ERP level is also provided.

### Prepared for the (digitized) future

Markus Stecher, the project manager, drew a positive conclusion, "Retrofitting our process control system with Simatic PCS7 version 8.2 has been the right step with the right partners. Now our production is once again based on an integrated foundation. The obstacles to innovation have been overcome, and optimizations and expansions are feasible once again." This means that Milchof Brixen is also optimally prepared to meet future challenges, such as the progressive digitalization of processes.



**Working together for a future-proof process control system (left to right): Herbert Boscheri, Head of Engineering and Maintenance at Brimi, Konrad Schneider, Senior Sales and Marketing Coordinator at Siemens, Alexander Frena, Automation at Brimi, Markus Stecher, Head of Retrofit Projects and Head of IT at Brimi, Peter Kubalek, Managing Director at Pavis Engineering, Uwe Barnewald, Solution Partner Manager for South Germany at Siemens. (Image: Siemens)**

# Hellenic Dairies

## Savings potentials in cooling tunnels

**C**ooling processes are extremely important in the foodstuff industry. The dairy industry, in particular, requires high-performance and reliable systems to cool its products in a defined manner. The constant high level of competition simultaneously increases the necessity to utilise energy resources sparingly: This objective can be achieved by utilising pallet cooling systems which are precisely customised to the requirements and conditions of the respective producer. The fact that airinotec has mastered the required technology has meanwhile spread internationally.

When it comes down to cooling technology, specialist knowledge is required. Especially in the dairy industry, efficient product cooling requires a high level of industry knowledge and relevant experience. One person knows this very well: Stefan Hummrich, who manages the business of the Franconian airinotec GmbH company together with Ralf Niebe. As one of the leading suppliers in Europe, airinotec is a heavy-weight in the field of developing cooling systems, and develops tailor-made systems for cooling palletised products. One focus of the company is concentrating on foodstuff production – and dairy products belong to the supreme discipline in this case because of their specific requirements.

### Recipe for success: Customer orientation

"Our recipe for success is customer orientation," says Stefan Hummrich. "When we first started the company, we initially concentrated on listening to our customers. We quickly realised that the requirements

for every project were very different." Of course, it is therefore primarily the products which determine the design of the plant. How large is the production volume? Are the filling temperatures the same for all the products involved? Which cooling result must be achieved in what time? What does the cooling behaviour of the pallets look like? At the same time, however, the spatial conditions which exist in the companies are also decisive: Is there a lot of, or little, space available? How high are the premises? "A completely standardised solution is not the solution of choice under these prerequisites. Instead, there is always a requirement to develop modular standards for the individual systems, which can then be flexibly adapted to the application case which is involved," says Stefan Hummrich.

### A comprehensive system portfolio for all application cases

Here at airinotec, one develops a portfolio which is aligned to the customer's requirements and which takes all these points into account – and this is always adapted to every size and every need. In principal there are four system solutions: The one-track or two-track ChannelCool cooling tunnel, the discontinuous functioning AccuCool as well as the C-Cube and ModulCool. These variants have been designed and developed for different application cases and can therefore be configured specifically for each individual case.

ModulCool has been developed for smaller dairies as a static cooling system in which pallets can be parked in cold storage cells. The system is called ModulCool because it is based on a modular construc-



**Airinotec AccuCool Flexible pallet cooling on two Instorage levels.**

tion design; it can be easily extended in order to add additional cooling modules at any time. The C-Cube, on the other hand, is particularly suitable for products with longer cooling times – and for pallet cooling in existing cold stores. C-Cubes are supplied as pre-assembled and can be utilised very quickly without investing time and effort. A C-Cube can therefore cool two pallets – and the system can also be expanded at any time or adapted to new products in this case.

### Continuous or discontinuous?

ChannelCool is based on a continuous pallet conveying system: If a company does



**Airinotec Incubator – Fully automatic on two storage levels.**



not have a large product range, in which the different dairy products have similar cooling characteristics, then ChannelCool is the first choice for this requirement. The pallets are transported continuously by means of chain conveyors in this system. The specially, in-house developed Rapid Cooling Technology plus (RCT+) air guidance system, which has been optimised over the years, hereby ensures perfect heat transfer between the cooling air flow and the pallets which have to be cooled. The air flow, which is conditioned by the cooler, is routed into pressure chambers, blown onto the pallets in a defined manner and then returned to the cooler in a circuit. This therefore shortens the required cooling time and increases energy efficiency.

RCT+ is also an integral part of the discontinuous functioning system: The patented AccuCool system provides precise, just-in-time cooling for a wide variety of products. In contrast to the ChannelCool system, the pallets are hereby transported with a traversing carriage. The pallets are distributed to the different locations in the rack system. The pallets are discharged immediately after the individual cooling time process has elapsed, as and when required. AccuCool is therefore perfectly suited for dairies which have high product variety,

product and container complexity and fluctuating throughput performances. The system combines and integrates the advantages of high throughput elasticity with demand-oriented pallet cooling with different cooling times.

### New project in Greece

"We utilise standard components in order to optimise system costs. At the same time, all systems are so variable that they can be tailor-made to the respective operating processes," says Stefan Hummrich. "Based on our latest project, which we developed for a dairy in Greece, one can easily see how versatile our systems are". Hellenic Dairies is a family-managed business which is one of the largest dairy companies in the country. The system utilised is based on discontinuous AccuCool technology: Hellenic Dairies can hereby cool up to 48 pallets on two different storage levels. Each pallet is transported to a fixed cooling location with a conveyor vehicle and then collected again when the individual cooling period has expired. The result: An optimised pallet throughput which not only creates energy savings, but also cooling space and thereby space and investment costs.

In addition to the pallet cooling system, the project also comprises a fully automatic incubator in which yoghurt is incubated at exactly 42 °C. A time-controlled and/or pH-value-controlled recipe management system enables optimum and reproducible product quality. The pallets then transfer into the cooling tunnel when the targeted incubation level has been reached. The complete system functions fully automatically. A digital control system ensures that the entire process is executed with reduced personnel time and effort. "Hellenic Dairies not only utilises the best system components available," says Stefan Hummrich. "In addition – and this is hereby extremely important – we can ensure that the subsystems are perfectly coordinated at all times." airinotec therefore utilises its own Cool Master-CM automation platform, which was developed on the basis of the world's leading Siemens Simatic S7 and Rockwell Automation automation systems. The implemented automation also optimises the cooling tunnel system from an energy point of view: For example, an intelligent function module automatically switches to an

energy-saving Eco mode when the defined target temperature has been reached, or deactivates cooling tunnel zones which are not occupied by pallets.

### Support via VPN

The error rate is also reduced by utilising the automation process and, in the event of a service incident, assistance can be quickly viewed: "We have developed a support system which enables secure, safe and fast communication and comprehensive functions for remote services with our systems," says Stefan Hummrich. The so-called Global Remote System is connected via VPN to airinotec's corporate head office in Bayreuth – direct customer support is immediately provided in the event of service being required. This combination of service, customer proximity and engineering skills, has enabled airinotec to be internationally successful for 12 years. In the dairy industry alone, the company has already planned and implemented 30 pallet cooling systems to date – in all required dimensions. And all these projects have one thing in common: "They are always planned and implemented according to the customer's requirements and therefore ensure optimum results in precisely this application," says Stefan Hummrich.

*All photos copyright: airinotec*



**Airinotec C-Cube for existing cold storage.**



**Torben Jensen, Arla Foods Ingredients, managed to greatly improve Skyr made in the separation process (photo: IDM)**

**FrieslandCampina Ingredients:  
All about children's health**

At Fi Europe, FrieslandCampina Ingredients presented a new B2B concept aimed at addressing the nutrition of children in their early and middle stages. The time span ranges from 12 months before to 12 years after birth. In particular, it is a matter of sufficient supply, with which the brain development and the training of the immune system are promoted as well as an altogether balanced nutrition, which is to avoid malnutrition just like Adipositas, Vivinal MFGM is an ingredient for infant nutrition, which is produced from sweet whey. The protein content is 70%, of which 5% are glycoproteins. The fat fraction contains complex lipids and the product promotes cognitive development and the immune system. In addition, F/C now also supplies 2'-furo-syllactose from fermentative production. The product is associated with a reduction in infections and the promotion of the growth of bifidobacteria in the intestine. [frieslandcampina.com](http://frieslandcampina.com)

**Arla Foods Ingredients:  
Improved Skyr**

Arla Foods Ingredients has dedicated itself to the disadvantages of Skyr and Quark, which are produced using the separator process. Consumers often perceive common products as too dry and too sour, the mouth feel is not "smooth" enough, and the product surface does not shine sufficiently overall, according to a consumer survey commissioned by Arla. The addition of



**Last year's Fi Europe in Paris featured a great number of most interesting ideas and developments in the food ingredients market (photo: IDM)**



**Mel Jackson, CSO at SGF, explained that stevia needs to be specially formulated for the products it should be used in (photo: IDM)**

Nutrillac YO-4575 (whey derivative) in a dosage of 1.8% before separation improves the consistency and taste properties of Skyr and Quark. 70% of the additive goes into the product, confirms Torben Jensen, Senior Application Manager Fresh Dairy Products and Desserts at Arla Foods Ingredients. Overall, Jensen says, the new concept brings the industry one step closer to the "dream" that protein-rich and vir-

tually fat-free products such as Skyr and Quark taste as pleasant as yoghurt. [arlafoodsingredients.com](http://arlafoodsingredients.com)

**Tate & Lyle:  
Stevia also for premium products**

Visitors to the Tate & Lyle stand were shown to their portfolio of stevia-based ingredients, developed in partnership with Sweet Green Fields, including Zolesse Natural Flavour.

Zolesse is labelled as a natural flavour and has been developed to deliver a clean taste profile in carbonated soft drinks and flavoured waters, building on Steviol glycosides' taste modulation properties.

This newest addition joined the existing portfolio of stevia solutions, which has been specifically designed to boost taste profiles and lower cost-in-use across a range of product categories.

There were four tasting samples at the show, each of which was distinguished by outstanding quality:

- ▶ a Clean Label chocolate dessert with a 39% sugar reduction (33% fewer calories), which had only 1.8% fat, but was premium in appearance and



**SoCrispies is a patented inclusion made from 100% milk protein (photo: EPI Ingredients)**

EPI also highlighted 100% indulgence-focused formulation of yogurt powder and SoCrispies as add-in. The product will bring crunchiness and taste to a wide variety of food applications as topping or inclusion. [epi-ingredients.com](http://epi-ingredients.com)

**GoodMills Innovation:  
High-MAC Whole-Value Fibers**

The grain refiner GoodMills Innovation has launched a novel dietary fibre on the market. "High-MAC" full-value fibres can not only promote bacterial diversity in the large intestine, but are also technologically convincing due to their versatile application possibilities.

The innovative dietary fibre is based on bran, which is finely ground in a multi-stage "multi-micro" process and further thermally and physically refined. The term MAC stands for 'microbiota accessible carbohydrates', i.e. carbohydrates that are bioavailable to the intestinal microbiome. These fibres are full-fledged because they are obtained from the outer layers of the wheat



**High-MAC full-value fibres are clearly superior to conventional wheat straw fibres (Photo: GoodMills Innovation)**

grain. They therefore contain natural wheat fibre with all minerals, vitamins and secondary plant constituents. This distinguishes them from commercially available wheat fibres made from wheat straw. The ingredient also contains micronutrients such as iron, zinc, magnesium, vitamins and polyphenols.

In addition to their added health benefits, High-MAC wholegrain fibres also score points because they can be easily integrated into existing formulations. Up to 30 percent sugar reduction in sweet formulations is possible. [goodmillsinnovation.com](http://goodmillsinnovation.com)

**Cargill:  
Permissible enjoyment**

Cargill pointed out that the demand for dairy products is also aimed, inter alia, at permissible indulgence. Consumers expect a reduced list of ingredients, but at the same time the familiar creamy-rich texture. Reformulation and plant-based alternatives are becoming increasingly popular.

Between 2013 and 2018, sales of plant-based dairy substitutes in Europe grew by 72%, while milk products with Clean Label grew by an average of 3% per year. At the fair Cargill presented a creamy, intensely tasting chocolate pudding based on skimmed milk (produced with native waxy corn starch and inulin), a vegan yoghurt alternative with hydrolyzed wheat protein, waxy corn starch and pectin, and ice cream with 80% sugar reduction and stevia addition. [cargill.com](http://cargill.com)

**DSM:  
Improved shelf-life**

DSM describes itself as the world market leader in the field of lactase. The world market in the lactose-free segment is growing by more than 7%, driven by development in EMEA and Asia, while sales of non-lactase-treated milk products are increasing by only 2-3% p.a. DSM's business in lactase combines market research knowledge, technical application knowledge and know-how. "Milk Joy" was presented at the fair as

taste. The sweetening was done with OPTIMIZER Stevia 3.10.

- ▶ a sugar-reduced strawberry yoghurt with 60% less added sugar, produced with INTESSE Stevia 2.0 added to the fruit preparation. The stabilisation is done by a HAMULSION system which provided a very good mouthfeel.
- ▶ a Greek-style drinking yoghurt with fibre, to which no sugar was added and which had 6% protein with only 1.6% fat. The product was designed with OPTIMIZER Stevia 3.10 and HAMULSION, the fibre content was adjusted with PROMITOR.
- ▶ a fermented vegan apricot dessert with 27% less sugar and 38% less calories produced with INTESSE Stevia 2.0 and HAMULSION.

[tateandlyle.com](http://tateandlyle.com)

**EPI Ingredients:  
Crunchy milk protein**

EPI Ingredients showed their new patented SoCrispies program at Fi. SoCrispies is a fully nutrition-oriented formulation containing 100% milk protein and can be used as crunchy inclusion or topping for ice cream or frozen desserts.

a product sample, which in addition to lactose cleavage was also distinguished by the addition of vitamins (A, D, E) and was fermented with *Lb. casei*.

By extending the shelf life through protective cultures, DSM also contributes to less food loss. The protection concept is called DelvoGuard and is based on the culture organisms *Lb. rhamnosus* and *Lb. sakei*. DelvoGuard is particularly interesting for fresh products in the on-the-go market, which are often consumed some time after purchase and must remain flawless despite being removed from the cold chain. [dsm.com](http://dsm.com)



**Taiyo showed an interesting concept that brought popcorn together with organic matcha (photo: Shutterstock)**

**Taiyo:**

**Complete product concepts**

Taiyo has embarked on a new course. Not only ingredients of the highest quality are offered, but also complete recipes and product concepts are developed for customers. One of these concepts is based on Bio Matcha. Taiyo sells this special ingredient in 100% pure form for tea ceremonies, but also with 70% share for applications in the food sector. These are also available for dairy products. In addition, the concept of a vegan protein shake based on Sunfiber was presented. Sunfiber is a particularly gentle, prebiotic dietary fibre, with which food and beverages can easily be enriched. [taiyo-gmbh.de](http://taiyo-gmbh.de)

**Ingredia:**

**Blockchain for dairy ingredients**

Ingredia has, together with French startup Connecting Food, realised a blockchain



**Wake up is a product concept by Ingredia that puts all one needs for breakfast into a 200 ml chocolate drink (photo:IDM)**

concept for real-time digital audit of its range of dairy ingredients. The blockchain covers anything from farm, incl. feed, to ready ingredients. Customers can check immediately that products labelled as GMO-free, animal welfare friendly or origin of Hauts-de-France fulfills the required specs. Different stages of the process can be traced and data can't be modified. That way, consumers trust can be restored, Ingredia says, when using a dynamic QR code on packages. Customers only need to link the traceability system of the production site of the ingredient.

Ingredia also showed innovations in the snacks market focusing on convenience health/wellbeing and indulgence. "Wake up" is a chocolate drink containing native micellar casein (PRODIET Fluid with over 87% protein content). The product, filled in a 200 ml carton package, has 10% protein and was formulated to cover the needs of a complete, yet transportable breakfast. In addition to its protein content, Wake up also brings fiber (1.9%) and it is naturally rich in calcium and amino acids. "Plane in the clouds" is a shelfstable high (6%) protein yogurt bringing three times less calories than a cereal bar. It is made using PROMILK 600A protein. "I scream so yum!" is a concept for protein-rich (12%) ice cream. The creamy texture is delivered by PROCREAM HP10. The dairy co-op also showed high-protein shortbread crumbles and protein-rich chocolate chips (27%). Another product idea was smooth and protein-rich cream cheese with twice as much protein and half the fat of a standard product. [ingredia.com](http://ingredia.com)

**Glanbia Nutritionals: CreaBev for Europe**

Glanbia Nutritionals introduced its new beverage solution CreaBev to Eu-

ropean audiences for the first time. The innovative solution for superior performance beverages, features a patent pending encapsulation technology that facilitates a more soluble and stable creatine monohydrate overcoming solubility and stability problems. Additionally, CreaBev does not crystallize when exposed to UHT treatment. [glanbianutritionals.com](http://glanbianutritionals.com)



**Glanbia Nutritionals introduced the new CreaBev concept (photo: Glanbia)**

**NIZO:**

**Adding or replacing plant proteins**

As a contract research and contract manufacturing company NIZO knows all about solving customers needs by offering solutions, efficiency and saving costs. One of the challenges nowadays is how to develop and produce products with animal and plant proteins materials. Adding or replacing plant proteins is not as easy as it sounds, as plant proteins work quite different compared to regular proteins which you will experience in structure, solubility, taste and smell. NIZO has more than ten years of experience in extraction and application in plant proteins, in addition to the 70+ years of dairy experience. To show this, NIZO handed out home made faba beans, fully plant based meringues made of waste stream of faba bean production. [nizo.com](http://nizo.com)



**NIZO's state-of-the-art spray drying installation (photo: NIZO)**

# PET is a great resource

## IDM met José Priante from Sidel

**D**uring the BrauBeviale trade show, held last November in Germany, IDM asked José Priante, Sidel's Vice President Sales Beverages Europe and Central Asia (ECA) about the future of plastics as packaging material. Priante pointed to the growing market for liquid dairy foods on a worldwide scale as well as to the continued growth of the dairy alternatives category. Sidel, he said, is very well positioned in this field based on its Predis dry sterilisation technology for PET preforms.

PET, Priante said, is a great resource for packaging. The problem is mismanagement of waste. The corner stone of circular economy is waste collection, especially to avoid leakage on lands, in rivers and oceans. However, the situation will change soon as governments have started to tackle plastic waste worldwide, implementing proper infrastructures and legal frameworks to support good collection systems. Priante added that PET is perfectly suitable for a true circular economy of plastics: this is the only plastic packaging material that can be recycled bottle-to-bottle, provided that local regulations allow it, no other polymer offers this advantage. He pointed out China where those who do not feed plastic into recycling are fined. "I don't see a threat to PET," Priante said. "At Sidel, we are closely working together with our partners along the plastics value chain with the goal of addressing the pollution crisis at its source and keeping plastics within the economy."

Sidel has meanwhile installed over 180 Predis systems. According to Priante, this is the fastest dry aseptic solution for low acid products available on the market, capable of speeds up to 60,000 bph. Predis



**Sidel Aseptic Combi Predis merges dry preform sterilisation with aseptic blowing, filling and sealing functions (photo: Sidel)**

is also the most flexible solution for aseptic PET bottling as it is suitable for both still and carbonated products. The Sidel Aseptic Combi Predis has been FDA-validated since 2017: this industry first helped sensitive drinks producers based in Asia and South America expand their market reach, as they can now export their goods to the US.

### Sidel Aseptic Combi Predis

The Sidel Aseptic Combi Predis merges dry preform sterilisation with aseptic

blowing, filling and sealing functions within a single production enclosure. It differs from traditional aseptic technology because the package decontamination takes place at the preform rather than at the bottle phase.

The world's first aseptic PET filling equipment with dry preform sterilisation approved by the US FDA (Food and Drug Administration), the Sidel Aseptic Combi Predis is an important step forward in terms of sustainable production because it does not require any water and uses only minimal amounts of chemicals. To date, it has globally contributed to saving ten billion litres of water, while producing 60 billion bottles.

The blower oven activates the sterilising effect of the hydrogen peroxide vapour, thus eliminating the need for additional heating of the preforms, saving further on resources. Moreover, it offers unlimited lightweighting potential, for reduced PET raw material consumption, and allows for expanded design flexibility.



**PET is perfectly suitable for a true circular economy of plastics (photo: IDM)**

# Resource-saving and flexible filling of sensitive products

First linear InnoPET BloFill ABF aseptic block from KHS satisfies current dairy requirements



Author: Thomas Redeker, Sales Director Dairy Europe, KHS Group

**T**he market for sensitive beverages is flourishing. Throughout the world manufacturers of dairy products have recognized the potential of wholesome beverages and expanded their product portfolio over the past few years. Most of the new products are filled into PET bottles. With its new linear InnoPET BloFill ABF aseptic



**The heating system in the new Blomax generation consumes up to 40% less energy compared to most standard heating systems thanks to its optimized near infrared heating concept and new Double Gate technology (Photo: KHS GmbH)**

tic block KHS is satisfying the requirements of the dairy industry for flexible filling technology for sensitive products. Fast format changeovers and a modular design are the ideal solution to the rapid changes in demand producers are now faced with.

Sensitive beverages are becoming increasingly popular all over the world. The demand for functional foods with less sugar in particular is growing. "Keeping to a healthy diet is playing a central role in the lives of more and more consumers," explains Thomas Redeker, sales director for Dairy Europe at the KHS Group. "The demand for products that are sustainably packaged and attractively presented has also greatly increased in the last few years."

## Dairy industry innovations filled into PET containers

PET bottles are the ideal vehicles for this new trend. An increasing number of makers of dairy products are thus relying on containers made of polyethylene terephthalate. "Not only producers but also consumers are convinced by their many different advantages," says Redeker. In particular this includes the great capacity for individual design this type of container has. "PET bottles lend themselves to exclusive design. The cap and label can also be perfectly tailored to the brand. This had a positive effect on the brand positioning at the point of sale," Redeker states.

The plastic containers also score when it comes to their environmental balance as they are fully recyclable. PET bottles not only



**The linear Innosept Asbofill ABF 712 filler for sensitive products is available in both a standard aseptic and ESL version. In the KHS process the containers are sterilized using a hydrogen peroxide aerosol and sterile hot air (Photo: KHS GmbH)**

provide reliable product protection; they also have good pouring properties.

### **KHS satisfies customer and consumer demands with new block**

KHS first recognized the potential of PET containers for aseptic filling 25 years ago. Its latest development is the linear InnoPET BloFill ABF aseptic block. This combines the rotary InnoPET Blomax Series V stretch blow molder with the linear Innosept Asbofill ABF 712 aseptic filler.

The block yields many benefits. It not only takes up less space than the individual machines, for instance; the air conveyor is also no longer required. This cuts down on energy consumption. Another advantage is that personnel costs are reduced as only one operator is needed in place of the former two. "By blocking the machinery and including a continuous clock module we also minimize the risk of soiling. This has a positive impact on hygiene and line availability," smiles Redeker.

Fast format changeovers within the space of up to ten minutes also help to boost system availability. They are performed under aseptic conditions, doing away with the need for any additional cleaning and sterilization. The short changeover times also let producers of sensitive beverages fill a large number of different stock-keeping units (SKUs) in a very short time indeed. The linear aseptic block is designed to fill milk, mixed milk beverages, juice, smoothies and iced tea into PET bottles holding between 250 milliliters and two liters. The equipment outputs up to 12,000 1.0-liter bottles and a maximum of 15,000 0.5-liter bottles per hour.

Bottlers also profit from the modular design of the dry aseptic block which allows the filler to be expanded at any time. Operators can retrofit their block with a chunk filler or additional filling and capping unit, for instance. "The modular design gives our customers greater flexibility. They don't have to think about precisely which products they want to bottle when purchasing the block," Redeker says. "KHS enables them to retrofit the required modules on site as soon as they expand their product portfolio." This in turn permits beverage producers to react more flexibly to changing market demands.



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## Stretch blow molder with high energy savings gentle on the environment

With the integration of the stretch blow molder the aseptic block gains a number of further plus points. One of these is that the heating system in the new Blomax generation consumes up to 40% less energy compared to most standard heating systems thanks to its optimized near infrared heating concept and new Double Gate technology. This is made possible by the near infrared heater centrally installed in the closed reflector tunnel. In the heater the preforms pass the centrally arranged heating units to both the left and right. The preforms are spaced just around 18 millimeters apart instead of the previous approximately 37 millimeters. The Dortmund systems supplier has thus been able to considerably reduce the number of heater boxes used. The air management system for heater box ventilation has also been optimized. "The fan can be set separately for the neck, reflector and lamps. This means that the machine only cools the areas which actually need cooling," explains Redeker.

## Effective sterilization with the KHS system

When further developing its linear aseptic filler KHS also focused on increased efficiency. The filling machine for sensitive products is available in both a standard aseptic and ESL version. In the KHS process sterilization takes place in several stages. First, the machine disinfects the neck and bottle interior. Here, the inside of the container is sprayed twice with a hydrogen peroxide aerosol ( $H_2O_2$ ) at a speed of up to 80 kilometers an hour. "This ensures that every part of the bottle is sprayed and sterilized; we even achieve this with individual designs and critical shapes," Redeker states. Secondly, two aerosol reaction cycles are initiated. The process ends with a four-stage drying process which uses sterile hot air.

## Gentle filling ensures product protection

In order to ensure the quality of the products, it is essential that the aseptic zone is absolutely clean. KHS ensures this by gentle non-contact filling, among other things, performed in two stages. This prevents any excessive beverage foaming.

After filling the bottle is conveyed to the capping unit. Here, the closure is sterilized in the same manner as the bottle in the fill-



**The new linear InnoPET BloFill ABF aseptic block from KHS is designed to fill milk, mixed milk beverages, juice, smoothies and iced tea into PET bottles holding between 250 milliliters and two liters (Photo: KHS GmbH)**



**By blocking the stretch blow molder and linear filler the systems supplier minimizes the risk of soiling. This has a positive impact on hygiene and line availability (Photo: KHS GmbH)**

ing section. This entails two-step disinfection with  $H_2O_2$  and two drying stages with hot sterile air. "In the capper unit we've also made sure that all parts in the aseptic zone have a flat surface. By doing so we can prevent any air turbulence, making cleaning and disinfection easier," Redeker comments. The bottle is then dated for full documentation of all information. "Our customers can always see which product was filled when on which valve," explains Redeker.

## One-block system

With its new dry aseptic block KHS has reacted to the current dairy demand for flexible, resource-saving filling of sensitive products. The new system also boosts line availability and considerably reduces energy consumption. Operators also have greater flexibility thanks to the short changeover times: format changes are facilitated by the well-coordinated interfaces. The modular design also enables customers to expand their linear aseptic filler block in order to meet current market demands at all times.



**With its new dry aseptic block the systems provider has reacted to the current dairy demand for flexible, resource-saving filling of sensitive products into PET containers (Photo: KHS GmbH)**

# A closed cycle

## Complete-line competence from Krones

**C**an plastic packages be sustainable? Yes, if they are resource-economically produced and kept in a closed cycle. Krones offers a solution for every step involved in the process. From material-minimised packaging design and energy-economical container production all the way through to the recycling of used plastics. The aim is to achieve a sustainable beverage factory with a closed PET cycle – a vision that's now within our reach. Because all the building blocks needed are already included in the Krones Group's portfolio.

For producing the preforms, every tenth of a second in cycle time and every tenth of a gram in weight are vital. There are plenty of potential savings. In order to use them, there are two pre-conditions: firstly, comprehensive knowledge of the properties and behaviour of the various preform materials; and secondly an in-depth understanding of the production processes involved – both during injection-moulding of the preforms and also when identifying the salient parameters for the stretch blow-moulding function. Based on its innovative hot-channel technology developed in-house, the Krones subsidiary MHT offers a sophisticated high-performance injection-moulding tool that even with a flakes content of over 70 per cent rPET achieves superlative results. In addition, it excels in term of particularly homogeneous temperature control of the melt, and natural balancing.

For the further path of the preform to a saleable product, Krones' portfolio includes an entire bandwidth of technical solutions. With the Contiform stretch blow-moulding machines, preforms with a recycle content of 100 per cent can be handled without any problems at very low energy and compressed-air consumption: Also at high speed. With the Contiform 3 Speed up to



**From the preform, then low-energy container production and packaging design, all the way through to the recycling of used plastics – Krones offers a solution for every step of the process. (photo: Markus Vogel, Krones AG)**

2,750 bottles per cavity and hour can be produced. This version even undercuts by up to 15 per cent the in any case already very low energy and compressed-air consumption of the Contiform 3 Pro.

After the bottles have been filled, they can be innovatively closed using Flip Lid. This closure has been jointly developed by Krones and Apar. It connects the lid to the bottle, thus preventing plastic waste from entering the natural environment. Commercial availability of Flip Lid is planned as from 2020.

For container decoration, Krones supplies the DecoType Select direct printing system, which offers high colour brilliance on both virgin and rPET. The resource cycle is not interrupted, since the American Association of Plastic Recyclers has confirmed that the ink involved can be removed in its entirety.

In order to combine eco-friendliness with cost-efficiency for the packaging of beverage bottles, Krones has expanded its enviro sustainability programme to include enviro Design. This means that in future packaging solutions will be scrutinised for their environmental impact, such as greenhouse gas emissions or preserving the eco-system. One of the solutions, for example, is the LitePac packaging option.

In the shape of LitePac, Krones has created a secondary package that consumes up to 90 per cent less energy in the production process and even 70 per cent less waste than shrink-packs.

In order to close the cycle, Krones offers in the shape of MetaPure recovery systems that recycle containers made of PET to make food-grade PET and upcycle polyolefins for higher-quality re-use than hitherto. [krones.com](https://www.krones.com)

# Skills requirements in the dairy industry

## Results of a pan-European project

**2** 6 November 2019 saw the presentation of the final results of a very important analysis of the future requirements for professional education in the European dairy sector. Representatives of international dairy companies and national education institutions gathered at the Van Larenstein Hall University in Leeuwarden, the Netherlands, to discuss the outcome of the EU Erasmus+ project „Mapping Skills Needs and Supply in the Dairy Sector“. IDM International Dairy Magazine took part in the event. Here's our report.

The project started back in 2016 born out of the realisation that freedom of movement of (dairy) workers in the EU must be supported by a comparison of skills required in the industry. Initiator of this project that finally was adopted and supported on EU level was AEDIL (Association for European Dairy Industry Learning). A 3-year process supplied a solid database for map-



The results of the project were discussed in several workshops (photo: IFM)



About 35 representatives of EU dairy companies and dairy schools met in late November 2019 in Leeuwarden (NL) to discuss the findings of the Erasmus+ project Mapping Skills Needs and Supply in the Dairy Sector

ping skills needs for the dairy industry in 14 European countries and identified the most important skill requirements today and in the future, specific for the milk processing industry.

AEDIL Secretary General Torsten Sach admitted in Leeuwarden that he didn't expect so many results, but in the end interviews with 117 dairy companies of different size, 56 schools and 65 ex students provided the so far biggest database on how dairy education is managed in Europe and what skills are required by today's and tomorrow's dairy industry. The results of the project will now be submitted to the EU Commission.

Statistician and dairy engineer Prof. Morten Arendt Rasmussen, Copenhagen University, confirmed at the Leeuwarden gathering that the database is really solid and provides a very good insight into dairy skills required. It was the open concept of the survey whereby respondents could freely formulate their view that provided the best insights into skills demand and fulfillment by existing education systems and institutions. AEDIL was able to identify the following skills categories that are most important to the dairy industry:

- Dairy skills
- Digital skills
- Green skills
- Management skills
- Recruitment appeared as one of the most pressing problems (issued by 80% of the respondents) and received another key priority in AEDIL's findings.

### Dairy skills

AEDIL Project Coordinator Isabel Sande Frandsen, Mejerifolk (Denmark), described some of the most important findings from the Erasmus+ project. Employees in the dairy industry must defi-



as LEAN as a tool for controlling unit operations stand at the core. In higher level education, future dairy company managers need to understand milk markets and consumer trends and their impacts on the industry.

### Work-based learning

All these skills must be developed in a work-based (life-long) learning process. Trainers and teachers alike need continuous upskilling in dairy plants to stay on top of newest developments. This means that a greater alignment between educational institutions and the industry is required. Dairy companies also may make use of external specialists in the supplying industry to cover special and plant-related knowledge transfer requirements.

### Recruitment

The image of the dairy industry as a place of work is generally poor. The public has the impression that milk processing lacks in progress towards a green economy. Therefore, the industry must see to improve its image as employer and to communicate possible ways of career. The focus of communication should be on digitalisation and innovation to make the sector interesting to youngsters.

The AEDIL event in Leeuwarden made one thing quite clear: if the dairy industry wants to attract and employ well-skilled workers, it must invest into necessary resources. This in turn requires money. The industry and, given the importance of milk production in rural economy, governments should be prepared for investment into qualified staff.

AEDIL has produced a report that summarises all the findings of the 3-year Erasmus+ project in detail. It as well as the database is available for free download at [www.dairysectorskills.com](http://www.dairysectorskills.com).

nitely have dairy-specific skills. These can only be brought across if professional education is at a level that can fulfill industry demand. „Do not level down specific dairy skills training but rather scale it up,“ Frandsen quoted on of the key findings of the AEDIL project. Adjustment of dairy training requires a close collaboration of industry and schools. AEDIL recommends that teachers and trainers have regular internships in dairy companies to have an insight into the state-of-the-art of industrial milk processing.

Besides dairy skills, the industry also requires soft skills that make workers capable of trouble shooting etc. This requires workers that are creative and problem solution minded.

### Green skills

When it comes to green skills, dairy workers must be able to assess risks associated with milk processing, they must have an insight in re-use of energy and resources and be able to understand business plans with a green angle.

### Digital skills

Digital skills rank very high in the requirements of workers' qualification brought forward by the dairy industry. This includes the ability to understand fundamentals of automation and to use business software. Pilot plants in dairy schools should be upgraded to state-of-the-art automation to make students familiar with existing technology. Part of the required digital skills is also that workers need to be aware of IT security.

### Management skills

As the dairy industry also needs qualified managers, workers' education must convey special qualification. The AEDIL project identified that business and supply chain understanding as well



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Brands: Alfa Laval, Tetra Therm, Tetra TBA, GEA

### Also complete dairy factories

# Unlocking the potential of QR codes

SIG researched QR code usage around the world

In today's on-demand and digitalised world, consumers are more connected and informed than ever. They can now access information about businesses and their products in an instant. And as digital consumers and connected spenders adopt new behaviours and communication channels, brands are having to work even harder to reach, understand and engage them.



**Ayed Katrangi, SIG's Senior Product Manager Automation and Digitalization (Photo: SIG)**

In this highly competitive market, connected packaging has emerged as a unique way for food and beverage producers to connect with consumers. Solutions like scannable QR codes are being utilised more and more on consumer products – turning physical packs into interactive tools. All so consumers can access the information they want, while brands can build trust and recognition.

## What consumers think

With connected packaging becoming more prevalent today, what do consumers really think about it? How are they interacting with digitally-enabled packaging and why? And how can solutions like on-pack QR codes help brands develop stronger relationships with their audiences?

To answer these questions, SIG – a leading systems and solutions provider for aseptic packaging – researched QR code usage around the world through nearly 3,000 interviews. The company asked consumers in Brazil, Europe and China how they use and perceive QR codes on smartphone-enabled packaging. The results of which reveal the true potential of connected packaging.

## China is leading the way

SIG first asked consumers how often they currently scan QR codes. In Brazil and Europe, us-



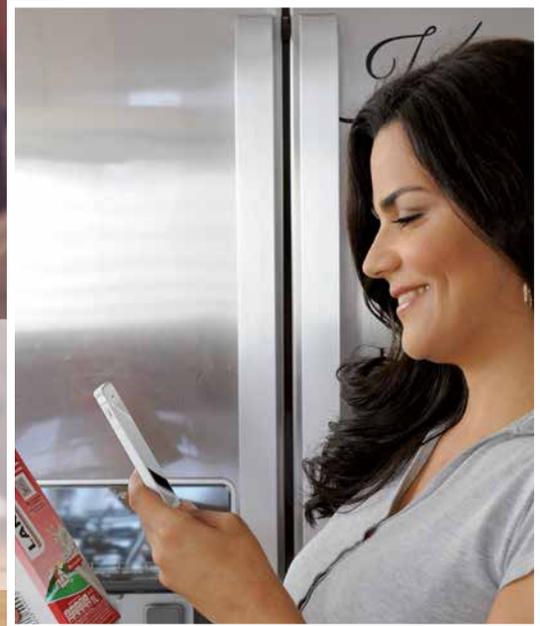
**"In a world where technology can now be integrated into everything, connected packaging is an incredible opportunity for companies to play a bigger role in consumers' lives," says Ayed Katrangi, SIG's Senior Product Manager Automation and Digitalization. "Through interactive functionalities and enhanced user experiences, brands can offer real value to consumers."**

age rates were fairly similar with just 7% and 8% of consumers, respectively, scanning QR codes several times a week. In China, however, this figure rose to 50% – with consumers predominately hoping to gain financial rewards. This not only shows that QR codes are far more established in China but also that brands in Brazil and Europe could do more to promote their value to consumers.

Consumers in both these markets scored QR codes highly for being innovative, useful and easy to use, as well as important for product peace of mind. But many also cited a lack of awareness as a major hurdle to scanning more often. To reach the high engagement levels seen in China, brands in Brazil and Europe therefore need to provide clearer information



**In a highly competitive market, connected packaging has emerged as a unique way for food and beverage producers like Languiru in Brazil to connect with consumers. Solutions like scannable QR codes are being utilised more and more on consumer products – turning physical packs into interactive tools. (Photo: SIG)**



**Consumers score QR codes highly for being innovative, useful and easy to use, as well as important for product peace of mind. (Photo: SIG)**

on what consumers actually stand to gain with connected packaging.

### Trust and transparency rule

By using fraud-proof printing technologies, QR codes offer a viable way to increase product trust and transparency. In Brazil and Europe, SIG found consumers are particularly interested in production and expiry dates, as they want to learn about a product's journey and quality. In China, meanwhile, confirmation of product authenticity is key with 94% of consumers believing this is essential for product peace of mind.

In all surveyed markets, it's clear that unique and fraud-proof QR codes have the potential to ensure more product transparency, peace of mind and ultimately engagement. In Brazil (98%) and Europe (73%), consumers are ready to scan QR codes more for brands offering transparent information, while 78% and 39%, respectively, would scan QR codes regularly to communicate directly with their brands of choice.

"Connected packaging enables the collection of real-time data throughout the product journey – from sourcing, processing, filling, quality checks and logistics, right up to the supermarket shelf," says SIG's Katrangi. "All this data can be linked to each individual package, so relevant and transparent information is always available to consumers."

### Scanning for the right reasons

For brands using QR codes on packaging, knowing the right consumer incentives is crucial. In all surveyed markets, instant free gifts – closely followed by cash back – is seen as the most important trigger to scan a QR code. In addition, in Brazil and Europe, a high percentage of consumers are in agreement that promotions make a brand more attractive when shopping and are ready to scan QR codes more frequently to receive rewards.

In China, scanning QR codes for financial gain is already a well-established practice. In fact, 65% of consumers here think it's the most important reason to scan – placing financial rewards far above peace of mind, shopping assistance, information or entertainment. As China shows, gifts are key to the heart of consumers, meaning brands that offer QR gifts, cash-back offers and shopping coupons via QR codes will clearly stand out.

### Entertainment equals engagement

With QR codes, consumers can access a wealth of interactive content with their smartphones such as videos, songs, games and quizzes. All of which can make a brand and its products seem more attractive. In Brazil and Europe, video content, including

TV shows, movies and animations, is seen as the most appealing entertainment form for 56% and 40% of consumers respectively.

In China, however, consumers are more interested in accessing online gaming with 59% of consumers rating this as their preferred entertainment. In addition, 59% of consumers also want to broadcast their product interactions on social media, highlighting how consumers are looking to share and discuss brand experiences. What's clear for all markets is that on-pack entertainment is a proven gateway for consumer engagement.

### Enhanced shopping experiences

In addition to entertainment, QR codes can also facilitate more convenient shopping experiences. This includes everything from knowing where to repurchase products and getting the latest in-store promotions to having direct contact with customer service and being able to re-order products quickly online.

In Brazil (72%) and Europe (41%), consumers want to know the physical locations where they can purchase the relevant product. And in Brazil, 75% are ready to scan QR codes regularly to access online shopping assistance. In China, consumers are

also interested in knowing where to buy a product, but the majority (80%) want to be taken directly to the product company's website to shop via quick links.

In all markets, it's apparent that consumers are ready to switch to brands that offer more convenient online shopping assistance and options. QR codes provide an ideal platform for these enhanced experiences, which can help increase product sales and brand loyalty.

### Connecting to consumers

As SIG's findings show, QR codes can facilitate more engagement and loyalty through product authenticity, information and entertainment. They can also guide consumers through the purchasing process, which ultimately leads to more sales.

For many consumers, particularly in China, scanning a QR code has now become second nature and an integral part of the shopping and product experience. But with usage increasing around the world, now is the time for brands to

tap into this potential and gain a competitive edge.

To help brands and producers unlock the potential of connected packaging, SIG offers a range of market-ready solutions as part of its Connected Pack platform. These solutions combine unique digital coding technologies and track-and-trace capabilities to ensure connectivity and transparency in every pack, and drive greater digital interaction and engagement.

"SIG's Connected Pack platform offers a whole range of traceability and interactive packaging solutions," adds Katrangi. "These allow consumers to easily access product quality information, play games, watch videos, read recipes, participate in prize draws and even receive personalised communication – all through the pack itself."

To see how SIG helped Brazilian dairy producer Languiru Cooperative reap the rewards of connected packaging, check out their case story: [www.sig.biz/en/solutions/track-and-trace-story-languiru](http://www.sig.biz/en/solutions/track-and-trace-story-languiru)



Connected packaging has emerged as a unique way for food and beverage producers to connect with consumers. Solutions like scannable QR codes are being utilised more and more on consumer products – turning physical packs into interactive tools. All so consumers can access the information they want, while brands can build trust and recognition. (photo: SIG)



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This book addresses above all cheese makers but also trainees as well as students, graduates of food technology and scientists. For special instructors, this book is a solid base for courses or lectures. It is an extremely valuable help as reference book for dairy specialists and the cheese industry as well as for technical advisers and suppliers. CHEESE TECHNOLOGY makes an invaluable contribution to the preservation and documentation of accumulated know-how of cheese technology across decades.

# What could happen if Russia reopens its dairy market for EU exporters

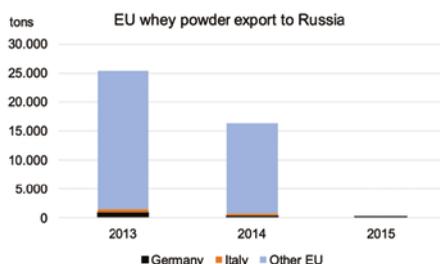
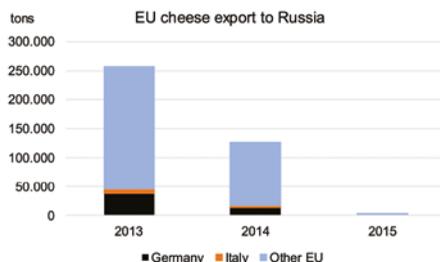
## Potential scenarios and implications



In 2014, the European Union imposed economic sanctions against the Russian Federation. In response, the Russian Federation imposed import bans on agricultural products (including dairy products) from the European Union as a countermeasure. As a result of the bans, EU dairy exports (some annual 30,000 tons

of butter, 257,000 tons of cheese, 21,000 tons of SMP and 26,000 tons of whey powder) in total annual value of EUR 1.4bn towards Russia have come to a complete halt. Following the introduction of the sanctions, EU dairy prices (butter, cheese and SMP) continued to decrease significantly.

The EU economic sanctions are effective until the end of July 2020. Nevertheless, lately we have been hearing that the EU and Russia might be reconsidering their current stance. Once these sanctions are no longer in place, we expect a short-term positive price shock to European dairy prices and a significant business opportunity for competitive EU dairy players. The potential cheese import of Russia is currently at around 250,000 tons per annum, where EU producers used to enjoy almost 60% of market share. On a smaller scale, the Russian dairy market also has the potential to open up several tens of thousands of tons of additional butter export for EU producers.



As a response to Russia's annexation of Crimea, international sanctions were imposed against Russia. The European Union imposed economic sanctions (export bans) in July 2014 targeting its trade relationship with Russia in specific economic sectors (including the dairy sector). In August 2014, as



Germany. Italy was the ninth most important exporter to Russia within the EU. Since the Russian export ban, the United States has become the EU's largest market for both butter and cheese (a market which has recently been impacted by the introduction of additional import tariffs, more on this later).

As a result of the sanctions, Russia has increased its internal dairy production, however, the increase in produc-

tion was not enough to fill the gap, and to reach a self-sufficient domestic dairy industry. Therefore, Russia has still been relying on dairy imports – although at lower volumes – now predominantly from Belarus (e.g., in 2018, the cheese import from Belarus was 83% of total Russian cheese import).

Following the introduction of economic sanctions, the EU dairy products destined for Russia had to find other

a countermeasure, Russia imposed import bans on agricultural products (including dairy products) from the EU. In December 2019, the EU announced the extension of sanctions until the end of July 2020. Before the sanctions Russia was the fourth-largest trading partner of the EU, and the EU was Russia's most important trading partner.

As a result of the economic sanctions, EU dairy export to Russia has disappeared. The last full year of export activity unaffected by sanctions was 2013 when the EU exported dairy products to Russia with a value of ca. EUR 1.4bn. In 2013, EU butter (30,020 tons, some 30% of total EU butter export), cheese (257,198 tons, nearly 33% of total EU cheese export), skim milk powder (21,263 tons, some 5% of total EU SMP export) and whey powder (25,459 tons) exports to Russia represented 1.6%, 2.9%, 1.9% and 1.6% of respective EU dairy production. In terms of importance, the cheese export represented the largest part of the EU's dairy trade towards Russia. The largest EU dairy exporters were Finland, Netherlands, Lithuania, Poland and

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markets and customers. Although compared to total EU production these export volumes are not very significant (as we have seen the largest share was recorded with cheese at 2.9%), producers had to find new customers. In addition, the Russian dairy imports from the EU accounted for almost 25% of total EU dairy exports. Consequently, the re-direction of Russia sales was meaningful in overall terms of EU dairy export activity, thus the subsequent temporary decrease in export demand might have also contributed to the broad-based decreasing European dairy prices.

The European Union has decided to extend the economic sanctions against Russia by the end of July 2020. Nevertheless, some EU members, most notably Italy, Hungary, Greece, France, Cyprus and Slovakia are sceptical about the sanctions, and have called for a review of them. In addition, due to the recently introduced additional US import tariffs on a wide range of EU products, some key export products (e.g., Italian hard cheese) are facing tough sales conditions. Therefore, it is not surprising that some voices are getting louder and louder to reconsider the EU's overall stance on the economic sanctions against Russia.

Lately, we have been hearing from several trusted sources that the parties might consider changing their positions. It is not clear if this situation is

### L'INTERFORM

With over 50 years of experience and a team of dedicated and knowledgeable professionals, L'INTERFORM is one of the leading independent brokers of dairy commodities in Europe and has direct relationships all over the world with major sales segments such as purchasing organizations for retailers, wholesalers, food service suppliers, and industrial transformers. Throughout its history, our firm has introduced many renowned manufacturers of Europe's dairy industry and their brands to the Italian market and continues to represent exclusively selected European dairy businesses in Italy.

In recent years, L'INTERFORM has expanded its scope of practice and since 2017 has been providing comprehensive financial risk management and advisory services for the dairy and broader agricultural commodities sectors.

solely driven by economic factors or if political considerations are also in play. It is extremely difficult to foretell the behaviour of actors in such situations, as decisions are often short-sighted and politically motivated (e.g., please see an example of this in the below box).

As a result of the economic sanctions, the Russian dairy industry has gone through considerable transformation by increasing domestic production (in several cases via government support), and by decreasing import volumes. Nevertheless, in 2018, Russian butter import still amounted to some 90,000 tons, cheese to 250,000 tons and SMP to 95,000 tons. Consequently, the end of the Russian export bans would represent significant business opportunity for well positioned European dairy companies.

EU dairy prices have been historically, and also lately very competitive in international markets. Consequently, a potential end of economic sanctions could open the Russian market to EU exporters. We believe EU exporters are well positioned to gain significant export market share (several tens of thousands of tons) at the expense of Belarus (butter import from Belarus represents 76% of total Russian import compared to pre-sanction levels of 30%). The same economic reasoning also holds for cheese, but at a larger scale. The EU used to enjoy almost 60% cheese export market share, while Belarus now has 83% market share compared to ca. 20% prior to the sanctions. EU-originated cheese is currently very competitive internationally, therefore, for EU cheese producers Russia could again be a very important export market. With regards to competition from other exporters, the potential market size is close to 200,000 tons. However, we believe EU cheese producers can rather easily challenge newly established Russian producers as well.

Once economic sanctions against Russia are lifted (or not extended beyond their currently anticipated deadline of 31st July 2020), we also expect European dairy prices potentially to increase in the short term, most probably for cheese, but at smaller scales also for butter and SMP. This potential impact has consequences for proper dairy price risk management as we experience a growing number of potential risk factors (both positive and negative) facing dairy producers.

### How China has executed a U-turn in its Canadian pork import policy

China's recently introduced and suddenly lifted import ban on Canadian pork is a good example of how sovereign countries in today's economically and politically dependent world can execute U-turns in their trade policies from one day to the other. Following Canada's arrest of Huawei's CFO on US fraud charges in December 2018, China initiated economic restrictions (as a retaliation) against Canada after claiming to have discovered falsified certificates for meat exports. Independently from these developments, the Chinese pork industry has been hit severely by the African swine fever, which has outgrown itself into a national pork crisis during the course of 2019. Half of the China's pig population has been wiped out despite increased imports. In addition, pork prices have almost doubled, while China still faces meaningful shortages of pork meat. Seeing this situation, Chinese authorities decided in November 2019 to lift Canadian pork import bans from one day to the other. Despite a politically motivated import ban, at the end, China was forced by economic developments to change its political stance towards Canada, and lift import bans on Canadian pork.

# Sharing innovations in cheese science and technology



Author: Sylvie Turgeon, co-chair of the IDF International Cheese Science and Technology Symposium Organizing Committee, Professor, STELA-INAF, Université Laval



*Every four years, international cheese experts meet to discuss recent scientific advancement. Sylvie Turgeon explains why this event is a must-attend for those involved in the sector.*

In 2020 the IDF International Cheese Science and Technology Symposium will be held in Quebec, Canada, taking place in Quebec City at the historical Fairmont Château Frontenac from 1 – 5 June 2020.

The Canadian dairy industry produces 1050 varieties of cheese, of which 740 come from the province of Quebec. Quebec has a proud history of dairy production, processing, research and innovation. It is the province that produces the highest volume of milk and counts half of the dairy farms of Canada. Cheese is produced in 110 factories of which 53 are artisanal and farmstead cheese factories. The dairy sector is supported by scientific research and expertise, mainly with the STELA Dairy Research Centre, the most important research centre in Canada, whose experts work closely with industry to answer their needs and to stimulate innovation.

With the aim of delivering the most recent research, innovation and expertise in cheese science and technology, the scientific programme, which includes 36 speakers from 11 different countries, will focus on six main thematic areas: Microbial Ecology: Starters, Adjunct and Indigenous Microbiota (keynote: Dr. Paul Cotter, Teagasc), Cheese Technology: Process

Efficiency and Innovative Approaches (Dr. Valérie Gagnaire, STLO, France), Cheese Structure and Rheology (Dr. John Lucey, University of Wisconsin, USA), Ripening, Flavor and Authenticity (Dr. Ylva Ardö, University of Copenhagen), Functionality, Nutrition and Health, Innovation and Consumer-Centric Approach (Dr. Eileen Gibney, UCD, Ireland). Scientific papers will be published in the peer-review journal "Dairy Science and Technology".

Full registration offers to move freely between parallel-run symposia. The IDF Cheese science and technology symposium kicks off with the Opening Cocktail on Monday June 1 with the famous Wine and Cheeses showcasing the unique Quebec fine cheeses. On Monday June 1, the Novalait Forum Techno showcases the research results supported by the organization owned by Quebec dairy producers and processors. It is followed on Tuesday by a workshop on Milk Microbial Ecosystem proposed to Artisan Cheesemakers.

Looking ahead to Wednesday and Thursday, the IDF Canada Dairy Outlook Conference will feature highly reputed speakers such as Thomas Mulcair, professor of Political Science and ex-leader of the Quebec New Democratic Party and Andrew Novakovic, from Cornell University. Throughout the week, poster sessions offer the opportunity to exchange with graduate students and research professionals, our future leaders.

Exhibitors will have the opportunity to network with some of the leading names in the dairy processing sector and to build brand awareness and partnerships with international delegate experts. On Friday June 5, technical visits propose to discover Cheese manufactures and Research centers (STELA and the Institute of Nutrition and functional Foods) in a friendly and relaxed atmosphere.

Combined to the pleasure of visiting Quebec City, cradle of French civilization in North America, proclaimed UNESCO World Heritage site, this exceptional gathering of the dairy industry promises to be an enriching professional experience.

*The Canadian National Committee of the International Dairy Federation (IDF) co-organizes the IDF International Cheese Science and Technology Symposium with the Dairy Science and Technology Research Centre (STELA) of Université Laval. Participation of the global network of scientists in academia, business and government is targeted for a highly qualified audience. More than 400 participants from over 20 countries are expected.*

Visit the website:

[fil-idfcheese2020.com](http://fil-idfcheese2020.com) for the complete programme or to register.

# One bite at a time

## Tackling carbon neutrality

**C**arbon neutrality is an imperative global goal to halt global warming. But it can also have a significant benefit on a company's performance.

The risks of climate change now need little introduction. We are already starting to live with the impacts of a changing climate on communities, businesses and supply chains. Within the food and beverage industry climate change is already impacting food production, water scarcity and extreme weather events, all which pose huge risks to businesses and future food security.

The most recent Intergovernmental Panel on Climate Change (IPCC) report in October last year delivered the unnerving news that we have less than a 12-year window to act on climate



**Mark Chadwick, CEO Eco-Art: Obtaining good data and calculating a footprint using internationally recognised methods will help you comply with both existing and future GHG reporting requirements**

and limit global warming to 1.5 degrees Celsius. It made plain that limiting warming to 2°C will not be enough to prevent the most serious impacts. In order to achieve this goal, we need to reach global net zero carbon emissions by 2050.

And now there is a more public face to the voice for change. Protests by Extinction Rebellion and school children around the globe have been recently dominating headlines, meaning climate change has suddenly pushed its way to the forefront of public consciousness with pressure for action on carbon neutrality rising with it.

The UK food supply chain from production to consumption accounts for about 20% of UK greenhouse gas (GHG) emissions<sup>1</sup>. This makes it vulnerable to increased demands for climate action particularly in a sector susceptible to changing consumer demands and exposed to NGO pressure. Understanding this, the sector as a whole has already been proactive in emissions reduction efforts. The Food and Drink (FDF) has pledged a 55% reduction in emissions by 2025 as part of its Ambition 2025 initiative and has reported impressive progress on targets so far.<sup>2</sup>

### What's in it for us?

The calls for carbon neutrality might appear highly ambitious and even a little doom-mongering at times, but they also present significant opportunities to the food and beverage industry – from meeting increasing consumer preference for low carbon products; costs saved through energy reduc-



tion programs; greater innovation to achieve competitive advantage; enhancement of brand reputation; better preparedness for future legislation and the building of more financially- and climate-resilient supply chains. Many stakeholders now want to see that companies have properly accounted for climate change. Consumers are increasingly opting for more environmentally friendly brands, with employees wanting to work for more responsible companies<sup>3</sup> and the investor community making plain their commitment to withdrawing shareholder backing if climate is not adequately addressed.<sup>4</sup> Tackling climate should now be seen as an opportunity to keep stakeholders happy, secure business and safeguard long-term investment.

For any business, ambitious reduction targets – particularly carbon neutrality – is a significant commitment, not least in an industry dependent on complex supply chains and trying to maintain competitiveness in a crowded market. However, it is not insurmountable when undertaken as a journey, and one that can be broken down into achievable stages.

### Pathway to carbon neutrality

Before beginning your carbon neutrality journey, gathering reliable data and putting in place systems for collection and monitoring will be vital. This is the only way to have a true understand-



EcoAct worked closely with innocent drinks to calculate their supply chain carbon footprint from actual data, where available, and to develop estimation methodologies where it wasn't

ing of your impact – both positive and negative. This can be a challenge in an industry where the majority of emissions often occur within the wider supply chain. However, isolating emissions within your control (Scope 1 and 2 emissions) should be attainable, followed by prioritising emissions hotspots and then engaging with suppliers to tackle your whole value chain (Scope 3).

Obtaining good data and calculating a footprint using internationally recognised methods will help you comply with both existing and future GHG reporting requirements. It will also give you confidence and credibility in your external reporting.

Target setting best practice now expects science-based targets (SBT), which are specifically aligned to limiting warming to the recommended levels of 1.5°C or well below 2°C. There are already 45 companies from the food and beverage processing industry that have set SBTs. While ambitious, these targets will provide clear goals for reducing emissions in line with the trajectories needed to adequately limit warming.

SBTs are particularly challenging when your suppliers are far removed from your own operations in geography and climate ambition, but you can start by identifying the largest emissions areas and those where there exists the most ability to influence. It then requires engagement with both staff and suppliers to implement procure-

ment criteria and collaborate to find solutions. Working with suppliers to improve their own credentials on emissions can be a mutually beneficial exercise in terms of reputation, innovation and climate resilience.

Improving energy efficiency within your operations will play a significant part and this comes with the potential for substantial financial savings. With the continued rise in Climate Change Levy rates, such savings could also avoid growing taxation costs. Steps to reducing energy intensity can include incentivised energy efficiency measures for employees, replacing inefficient technology such as older refrigerator models and installing better energy management systems. Added benefits will include easier compliance with current legislation such as the Energy Savings Opportunities Scheme (ESOS) and the Streamlined Energy and Carbon Reporting Regulations (SECR).

Renewable energy also plays an important role in a carbon neutral commitment and with cost reductions over the past few years, renewables are now financially viable competitors to fossil fuels. EcoAct research shows 75% of FTSE 100 companies now use renewable energy. Investing in onsite renewable energy or purchasing it via assured certificates allows companies to confidently report that the energy used is zero carbon.

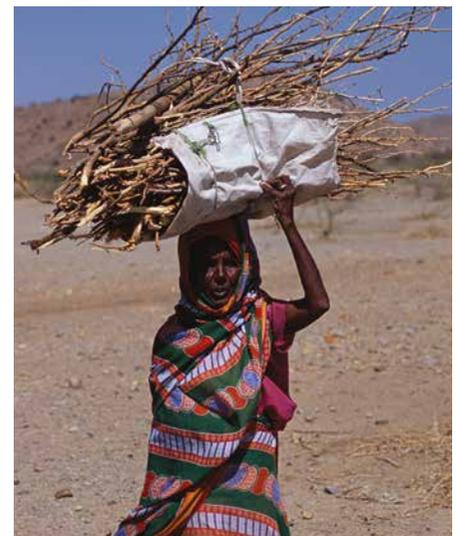
As we don't yet inhabit a zero-carbon economy, achieving carbon neutrality solely through operational changes can be a tall order. Companies are increasingly realising that high-quality, verified offset projects can play an important role in tackling remaining emissions across their value chain. The additional opportunity here is that you select projects which mean most to you and your stakeholders. Verified high quality credits come from a variety of social impact projects, usually in developing countries, which have a real and important effect on peoples' lives and the environment. Such projects can

focus on health, economic empowerment, prevention of deforestation, renewable infrastructure and biodiversity protection. Projects such as these are aligned to the United Nations Sustainable Development Goals and, therefore, enable an organisation to demonstrate their commitment to these global objectives which can be included in their sustainability reports.

Some companies who rely on the sustainability of their food producers might consider the setting up of their own supply chain projects to sequester carbon or reduce emissions. Referred to as "insetting", it can be reflected on the carbon balance sheet and also have the added bonus, if implemented correctly, of safeguarding sustainability of produce and producer livelihoods.

### Case study: innocent drinks

innocent drinks have always had strong environmental values and big ambitions when it comes to sustainability, but like many within their sector they face



**innocent drinks have committed to carbon neutrality and with their latest footprint are in the process of selecting offsetting projects that best align with their values to offset their residual emissions, such as sponsoring LPG stove projects in Africa that avoid wood collection**

the challenges of being a fast-growing company with an extensive value chain that includes agriculture, packaging, transportation and manufacturing.

They approached EcoAct for help with improving the quality of their data calculation methodology, calculating their Scope 3 emissions, devising a more simplified methodology for estimating emissions from fruit, and engaging relevant people in the supply chain team. All this was to provide the basis for climate change targets and to highlight the most important areas to work on to reduce emissions.

EcoAct worked closely with innocent to calculate their supply chain carbon footprint from actual data, where available, and to develop estimation methodologies where it wasn't. To calculate emissions from fruit, mini Life Cycle Assessments (LCAs) were developed for the top 5 purchased fruits. From this, it was possible to extrapolate in order to estimate emissions for all fruits purchased.

From this footprint, emission hotspots were identified in order to focus attention for target setting and emissions reductions. Each of the hotspot areas were assessed according to two criteria: the ability to be influenced and how material they are for the business. This enabled EcoAct to prioritise the emission hotspots we would focus on.

It is important for any target that contextual and market changes, such as new environmental initiatives and the effects of the grid and transport greening, are taken into account. For this, a bespoke feasibility tool (CRaFT) was developed which enables innocent to visualise these impacts against their

”

EcoAct have been instrumental in helping us work out what our climate change target should be as well as the best way to go about achieving the target. They offer a great balance between providing the cold-hard technical insight required alongside a fun, friendly and engaging way of doing things.

*Simon Reid,  
Sustainability Manager, innocent*

new targets and help them make decisions on what actions to take.

With targets set, it was time to tackle the emissions. innocent recognised the importance of a strong supplier engagement strategy as key to achieving reductions and hitting their target. An EcoAct consultant worked alongside innocent at their London headquarters to develop a strategy for collecting data and engaging the supply chain teams who managed the relationships with suppliers. As a result of this close partnership, the teams felt part of the process and were supported in making their specific commitments for reducing emissions within their area of the supply chain.

innocent have committed to carbon neutrality for their Scope 1 and 2 emissions and with their latest footprint are in the process of selecting offsetting projects that best align with their values to offset their residual emissions and get these emissions Scopes to net zero. innocent is committed to their

ongoing journey towards further emission reductions across all Scopes.

## Turning challenge into opportunity

Carbon neutrality is a significant goal and demands commitment. However, when tackled in more bite-sized chunks and approached as a journey, it becomes a manageable challenge, particularly when commercial benefits are uncovered along the way.

The role of the food and beverage sector is a vital one, not just in reducing its portion of emissions but in helping to safeguard food security for a growing population. The opportunity to demonstrate competitive credentials, to innovate and future-proof our businesses is significant, particularly if taken advantage of now.

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## European Dairy Conference 2020

19<sup>th</sup> May 2020, Berlin

The first European Dairy Conference (EDC) will focus on dairy product exports. The target groups of this conference include dairies, milk trading companies, the food industry and representatives of related associations. [www.ife-ev.de](http://www.ife-ev.de)

# A milestone in tank cleaning

Finally fast and safe cleaning



Authors: Dipl.-Ing. Thomas Weyrauch (photo), Hohe Tanne GmbH; Dipl.-Ing. André Boye, Fraunhofer IVV



Innovative cleaning robotics for faster and safer cleaning of tanks and containers with controlled jet motion. The Adaptive Jet Cleaner (AJC) enables previously unattainable needs-based cleaning and thus an enormous increase in efficiency.

The cleaning of large and stubbornly contaminated tanks is usually done by means of rotating jet cleaners. These have the disadvantage that the path of movement is set by gear ratio. Consequently, needs-based cleaning in the scope of industry 4.0 that is adapted to tank geometry is impossible.

Hohe Tanne GmbH and the Fraunhofer IVV Dresden rose to the challenge. A novel, needs-based cleaning system was developed, which demonstrably reduces cleaning time by up to 60% and resource consumption to the same extent – in short: it is revolutionizing previous cleaning processes.

## Adaptive Jet Cleaner (AJC)

Our new development involves a jet cleaner with an intelligent drive concept, the core of which is formed by two independently controllable axes. This allows for freely configurable 360° tank cleaning, as well as targeted cleaning of every single point in the tank. Due to the AJC being freely configurable (in contrast to current market standard cleaning machines), any cleaning track can be programmed and run. Thus, an optimized and individual cleaning program for each process can be created. Hard-to-clean areas in the tank, such as sensors, process connections, agitators or heavily dried product deposit due to liquid levels, can be locally worked on with a higher cleaning intensity. This is achieved, for example, by local adaptation of movement speed and motion profile of the aiming beam.

The design of the AJC is compact and meets all relevant hygiene standards – on the inside as well as on the outside (EHEDG, 3A). Only materials which have a high chemical resistance (acid, lye) and are approved for hygiene critical areas are used. The AJC is mounted in a tank or container using industry-standard and common connecting elements, such



Adaptive Jet Cleaner (two nozzle design) mounted in tank (photo: Hohe Tanne)

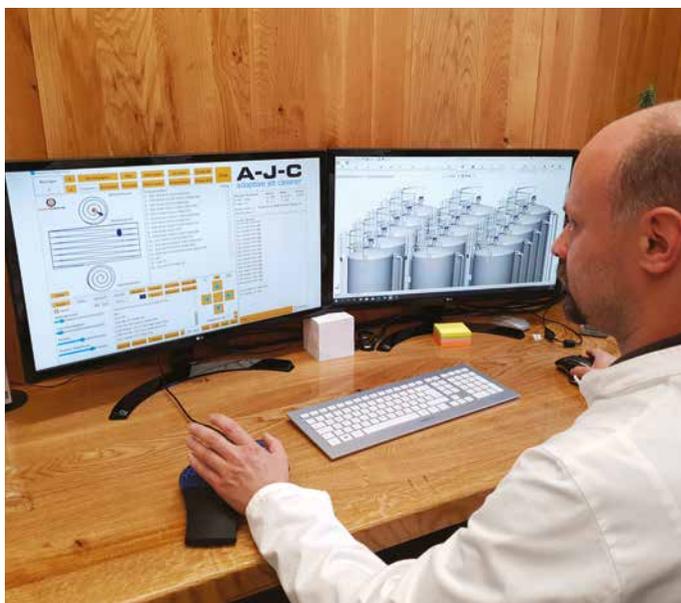
as pipe fittings or flanges. Since die AJC doesn't have any specific connection requirements and it's similar in size to conventional cleaners, it can be easily integrated into new and existing systems.

It is connected to the respective CIP system (cleaning-in-place) via commercially available fluid connections (flanges, screw connections). Another innovative characteristic of the AJC is that volume flow inside is guided via a separate fluid line. No additional hygiene risks arise during cycle cleaning because, as opposed to standard tank cleaners, the product residue transported by the detergent doesn't flow through e.g. the gear units and thus can't get stuck. Bypass holes on the nozzle arms (the AJC's self-cleaning function) ensure continuous cleanliness of the exterior surfaces. The AJC is thus almost 100% hygienically safe.

In order to enable rapid implementation in process plants, a suitable software to accompany the hardware has been developed. Dimensions and geometric characteristics (critical areas) of the cleaning environment can be entered by the operator, and individual cleaning paths or procedures can be defined. Any number of cleaners can be controlled individually, either via WiFi or permanently wired. Each cleaner can store product-specific programs. Due to the AJC being freely scalable, a quick adaptation to applications outside of tank cleaning is possible.

### What are the advantages?

In the processing industry, operating times of machines and systems significantly impact prices of end products. In order to increase output, processing operations are continuously optimized and developed with regard to cycle times. It's a different matter when looking at the cleaning process, which is required by law and generally seen as a necessary evil. However, with cleaning accounting for 15 to 20% of total



**Matching the hardware a software was developed to implement the jet cleaner easily in a process (photo: Hohe Tanne)**



**Any number of jet cleaners can be customized control via WiFi or hard-wired (photo: Hohe Tanne)**

process time, it must not be neglected when aiming for increased plant availability. Furthermore, with the objective of eliminating any risk from the outset (and as a result avoiding contamination and product recall), cleaning processes are usually designed with worst case scenarios in mind and as such end up being excessive and inefficient.

The AJC cleans critical areas systematically and efficiently while reducing cleaning time and producing equivalent or better results. Production costs are lowered with a simultaneous increase in hygiene. The AJC also has a positive impact on the environmental goals of companies. Needs-based cleaning saves on cleaning agents, process water and wastewater. It can be assumed that cleaning a simple tank with a capacity of approx. 30,000 liters costs an industry-typical company 100 €. For tanks with a particularly large number of difficult-to-clean areas, the savings in time and costs are around 60%. If these values are extrapolated to one year, assuming only one cleaning per day, even for a simple tank a savings potential of approx. 15,000 € per year (60 € x 5 days a week x 50 weeks) can be achieved.

### Efficiency study at the Fraunhofer IVV

In order to substantiate this claim, comparative cleaning tests between conventional 360° orbital cleaning and an adapted AJC program were carried out at the Fraunhofer IVV Dresden. For better comparability, the orbital trajectory was mapped with the AJC, using the freely parameterizable software. A constant volume flow of 11,5 l/min at 3 bar from a full jet nozzle was used in both setups. Demineralized water was used as a detergent. For testing, a 10,000 litre stainless steel tank was soiled, modeling a realistic contamination. An optical pollution sensor was installed in the tank for inline cleaning monitoring, whereby both setups could be tested against each other with regard to their cleaning effect. The optimized AJC program sequence resulted in time savings of 58% compared to standard orbital cleaning.

In summary, the AJC allows for previously not feasible needs-based cleaning as well as a huge increase in efficiency and conservation of resources. Downtimes are significantly reduced. Due to its free scalability, the AJC can be used for various cleaning scenarios, from component cleaning to external and internal surface cleaning of production plants.

# Ecolean

## Top globally in trusted sustainability rankings

**G**lobal packaging producer, Ecolean has been awarded the prestigious Gold Medal Recognition 2020 for its sustainability work. The certificate is awarded by the independent and trusted provider of sustainability ratings, EcoVadis. In the overall rankings, Ecolean is placed in the top 5 percent of a total of 60,000 companies assessed from 155 countries.

Ecolean's high score is based on the company's strategic work with clear objectives within significant areas of sustainability such as environment, including renewable energy and climate impact and social aspects – as well as via monitoring and transparent reporting of sustainability data of its lightweight packages and filling machines. For Ecolean, this is the first year the company participates in the ratings by EcoVadis.

"We are very pleased that our sustainability work is confirmed to be in the top in a global context. The demand for lightweight packages with minimal environmental impact for liquid food is increasing, and an independent assess-

ment such as EcoVadis helps us to show the world our great commitment and successful work on developing packaging solutions with sustainability at the core of our business," says Peter L Nilsson, CEO of the Ecolean Group.

"Our vision is to be the best packaging company in the world in the eyes of all our stakeholders. The EcoVadis rating is a result of our continuous quest to constantly reduce our environmental impact and to be a responsible company that our customers know they can trust," says Anna Palminger, Sustainability Manager of Ecolean Group.

### Approach to sustainable packaging

Innovation has always been fundamental for Ecolean, which was founded in 1996 in Helsingborg, Sweden. The concept of using a minimal amount of raw material to produce a unique flexible lightweight package and efficient filling system has been established by people with great knowledge and long experience within the global packaging industry.



With an emphasis on the whole life cycle impact of the process from raw material to product end-of-life, Ecolean sets an example for others to follow. As the first packaging supplier in the world to review the whole system with detailed analysis and description in Environmental Product Declarations (EPD) – encompassing the lightweight packages as well as filling machines, the committed company enables full comparison between packaging solutions for dairy and beverage producers.

When producing lightweight packages and filling machines, Ecolean fully optimises the use of raw materials and energy throughout the entire value chain. The carbon footprint from the products is low due to the lightweight philosophy of using minimal raw materials from the beginning.

### About Ecolean

Ecolean develops and manufactures innovative packaging systems for the dairy and liquid food industry. Ecolean's modern lightweight packaging is consumer convenience and environmental concern in one. Ecolean is a global company with its headquarters in Sweden. Established in 1996, the company has commercial activities in over 30 countries, with China, Pakistan and Russia being its largest markets. Ecolean has 450 employees. Ecolean is the only packaging system supplier that provides Environmental Product Declarations for its entire product range. [ecolean.com](http://ecolean.com)



The demand for lightweight packages with minimal environmental impact for liquid food is increasing (photo: Ecolean)

# The “European Green Deal” and the dairy sector

## A shared ambition



Author: Alexander Anton, EDA Secretary General

**The new European Commission has made it clear from the very first moment, even before taking over office on 1st December 2020: the “European Green Deal”, the flagship initiative for the European Union, will translate the climate and environmental ambitions into legislation and reality by the end of this legislative term in 2024.**

**A**nounced on 11th of December 2019 by the EU Commission President Ursula von der Leyen as a tool to “reconcile the economy with our planet”, it aims to make Europe the first climate-neutral continent by 2050, while boosting the competitiveness of European industry and ensuring a just transition for all. However, the new EU-wide strategy is not only about climate: it is meant to address the broad range of environmental challenges. As part of the Green Deal package, the European Commission will in fact propose different strategies and programmes aimed at stepping up EU action in the field of biodiversity protection and ecosystem restoration, enhancing circular economy, achieving a zero pollution and toxic-free environment, promoting clean and affordable energy, shifting towards sustainable and smart mobility. The most important part of the Green Deal for dairy is the objective to increase the sustainability of the European food system.

### “Farm to Fork strategy”

A “Farm to Fork” strategy, that will be published on 31st March 2020, will specifically tackle the food sector. “A fair, healthy and environmentally friendly food system” is the overall objective. The European Green Deal is most welcomed by the European dairy industry. Especially the Farm to Fork strategy will link and coordinate the multi-layered fields of legislation and sustainability efforts of the dairy sector in a more coherent manner and the dairy industry has already embarked this journey.

### Sustainability in a competitive world

All European dairy companies have already started to work on their sustainability agenda – many even before the 2015 United Nations

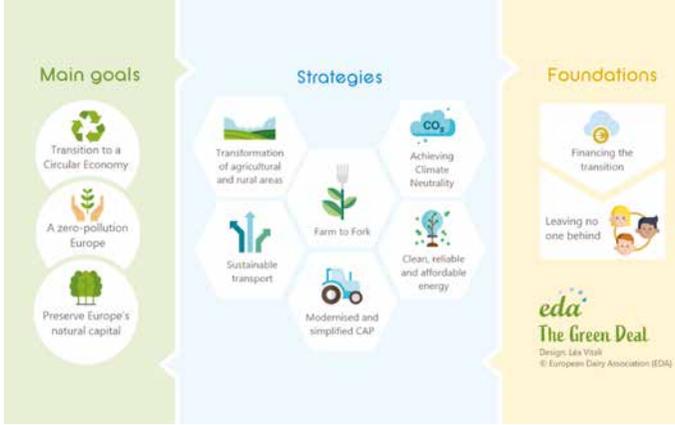
Sustainability Development Goals. In March 2020 Danone will officially open its climate neutral processing site in Wexford (Ireland), the Finish dairy cooperative Valio has published in December 2019 their carbon neutrality plan by 2035.

In spring 2019, Arla Foods as well as FrieslandCampina went public with their zero net carbon strategies by 2050 and their implementation strategy 2030.

Beginning of February 2020, Arla Foods CEO Peder Tuborgh has presented in the European Parliament the “Vision for the Future of the European Dairy Industry” – another milestone, that underlines both, the leadership of EU dairy and the honest and realistic assessment of the challenges ahead of our sector.

The current environmental challenges have an impact on the European dairy sector and more broadly on the food system, in terms of food security, quality and safety of food products and food prices. However, we are not only affected by them: the responsibility of the dairy sector in contributing to the impact on the environment cannot be denied. The sector is therefore continuing to focus its efforts for reducing the environmental footprint of dairy operations and of the entire value chain, while ensuring food quality and safety, in order to achieve the overall UN Sustainable Development Goals (SDGs). Many companies are already making tremendous efforts in these fields and are acting in view of a wide range of targets to future improvement.

Biodiversity protection is one of the key objectives of the Green Deal strategy. The intention of the European Commission is to further step up the EU efforts in the field of biodiversity preservation and ecosystem restoration, presenting a new Biodiversity Strategy for 2030. In this context, the European dairy sector is proud to positively contribute



to biodiversity protection, halting and reversing land degradation and keeping the cultural landscape in Europe. Practices and commitments to preserve biodiversity within the sector include reducing ammonia emissions and nitrate leaching, sustainable soy sourcing as well as measures aimed at soil management and renewal at farm level.

In the field of Circular Economy, a new action plan is also foreseen as part of the EU strategy. The dairy sector is active in a wide field of topics to improve the circular performance of dairy operations and we work with other sectors on issues such as packaging and recycling, by-products valorisation, water re-use and food waste reduction.

The 2050 Carbon Neutrality objective at the core of the new Green Deal is a very ambitious target to which EU dairy is committed to contribute as well. Greenhouse-gas (GHG) emissions from dairy operations have significantly decreased in the past decades thanks to the efforts of all the actors in the sector, making the carbon footprint of EU dairy one of the lowest in the world. Energy efficiency measures to reduce usage of fuels and electricity, renewable energy production on farm, sustainable feeding options and better manure management are only some of the practices which are implemented for reducing the carbon intensity of dairy. Enhancing carbon sequestration by pastureland at farm level also plays a key role in mitigating emissions and many European dairy companies are committed to further scale up regenerative agriculture practices to promote it. European dairies are frontrunners at global level when it comes to climate action and – as per the examples shown above – many companies have signed up for the commitment of carbon neutral dairy chain by 2050 or even 2035, with examples of climate neutral certified companies already in 2019.

### Dairy Product Environmental footprint project: beyond GHG emissions

A holistic environmental strategy, as outlined by the Green Deal, is of paramount importance in order to ensure that the efforts deployed effectively lead to an improvement of the performance across all environmental indicators. In this context, the Dairy PEF (Product Environmental Footprint) is a fundamental tool for driving environmentally sustainable practices in the dairy sector and allowing to quantify the improvements. The project, conducted by the European Dairy Association from 2014 to 2018 and officially approved by the EU Commission, members states and NGOs as the reference methodology in dairy, covers a broad list of 17 environmental indicators and considers the complete life cycle of dairy products. It goes far beyond GHG emissions and covers basically the 'full' environmental footprint.

### Only what you can measure, counts!

Our Dairy PEF is today the best way to provide information on environmental performance in a credible and measurable way, while being always further refined to integrate more indicators. The PEF can represent a tool to substantiate any relevant green claims for sharing environmental footprint data along the chain.

For all we know today, the "Farm to Fork" strategy will specifically tackle the provision of environmental, nutritional and origin information of food products to consumers in the European Union.

### Sustainability englobes the essential nutritional value of milk & dairy

The success of the Dairy PEF attests the European dairy sector's continuous effort for improving its environmental sustainability from a holistic point of view and its positive and proactive approach on environmental sustainability. Next to environmental dimension, economic, social and nutrition benefits are equally important for dairy. Mirroring the vision outlined in Green Deal strategy by the European Commission, these are four major pillars that European dairy brings in as strong assets for the sustainable development in Europe and beyond. The dairy industry has a long history in providing essential nutrition, employment and livelihood, as well as contributing to the development of rural areas. Nutrition, social and environmental benefits from dairying, next to the economic sustainability, are highly important and will be further supported by a streamlined policy environment under the new Green Deal.

Over the last years, the efforts of companies of all sizes across the Union have shown the diversity of steps already taken towards "greening" the economy of dairy production and consumption, and the broad spectrum of contribution that dairy can bring to the sustainable development. The dairy – at all levels – is committed to step up and play its role within this new overarching political framework of the Green Deal.

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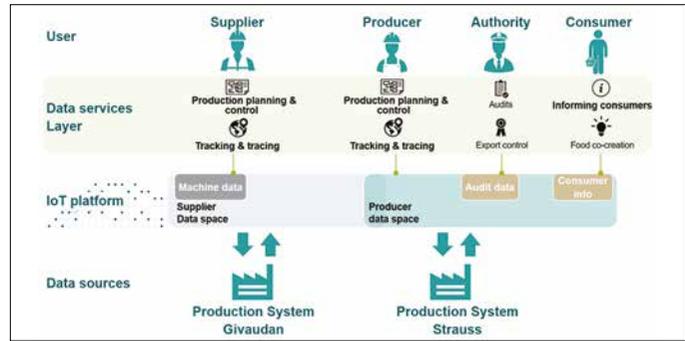
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Call for applications!

# Dairy Technology Award

Deadline for applications 30 October 2020

Supported by the dairy trade publications IDM International Dairy Magazine and molkerei-industrie and the Society of German Dairy Engineers (Ahlemer Ingenieure), the Dairy Technology Award aims at highlighting successful innovations in dairy and food technology. The prize has been awarded since 2009 to companies in the dairy and supplying industry and relevant service providers.

The Dairy Technology Award focuses on processes, equipment, complete production units and problem solutions that are of benefit to the overall dairy industry.



## Awards will be made in these field

- Process & Automation Technology
- Packaging & Filling Technology
- Environment & Sustainability Improvement (saving of energy and resources)
- Process Management & IT
- Logistics
- Food Safety.

## Jury

Applications will be judged and awardees will be selected by a jury consisting of these renowned experts:

- Prof. Dr.-Ing. Jörg Hinrichs, Dep. Soft Matter Science and Dairy Technology, University of Hohenheim
- Prof. Dr. Ulrich Müller, Dep. of Life and Science Technologies, University of Applied Sciences Ostwestfalen-Lippe
- Dipl.-Ing. Klaus Schleiminger, KSI Engineering, Krefeld
- Prof. Dr.-Ing. Saskia Schwermann, University of Applied Sciences and Arts Hannover, Faculty of Mechanical and Bioprocess Engineering
- Prof. Dr.-Ing. Matthias Weiß, University of Applied Sciences and Arts Hannover, Faculty of Mechanical and Bioprocess Engineering

## Awarding

The prize winning developments will be presented at the trade show Anuga FoodTec in March 2021.

Awardees will receive a certificate, the winning developments will be presented to an international readership in the magazines IDM International Dairy Magazine and molkerei-industrie as well as on Twitter and the websites international-dairy.com and moproweb.de.

## How to apply

Only in digital form, a condensed application is requested first. It should include:

- a) Reason for application
- b) Description of company/innovator with a short portrayal of the applicant and its professional background.
- c) Title of the application and area of development
- d) Description of the innovative project/the innovation on max. 3 pages A4 incl. illustration (photos, graphs, tables, sketches) centering on the special innovative development and, if applicable, quoting sources. (After checking, the jury might ask for further documentation or an on-site inspection)

Send applications to: Roland Sossna,  
Editor molkerei-industrie/IDM International Dairy Magazine,  
Email: [sossna@blmedien.de](mailto:sossna@blmedien.de). Questions will be answered by email or phone: +49 2590 94 37 20, +49 170 418 59 54 .