

MEATINGPOINT

magazine

SUSTAINABLE TECHNOLOGY, PROCESSING & PACKAGING

MEAT EXTENSIONS – PRODUCTS WITH **ANIMAL** AND **VEGETABLE** COMPONENTS

PLANT & MEAT:
PROTEIN IN HARMONY

THE FIVE PILLARS
OF SUSTAINABILITY

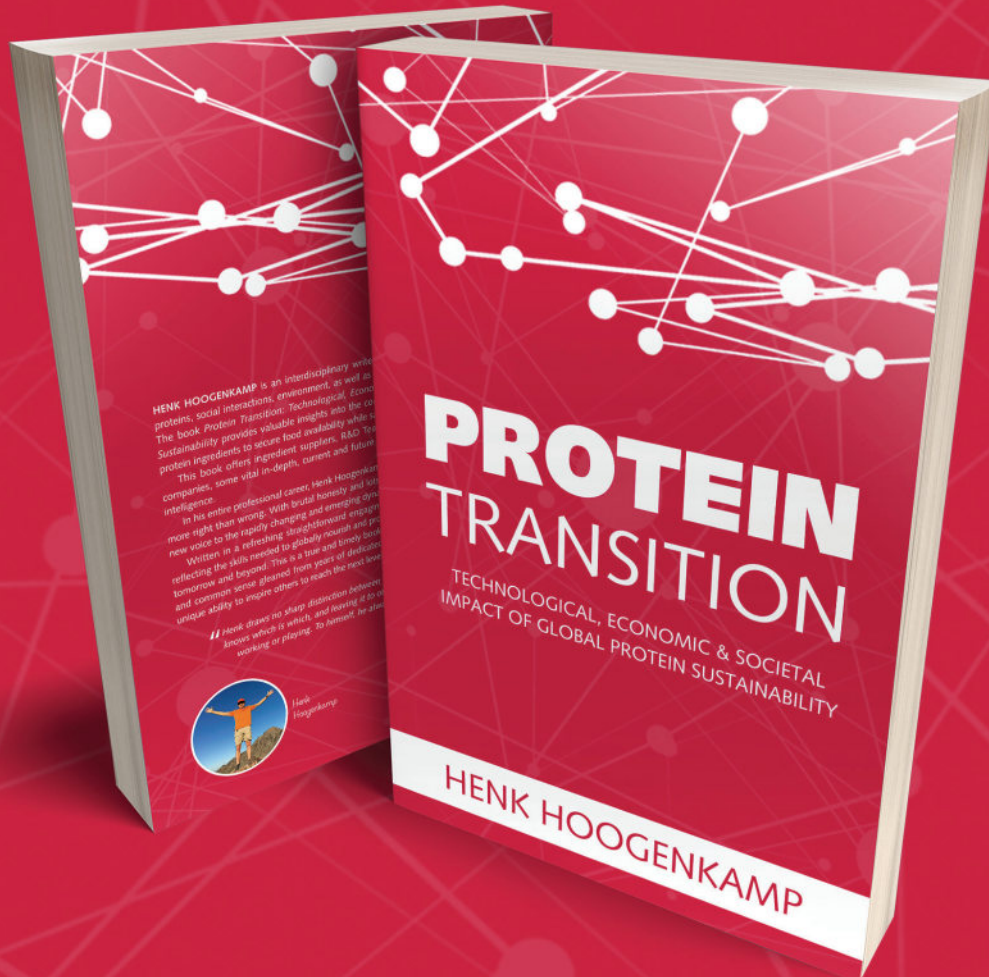
VEGAN ALTERNATIVES
TO MEAT AND SAUSAGES

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HENK HOOGENKAMP – A world renowned protein technology expert and globe-trotting, trusted advisor for food companies, academies and contributor to leading food journals. A powerful thinker and communicator about sustainable protein solutions. Henk Hoogenkamp has a worldwide reach designing and implementing strategic technologies to advance sustainable, nutritionally sound, tasty, and healthy food products. A Board member of public listed companies and also serves on the Advisory Boards of the world's leading food (ingredient & equipment) companies. Henk is probably the world's most referenced publicist in food technology, related to implementing animal and plant protein solutions, including sustainable and ecologically-sound hybrid and meat-free foods. Henk has pioneered and continues to be involved using transitional protein solutions in structured meat analog foods. Hoogenkamp's grand vision has clearly turned into reality now that world's largest food service companies are using plant protein solutions to provide wholesome and affordable nutrition to meet or exceed the consumer expectations. As evolving lifestyles, food choices and its related dynamic society diagnostics, continue to accelerate. Henk's latest work on plant protein solutions is timely and enlightening for the food and meat industry to better anticipate the world of tomorrow.

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Dear reader,

Not long after the summer holiday period, the trade fair season is in full swing. It is time to kick off the season by attending some of the most significant trade fairs.

One of them is SIAL Paris, which will take place at Paris- Nord Villepinte from 21st to 25th October 2018. It will be a bigger source of inspiration than ever for the world's food industry. 7,020 companies from more than 109 countries will be showcasing their products to retail and foodservice professionals. All kinds of food products, from ingredients through equipment to end products, will be on show across 21 exhibition sectors. Attend SIAL Paris to explore new markets, exchange views with the world's agri - food players and stay connected to trends and innovations.



Tristan Bogaard

Some days later- from 31st October to 3rd November 2018, Food - Tech Eurasia and Eurasia Packaging Istanbul unite forces to present the latest technologies in food processing, from cold chain equipment to food safety, processing and filling technologies to packaging production. Visitors can find new technologies, materials and equipment to lower their costs, reduce waste and increase efficiency. You can compare suppliers in order to obtain better options and improve your services. You can witness live demonstrations of the newest products and technologies.

Gulfood Manufacturing, the region's biggest food and beverage processing industry fair, brings together regional and global manufacturing industrial enterprises from 6th to 8th November in Dubai. 1,600 suppliers from 60 countries will demonstrate the latest F&B manufacturing business improvement tools. They are going to meet buyers to help them solving their biggest production, capacity and automation challenges.

Gulfood Manufacturing Industry Excellence Awards 2018 will be rewarded for best practices and innovations within the food manufacturing industry value chain. Winners will be announced at a glittering ceremony on the first day of the show in Dubai.

These fairs aim to help businesses become more energy efficient and find budget-friendly raw materials. Everything is at the forefront, from putting the manpower to better use to boosting productivity, while still aiming greater sustainability and profitability.

Enjoy your read!

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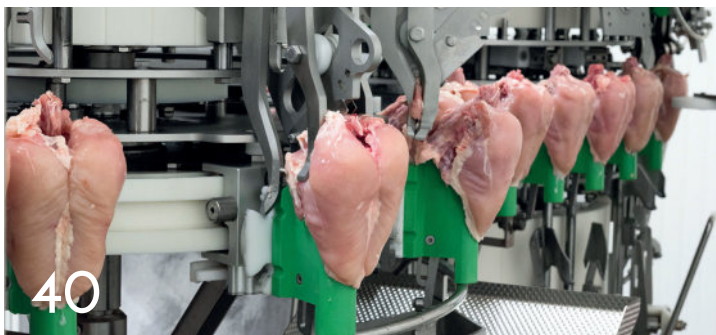
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- * Low - sodium, Low-fat Formulations for Sausages and Frankfurters
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MEAT BALLS WEIGHED QUICKLY AND ACCURATELY BY MULTIPOND

With 50% growth rates and an annual production exceeding 9,000 tons, the family-run business Öresundschark ranks amongst the fastest-growing meat processors in Sweden. The company specializes in the production of the popular food meat balls. Some are distributed under proprietary brands, but primarily under a private label. In total, the company has around 30 employees. While production is a three-shift operation, packaging runs over two shifts.

To equip capacities for the future, the production and packaging departments have recently been further expanded. When it comes to dispensing the meat balls with precise package weights, the family-run company relies exclusively on MULTIPOND, the manufacturer of customized multihead weighers - and not without good reason. Mikael Andersson, Technician Manager, explains: "We started out with a used machine from MULTIPOND which exceeded our expectations, so we also approached MULTIPOND for the second machine. The machine ran smoothly from the very first day. We therefore also decided on MULTIPOND for the rest of the machines."

Another MULTIPOND type MP-14-2400-1250-H-UL multihead weigher has recently been installed. This 14-head

scale is used for weighing a broad range of meat balls. The products can be weighed and packed either deep-frozen or fresh.

The meat balls are conveyed to the weigher by a bucket conveyor. Once at the top of the weighing system, the product is first conveyed to the prefeed hoppers via the radially positioned feed trays, and then to the weigh hoppers below. The computer now determines from partial portions the combination that corresponds or comes closest to the target weight. All product contact parts are precisely adapted to the production requirements and to the properties of the meat balls. This guarantees a smooth product flow. The weigher is controlled and operated using a convenient color touchscreen monitor. The fully automated calibration of the proprietary load cells ensures the highest accuracy and availability through the integrated calibration weight in each weighing cell. MULTIPOND achieves this as the only manufacturer of multihead weighers worldwide - automatically, continuously and during production. After the actual weighing process, the accurately weighed portions are transferred via 4-way chutes to the downstream product transfer system, which in turn transfers the finished portions to the downstream thermoforming machine.

The entire system was designed for an output of 60 weighings per minute. The target weights are between 350 g and 1,000 g, the mean



value, with the decisive criterion for the giveaway being 0.1% above the target weight. "MULTIPOND always keeps its promise. The excellent output combined with the highest precision and system availability provide the basis for maximum efficiency", says Andersson.

"The short routes and distances were extremely advantageous for the project implementation. Drawing on its long-standing experience as a partner, MULTIPOND was able to offer advice and support. All MULTIPOND systems run fault-free and are completely reliable. The collaboration has been smooth from the outset. The support from the company and its local agent are at the highest level."

The overall package is rounded out by the fast and reliable service and the robustness of the machines: "The total cost of ownership is lower with MULTIPOND than with any other manufacturer of multihead weighers", explains Andersson. "This, coupled with the incredible degree of accuracy, means the return on investment is twice as fast."

MULTIPOND has been an owner-managed German company since the very beginning. Drawing on more than 70 years' experience in industrial



weighing technology, we are a pioneer in this sector. Our success is based on the high quality and excellent technical standard of our weighing systems. We consciously commit to a high level of vertical integration, as well as production exclusively in Germany. Customer focus has become our corporate maxim. A team of more than 300 employees commits



Mikael Andersson, Technician Manager

„The total cost of ownership is lower with MULTIPOND than with any other manufacturer of multihead weighers“

worldwide to offer our customers from the food and non-food sectors optimized, unique solutions tailored exactly to their requirements at all times. Sales, project planning and service are handled by the headquarters in Germany, by the four subsidiaries in France, the Netherlands, UK and the USA, and by a worldwide network of agents.

www.multipond.com



Industrial Auctions BV

Professionals in online auctions for the food and beverage industry

Online auction machinery for the complete food industry on behalf of Windsor Food Machinery Ltd in Ashford, United Kingdom
Viewing day: 29th of October | Closing auction: 30th of October



Online auction machinery for the complete food industry in Nijverdal, the Netherlands
Viewing days: 30th of October | Closing auction: 31st of October



Online auction pig and cattle slaughter line, machinery and inventory slaughterhouse Marburg GmbH in Marburg - Wehrda, Germany
Viewing days: 29th & 30th of October | Closing auction: 7th of November



Online auction machinery for the complete food industry in Ystad, Sweden
Viewing day: 6th of November | Closing auction: 8th of November



Register for free

Find and bid

Win

Pay and pick up

www.Industrial-Auctions.com

HANDTMANN TECHNOLOGY FOR VEGETARIAN PRODUCTS

Handtmann offers a comprehensive range of technology for vegetarian products or meat substitutes, such as vegetarian sausages or shaped products like falafel burgers or tofu sticks.



ConPro system for vegetarian sausages in alginate casing

The Handtmann ConPro technology is an innovative method for the production of meatless sausage products with edible, vegan alginate sausage casings. The conventional ConPro system is used to produce cut sausages. After alginate crosslinking in the fixing bath, the co-extruded sausage strand is cut into individual

both cases, the ends of the produced sausages are open, i.e. not completely enclosed by the alginate casing. Depending on the viscosity of the filling product, the sausages can be further processed horizontally or



great potential for automation, with packaging in line and savings in casing costs generates significant economic benefits.

Handtmann forming systems allow the production of a wide range of formed products, whether vegetarian meat (meat substitute) or vegetarian and vegan products. Production is multi-lane onto downstream belts to water/oil bath or laminating systems. The filling product is fed to the flow divider by the vacuum filler. The servo-driven flow divider ensures precise rotor speed in the flow divider. The result is a continuous product flow without pressure fluctuations, and thus highly accurate final weights. The flow divider ejects the filling product in multi-lane filling flows via mould components. The vacuum filler's control system allows easy visualisation of the product shape and calculation of the process parameters. The shape can be changed quickly by exchanging a few mould components. Diverse product shapes



FS 520 forming system for formed vegetarian products such as falafel burgers or vegetable dumplings

portions by a separating device. The ends of the products can either be cut straight or also be shaped during the cutting process, thus creating rounded sausage ends. In

thus be produced, from individual sausages processed in horizontal position, through to endless strands of hung sausages. This continuous, almost unmanned production with



are possible, and product examples include organic loaves, falafel burgers, tofu sticks, vegetable burgers and sticks, dumplings and much more.

www.handtmann.de

GIVE YOUR SAUSAGES THE PRESENTATION THEY DESERVE

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The ModularLoader's proven technology ensures sausages within specification are correctly packed, maintaining consistent, perfect product presentation in single or multiple layers. Whether you use natural, collagen or alginate casings, the ModularLoader can handle them all.

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Food &
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*easily sorted and recycled where the right infrastructure is in place

LIMA: QUALITY IN SEPARATION AT SIAL



LIMA will exhibit at SIAL 2018, their NEW "LIMA quality meat", meat-bone separator LIMA RM 50 S.

In spite of its compact size, the LIMA RM 50 S enables to reach yet substantial outputs and is perfectly sized for chicken meat-bone separation applications.

As all LIMA "S" separators, this model of LIMA machine is used satisfactorily and acclaimed around the globe by customers producing the highest quality of MSM (Mechanically Separated Meat) at high yield.

Similarly, any LIMA S model can easily be changed over into a DDS / DD deboner / desinewer.

LIMA RM 50 S



The LIMA DDM / DDSM range ensures to get very HIGH QUALITY meat on raw products such as poultry, pork and beef. Typical applications:

- * Desinewing of raw materials with or without cartilage, such as, shank meat, trimmings, aponeurosis, high yields: from 80 to 95% while C/P ratios remain under controlled values and the temperature hardly increases during the process.

LIMA RM 400 DDM



- * Mechanical deboning, the same LIMA machines, equipped with the adequate deboning head enable to produce very HIGH QUALITY separated meat, in terms of structure, colour and low Calcium content, less than 1 000 ppm.

On this occasion, LIMA will also exhibit a LIMA RM 400 DDM / DDSM deboner / desinewer.



BELGIAN MEAT AT SIAL



**BELGIAN
MEAT
OFFICE**

The Belgian beef and pork exporters are welcoming their visitors at the 340m² booth of Belgian Meat Office during the Sial fair in Hall 6 at booth F234. This year the chefs and students of the hotel school

COOVI will ensure the Belgian pork and beef will show of their superior quality.

The Sial participation of the Belgian meat suppliers is supported by the website www.belgianmeat.com which exists in 8 languages. All companies present at the fair are represented with a detailed company profile and visitors can plan their appointments with them online.

Facts and Figures

In 2017 the Belgian meat suppliers have sold 800.000 tonnes of pork abroad, which is 76% of the total Belgian pork production. The Belgian pig meat sector can avail itself of carefully selected races and cross-breeds that deliver an excellent slaughter yield. The heavier carcasses have a high amount of lean meat. This gives

Belgium an efficient and modern meat processing industry that is known for its flexibility.

When it comes to beef, the Belgian suppliers exported 202.500 tonnes

abroad or 10% more than in 2016. The Belgian cattle herd mostly consists of Belgian White Blue cows. This species has heavily muscled carcasses with both tender and lean meat.



HIGH-PERFORMING CUTTERS ENSURE THE HIGHEST LEVELS OF QUALITY AND PRODUCT VARIETY IN INDUSTRY AND TRADE



Each company in the meat processing industry has different needs and requirements when it comes to day-to-day work. K+G Wetter offers the right solution with its cutters for industrial applications, which guarantee consistent quality in the 200, 360 and 550 litre sizes even if there is a wide range of products. K+G Wetter will showcase the 200 litre vacuum cutter VCM 200 at this year's SIAL trade fair in Paris. The machine dazzles due to its advanced vacuum technology and technical details that are specifically adapted to meet the requirements of industrial meat processing.

Like all the Cutmix series produced by K+G Wetter, the 200 litre vacuum cutter follows the same proven design principle - a grey cast iron stand lined in stainless steel with a complete design. This basis guarantees stability and operating smoothness over its entire operating life. Thin sheet-metal cladding, which can act as a disruptive resonator, was consistently not used. Of course, all machines comply with current standards and are checked for safety



Quality built in: The 200 litre vacuum cutter manufactured by K+G Wetter ensures simple and efficient industrial meat processing.



The "Easy Access" of the new angle grinder and mixer angle grinder E 130 mm / G 160 by K+G Wetter facilitates machine cleaning and component assembly.

and hygiene by the Meat Industry Insurance Association.

Greater Flexibility

Due to product diversity, a cutter that is capable of producing both top-quality large and small batches is much in demand in industrial manufacturing processes. The retractable baffle plate with the resulting variable cutting chamber enables the operator to adapt the cutters to the material to be processed at any one time. Respective knife systems also optimise the cutting result. A raised bowl edge prevents low-viscosity products from being discharged. The machines remain clean during the cutting process. A clear benefit in terms of hygiene.

Solutions for Hygiene and Safety

All units, such as the electrical control system and vacuum pump, are integrated in the machine stand of the VCM 200. The machine is operated and monitored via a centrally positioned touch panel. Maintenance work is reduced to a minimum due to the use of automatic central lubrication. In addition, the machine status is immediately readable via the operator control module. The continuous bowl drive

ensures a high level of variability and ideal feeding rate of the sausage meat without a backlog. Switch-off functions for temperature, bowl rotations and runtime offer the best conditions for safe production processes. As an added option, the software solution CutVision for quality management and CutControl for recipe management are available for all cutters in the Cutmix series produced by K+G Wetter.

Hygienic Sorting and Advanced Technology

As regards grinders too, K+G Wetter is constantly working on solutions that make meat processing more efficient in trade and industry. Like

all the machine solutions produced by K+G Wetter, the innovative angle grinders and mixer angle grinders E 130 mm / G 160 guarantee the highest possible hygiene standards and reduced workload in trade and industry. The new machine's USP is constituted by the direct access to the grinder hopper, the so-called "Easy Access" function. The spacious aperture not only makes cleaning easier but also ensures greater convenience when working. Ultimately, users can simply access the hopper, e.g. to add spices or to install and remove the mixing shaft and feeder worm.

Another clever detail is the sorting device on the K+G grinders and

mixer grinders. K+G Wetter has now designed its sorting device in such a way that both the manual and pneumatic device can be completely installed or removed in just a few seconds. This allows the user to clean the individual components particularly easily and thoroughly. The connection of the drive to the closing mechanism of the new sorting can be separated easily and without tools via a plug-in connection.



DELICIOUS MEALS, SUSTAINABLE TECHNOLOGY - MEET MICVAC AT SIAL



Truly fresh ideas are better experienced than explained. Micvac will exhibit at Sial, the world's largest food innovation exhibition, in Paris, France, 21-25 October, 2018. This is the perfect opportunity to see the Micvac method at work and taste the great flavours it produces.

Micvac has developed a chilled ready-meal production method that utilises in-pack cooking and pasteurisation in one continuous

process. Key to the process are the Micvac microwave tunnel as well as Micvac's patented packaging components: the Micvac tray and the unique Micvac valve. The method leads to reduced food waste, high levels of food safety, greater cost efficiency and significant energy savings all along the value chain.

Great Food and Good for the Planet

Micvac's own consumer research shows that consumers love the fresh, authentic taste of meals cooked using the Micvac method. They also love the ease and simplicity afforded by the Micvac valve which whistles when the meal has reached its ideal temperature in the microwave.

With its focus on sustainability, the Micvac method offers food manufacturers the advantage of producing high-quality ready meals that save energy and resources. This is due to less precooking and less cooking of food in automatic cookers or large-scale industry appliances. Furthermore, less water is needed for washing and cleaning as no wasted ingredients remain in containers. Micvac packages are also extremely compact which in turn leads to energy savings during transport.

Fresher, Tastier and a Longer Shelf-Life

The Micvac method enables shelf life of up to sixty days without preservatives compared to the



typical five-day shelf life for other chilled ready meals. This extended shelf life reduces spoilage in stores and at home while at the same time keeping food fresh and tasty.

Join us at SIAL

The Micvac stand will showcase our innovative method of producing and packaging chilled ready meals. Meet the Micvac team to experience the flavours and taste the quality.

SIAL

Hall 7, Stand C 309

www.micvac.com

TICHY TRADING
FOOD PROCESSING MACHINES

www.tichytrading.at

TEAM GB ANNOUNCED FOR WORLD BUTCHERS' CHALLENGE 2020

The six butchers who will represent Great Britain at the World Butchers' Challenge 2020 to be held in Sacramento, California, USA have been named.

WBC 2020 is set to be the biggest global butchery challenge in its history, with 15 teams expected to compete for the world championship title won by Ireland last April in Belfast.



In a special announcement at Dalziel's North West Butchers' Show in Chorley recently, it was revealed that all six representatives of Team GB who competed in 2018 will return to prove they are a cut above the world's best.

Team GB, called the British Beefeaters, has been named as Tom Wood (captain), Tom Wood Artisan Butchers; Michael Dufton, Knitsley Farm Shop; Mark Ramsay, Falleninch Farm Butchers, Stirling; Simon Taylor, Surrey Hills Butchers, Oxshot; Bryce

Lawson, McMurchie Meats, Hetton-le-Hole, County Durham and Jessica Leliuga, Ye Olde Sausage Shop, Oswaldtwistle, Lancs.

It was also announced that Team GB's support network for 2020 is expanding, with a new team manager Steve Derrick of Lucas Ingredients and master butcher Viv Harvey as new team coach.

Steve takes over from Dalziel's Danny Upson who becomes Chairman, whilst Keith Fisher returns as UK judge advising the team.

Danny Upson said: "We were very pleased to announce at Dalziel's Show that the team is staying together. They make an incredibly talented team who are all successful butchers in their own right.

"They worked phenomenally hard this year, the standard of entries was exceptional, and it was extremely close between the top five, so to raise the bar will be even tougher.

"But we'll be looking to push ourselves even harder, we're already planning for 2020 and we're out to prove our butchers really are among the best in the world."

WBC 2018 saw Great Britain take the coveted Best Beef Product title for its 'British Beef Cake', a split marrow shin designed for slow cooking in a casserole.

Of the 12 countries taking part, Team Ireland was crowned 'Best Butchers

in the World', with New Zealand and Australia taking silver and bronzemedals respectively.

Other competing countries included France, USA, Germany, Italy, Bulgaria, South Africa, Greece and Spain.

Meanwhile, Team GB is calling for entrants into the World Champion Butcher Apprentice & Young Butcher contests, which take place prior to the main event.

Entrants for the Butcher Apprentice challenge must still be enrolled in training with a registered training provider as of 1st March 2019.

And Young Butcher entrants must be under the age of 31 as of 1st March 2019.

Heats are expected to start in May 2019 with entrants working alongside Team GB in practice.

Danny added: "This is an opportunity of a lifetime for young butchers to join Team GB in Sacramento, and a chance to win the title."

The World Butchers' Challenge is designed as showcase of exceptional talent with the finest butchers being judged on technical skills, cookability of products, presentation, innovation and creative use of beef, lamb, pork and chicken products.

Team GB sponsors already signed up for 2020 are retail butchery specialist Dalziel, Lucas Ingredients, The Institute of Meat and The Worshipful Company of Butchers.

www.worldbutcherschallenge.com

MULTIVAC BUILDS NEW CENTER OF EXCELLENCE FOR SLICERS AND AUTOMATION SOLUTIONS

As part of an official ceremony, the Directors of MULTIVAC Hans-Joachim Bookstegers (CEO), Guido Spix (CTO and COO) and Christian Traumann (CFO) today turned the first spadeful of earth for the construction of a new building complex in Wolfertschwenden. It is intended primarily for the new Slicer Business Unit. The floor space of more than 17,000 square metres will also create 180 high-quality office work-stations as well as conference and function rooms, which will be capable of being used very flexibly. The investment amounts to around 35 million euros. Completion is planned for 2020.

"The new building complex is designed as an Application Center for our Slicing Solutions Business Unit, which is now seeing very encouraging development in our new business sector. In future automated packaging lines will be commissioned here as well," explains Hans-Joachim Bookstegers. "We have successively expanded our product range in recent years to include process equipment upstream and downstream of the packaging procedure. By founding the Slicer Business Unit, we have taken an important strategic step in the direction of 'Better Processing'."

The production space on the ground floor of the new Building 16 will be around 7,500 square metres. Building 17 will house the new Slicer Application Center as well as a reception area and an additional company restaurant, which will extend over two floors. In addition to this, a total of 180 high-quality office workstations will be created on the

third floor, while versatile conference and function rooms will be housed on the top floor.

In the Application Center the range of services on offer for slicers will be similar to those in the existing Training and Innovation Center (TIC), namely sample production and machine demonstrations as well as a wide range of training programs for the

the slicer, and right up to the actual packaging procedure itself. It will be possible to carry out individual trials with customers' own products as well as testing the slicing solutions for feasibility, output, return on investment, give-away and other critical factors."

A large number of guests took part in the ceremony, including Karl Fleschhut, Mayor of Wolfertschwenden. The



MULTIVAC slicers and slicer lines. "We have designed the Application Center in such a way, that our customers will find themselves in an environment, which reflects the real conditions in their own production sites," says Hans-Joachim Bookstegers. "There our customers will be able to experience the complete process chain live: this will extend from the demonstration of the various slicers handling a wide range of products, through to the presentation of different loading solutions downstream of

MULTIVAC Group has approximately 5,600 employees worldwide, with some 2,100 based at its headquarters in Wolfertschwenden. The production site in the Allgäu region of Germany currently comprises more than 72,000 square metres in total. In the early part of 2018 new production areas for the Traysealer Business Unit were completed, as well as additional office space for the Control Technology department, covering a total of around 4,000 square metres.

www.multivac.com

INDUSTRIAL AUCTIONS - A DEDICATED TEAM OF PROFESSIONALS

To get to know a company, the CEO or managers are often interviewed. However, after the first acquaintance at Industrial Auctions it seemed very clear that interviewing the whole team of every department brings more to the table than it was firstly expected. You do not often see such a close team carrying out and actually believing in the same value but definitely having their own individual points of view.



Industrial Auctions was officially established in 2010, when its current CEO, Mr. Ad van Kollenburg opened their doors to the online auctions. Focussed on the food and beverage industry they were determined to become market leaders and it has already shown that the online auctioneer is taking over territory in the industry.

In their head office, located in Eindhoven, the Netherlands, they perform their business activities. With a hall of 5,000 m2, next to the highway and near the airport they can effectively and efficiently fulfil their work. With an annual increase of auctions throughout Europe and a buyers network world wide the online auctioneer is proving itself valuable to the industry.

Q What Makes Industrial Auctions Unique?

"Going the extra mile" as naturally as this must sound nowadays, it is one of the Industrial Auctions core values to which we live up to", says Ad van Kollenburg. This is evident from the expertise in the F&B market, the service, the eye for detail and the professionalism from beginning to end.

The team of project managers agrees directly to this, "It is not only the auction itself, it is the detailed descriptions made for different lots with the big amount

of knowledge we gained through the years, the many pictures or even videos made of the machinery, personal meetings with our clients during the viewing days and the help we sincerely want to provide them with during the pick-up days. Moreover, not everything ends with the execution of the auction. For example, we also provide help to our clients and contractors after-sales by arranging disassembly, loading and transporting the purchase all around the world. Here the Head of Administration, Jack Frederiks, smiles and states that Industrial Auctions is by no means a rigid company, "We will always strive - no matter how - to be the best of service to our clients."

The team of logistics points out and confirms that unburdening both clients

and contractors is a key element, "We even make sure the location is broom clean left behind."

The Marketing Manager, John van Berlo, also mentions that "the informality of the company and the sober down-to-earth attitude contribute to the valued openness and transparency of the online auctioneer."

Q What is a Memorable or Worth Mentioning Moment for the Company?

"Only yesterday a client of ours from Brazil was paying us a visit to view their already bought machinery and to arrange transport for it. Clients are people you do not always have the privilege to meet up with. They can



**Industrial
Auctions BV**





show up at your door by appointment or surprise and we always like to have them over, even if it is only for a tour in the Industrial Auctions building”, says John van Berlo. “But what I remember most is a phone call, which once I had with a client in the last second of the closing of a lot when they placed a bid on. Once the time had passed, I heard not only the relief in our client’s voice but also the cheering of their employees in the background because they have won the machine.”

One of the project managers, Jeroen, describes a moment of the ending of an auction, where several companies just kept bidding on the one lot left. “The time continued to be extended each time with 5 minutes. As a result I

sat there for 2 hours straight beholding it from the side lines.”

Both Ad van Kollenburg and one of the project managers, Frank van de Velden, mention the different companies they have organised auctions for. “It is our daily work but it is also good to look back at what we have accomplished together; some great auctions for renowned companies like Vion, Friesland Campina, Nestlé, 2 Sisters and many more.”

Q How is the Company Improving Their Professional Work Over Time?

“Actually, listening to our clients and contractors and acting accordingly to them”, states the project manager Pim van de Velden directly. Additionally, Ad van Kollenburg says, “We will never act as if we already know everything. In a matter of fact, we learn from everyday practice. We do not shy away from problems and although we have drawn up rules and conditions, we do not hide away behind them. We want honest trades and try to make sure we meet that the best way we can.” “In addition, the expansion of the network also plays a major role without losing the sight of the quality”, says John van Berlo. We rather put effort in clients who commit themselves for years of

cooperation, instead of a ‘single score’. Improvements can always be made. We can refer to the website, flyers and advertisements. Another great example is the movement to our new head office here in Eindhoven. Even our online offers improve visibly over time.”

Q What Makes Industrial Auctions the Company to Put Your Effort In?

Once this question has been asked, there is an immediate clear answer from all of us: “the team”. Ad van Kollenburg compares it with a football team, “Everyone has their own specialty, something in what they excel. Bringing those qualities together make the ingredients for a team that not only respects each other but also brings out the best in each other.” Besides, the team spirit and the industry itself is also mentioned, as well as the world wide network they maintain; the diversity the work brings them and the fact they can let people experience the world of online auctions. It certainly gives them a high level of energy.

Q What Do Your Future Clients and Contractors Need to Know?

Industrial Auctions is not for sure a regular online auctioneer. The team wants you to experience the participation at online auctions in a particular and inventive way. Getting familiar with their working methods, the casual atmosphere, their high level of commitment and enthusiasm confirms the belief that cooperation is more than worthwhile.

“Industrial Auctions would like to get the job done for you while leaving you carefree. We will do that by providing transparency, openness, clear communication, integrity and clarity towards each other. We have hands-on mentality always following the safety rules, without hidden agenda or any nonsense”, says Ad van Kollenburg.

www.industrial-auctions.com



SEAFOOD PROCESSOR VEGA SALMON A/S IN DENMARK TURNS TO SEALPAC'S SUSTAINABLE FLATSKIN® SYSTEM

These days, more and more skin packs are conquering the retail shelves around the world. The advantages of the skin packaging system are obvious: securely sealed under deep vacuum, food products have a significantly longer shelf life and can be presented in a much more attractive way. By launching FlatSkin®, SEALPAC now offers a revolutionary solution that combines the sought-after skin packaging process with a plastic reduction of up to 75%. Danish seafood processor Vega Salmon A/S is one of the early adopters of the FlatSkin® packaging system for its hot-smoked salmon products.

True Innovation and Optical Highlight

SEALPAC's recently developed FlatSkin® system combines an attractive product presentation and extended shelf life with a highly sustainable use of packaging materials. Instead of common plastic skin trays, the FlatSkin® system uses cardboard carriers that allow for double-sided printing, hence offering optimal space for product information whilst providing unique branding opportunities. Some manufacturers may even dispose of their traditional cardboard sleeve.

A highly transparent barrier skin film fixates the product directly onto

the flat cardboard carrier, which has been coated with a polymeric protective layer. This layer provides stability to the cardboard and forms a reliable barrier against grease, moisture and oxygen. FlatSkin® packs are perfectly suited to vertical presentation (e.g. hanging



SEALPAC's FlatSkin® system at Vega Salmon in Denmark. Perfectly suitable for an attractive vertical presentation at retail.

or standing), making them true eye-catchers at retail. In addition, the tight-fitting skin film provides an attractive 3D effect that highlights the content to the fullest.

Renewable Materials, Separate Disposal

The FlatSkin® system uses cardboard carriers made from bleached or

unbleached fibre, which can be printed on both sides by means of low-migration printing inks and varnishes. After taking out the product, the thin polymeric layer is easily removed from the cardboard to allow for separate disposal. As such, the FlatSkin® system achieves a plastic reduction of up to 75%, hence providing an answer to the food industry's increasing demand for sustainability. FlatSkin® is suitable for a wide range of product segments, such as fresh meat, cheese, poultry and seafood.

Early Adopter in Denmark

Renowned Danish seafood processor Vega Salmon A/S (www.vega-salmon.dk), with its head office in Kolding, is one of the first users of the FlatSkin® packaging system for its hot-smoked salmon products, which it supplies under different brand names to various retailers. The products

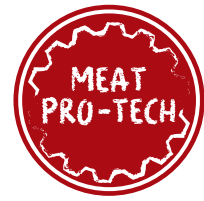
are manufactured on a SEALPAC A10 traysealer with 8-impression tooling for cardboard carriers measuring 260 x 130 mm. Each carrier has a double-sided print and hanger hole, which, combined with SEALPAC's unique OnTrayCut system, allow for an attractive vertical presentation at retail.

www.sealpacinternational.com

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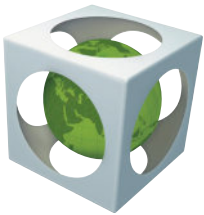
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THE FIVE PILLARS OF SUSTAINABILITY



The Schur Flexibles "rethink" label stands for packaging optimised with regard to sustainability

Dr. Martin Berlekamp/Max Wolfmaier: Under the guiding principle of "rethink", Schur Flexibles Group is presenting a sustainability programme for greater environmental and climate protection.

The recent European Plastics Strategy, developed by the EU Commission, is the result of an assessment of the global challenges facing the environment and our climate. The Commission has pinpointed the reduction of waste from plastics through increased recycling and the development of alternative packaging as a long-term solution to some of these challenges. Sustainability has therefore become a subject of paramount importance within the packaging sector. In addition, consumers increasingly value sustainability as a reason to buy or not to buy a product. Dr. Martin Berlekamp, Head of Sustainability and Max Wolfmaier, Business Development Manager at Schur Flexibles, talks about possible solutions currently being explored by Schur Flexibles Group.

Q You have recently announced the Schur Flexibles sustainability programme. Could you explain what this involves?

Berlekamp: The transition from linear, single-use material flow to a cyclical economy is an ecological necessity. The European Commission's aim is to drive change with its new strategy.

As a flexible packaging specialist we are committed to environmental stewardship, with the responsibility of creating packaging and processes that are as sustainable as possible. By 2025 most of our products will be recyclable, made of renewable raw materials or utilising a minimum of raw materials, and in this we will be market leader. Our 5R programme is dedicated to upholding these goals.

Q What does 5R refer to?

Berlekamp: This refers to the five pillars on which the Schur Flexibles sustainability concept is based.

It begins with responsibility. We take responsibility for our products and our company. We advocate sustainability within the Group and in our sphere of influence. We are currently working on many projects to make our flexible packaging products more efficient and ecological. We also carry out a lot of research and development to identify sustainable packaging solutions that are easy to implement. Additionally, we are an active partner of the SAVE FOOD and CEFLEX initiatives.

Recycling guarantees the most efficient utilisation of raw materials and packaging materials. This leads to a long-term reduction in the production of plastics. We carry out research to continuously improve recyclable packaging solutions as well as optimise resource recycling.

Replace refers to the replacement of non-sustainable materials and packaging concepts with sustainable ones.

The concept of reduction means that in order to save resources we strive to reduce as much as possible the quantity of materials used. Naturally,

product protection and functionality are still of utmost importance.

The renewal pillar refers to packaging materials that are made of renewable raw materials. This includes packaging materials made of paper, non-woven fibre or plastic film made of 100% renewable raw materials.

The packaging solutions developed as a part of our 5R approach and "design for recycling" concept, are all marked accordingly with our rethink logo to highlight our range of sustainable products.

Q Could you give us some examples of products that were developed using this approach?

Wolfmaier: Our current product range already includes numerous recyclable products that contribute to sustainable resource management. Many of our products are made of mono materials and are therefore recyclable. However, not only mono materials are recyclable – materials from the same group of plastics can also be recycled together. One such group of plastics are polyolefins, to which PE and PP belong. This also enables the recyclability of product combinations such as our SkinFreshTop combined with our C-base bottom films.

We have developed a mono PET lidding film for mono APET trays, thereby



Max Wolfmaier,
Business Development Manager

enabling mono PET packaging. The BarrierTop(re) is highly machinable and is available with a peel or an antifog option.

We are particularly proud of not only having received the the German Packaging Award 2018 in the sustainability category but also being awarded with the German Packaging Award in Gold 2018 at the ceremony at Fachpack for our reclosable FlexiClose(re) packaging concept. The Gold Award rewards innovations from the circle of Packaging Award winners that set very special trends, find important answers or act as a pioneer in an entirely new way. Used in conjunction with Schur Flexibles C-base, FlexiClose(re) provides a completely recyclable, high-barrier reclose solution. What makes FlexiClose(re) so innovative



At FachPack FlexiClose(re) was awarded with the German Packaging Award 2018 in Gold after having received the German Packaging Award 2018 in the category sustainability.

is the polyolefin-based lidding film which, when used in combination with C-base, forms a recyclable system.

For portion packaging we have developed a special polypropylene rigid film that provides an excellent alternative to PVC or PS due to its outstanding machinability.

Our SuperThin laminate film and BarrierTop X 35 are further products in our sustainability portfolio. These new films are amongst the thinnest in the market. They offer material savings

as well as reducing the amount of resources required for storage and transportation, thus leading to a more efficient use of resources all along the value chain.

Last but not least, we increasingly use renewable raw materials such as paper, waxed paper (using classic wax and eco wax), PE from renewable resources (bioethanol) and sugar-based films.

Q Should packaging not be avoided as much as possible?

Berlekamp: There has been much discussion about the sustainability of packaging and its avoidance. At Schur Flexibles we take a 360-degree view of the subject. On its field-to-fork journey, a product goes through a multitude of production, storage and transport processes. All of these utilise substantial amounts of resources of which only around three per cent are due to its packaging.

At the same time, packaging plays a vital role in product protection and therefore leads to resource efficiency and climate protection. When you have longer shelf life and reduced food waste, less of the resources that went into producing the end product are wasted.

In the pharmaceuticals sector packaging is essential to ensure product protection. This is why one of our goals is to produce packaging using as little material as possible while still guaranteeing high levels of quality and functionality. It allows us to find packaging solutions that offer maximum product security but with minimum impact on the environment.

Q What long-term goals do you have in relation to sustainability?

Berlekamp: Our commitment to greater environmental and climate

protection is a demonstration of our responsibility to the world in which



Double Winner FlexiClose(re): German Packaging Award 2018 in Gold and German Packaging Award 2018 in the category sustainability.

we live. Additionally, we intend to keep our market-leading position in the European packaging sector.

Sustainability is a criterion that is increasingly influencing consumers when they decide whether to buy a product or not. This has led to retailers demanding innovative packaging solutions from the packaging industry.

Our innovative, sustainable products are designed to boost our customers' success, allowing them to reach their own sustainability goals. The ability to advertise products by highlighting the sustainability of their packaging leads to significant market advantages.

It is important to remember that packaging is more than just a covering. Packaging should provide optimal protection, have innovative features and create eye-catching point-of-sale optics that lead to sales. In order to always be one step ahead, we engage in extensive research at our state-of-the-art research facilities in Finland, Germany and Denmark. Here we offer advice, research and collaboration, combining commerce with ecological concerns. We offer our customers close partnerships as we are convinced that the only way of mastering global challenges is by working together.

KLÖCKNER PENTAPLAST LAUNCHES 'POSITIVE PLASTICS PLEDGE' TO HELP SHAPE A SUSTAINABLE FUTURE

From helping in the fight against food waste to creating a circular economy, there are many positives about plastic packaging that go largely unnoticed in the public eye. At Klöckner Pentaplast (kp), we have embarked on a Positive Plastics Pledge to drive change away from the negative towards the positive. It is time to change how society interacts with plastic packaging at every stage of the meat value chain. As a global leader in packaging solutions, we have a key role to play.

Anyone with a little knowledge of packaging innovations will appreciate the value and benefits that plastic packaging holds for consumers, as well as for producers, packers and retailers. With a focus on sustainability, high-performing solutions like vacuum skin packs and super lightweight mono-material trays have kept meat, poultry and seafood fresh and safe, have extended shelf life and become less resource-intensive to produce.

However, waste and ocean-bound litter are global issues commanding increased attention, and kp understands and shares the concern. We also see this attention towards the industry as a positive, one that needs to be harnessed to help transform how society thinks about and handles plastics and litter.

Currently, society tends to view packaging as nothing more than 'waste'. This misconception continues to influence attitudes and behaviours around plastics, when it is actually a valuable raw material, with superb sustainability credentials. Plastic as a material is extremely versatile and flexible and can be easily recycled with the correct facilities to support the recycling stream.

Transforming the Plastics Value Chain

At kp, we see it as important to communicate the facts. But this is not enough on its own. As well as shaping a positive dialogue, we want to lead transformation. We want to see plastics understood, valued and handled as the important circular economy resource it really is.

We are realistic about the long-standing issues associated with the life cycle of plastics, but we are not content to leave the status quo unchallenged, in our own business or beyond. It is

why we are actively addressing every touchpoint in the circle, from our design and manufacturing processes to end of life. One thing is certain: everyone with a stake in the future has a part to play, as no single entity in the value chain can achieve the necessary step change towards greater sustainability on their own.

For this reason, collaboration and engagement form the basis of our newly launched Positive Plastics Pledge. It is an ambitious roadmap that restates our long-term aspirations clearly and cohesively. Through it, we are taking our plans to another



level and using our voice to call for a future with less waste and better recycling of plastics.

Leading From the Front

Sustainability is no passing trend or a new initiative at kp. We already offer truly sustainable packaging solutions and have been working on a wide range of initiatives for many years, including optimising resource use, designing for recyclability and using a significant amount of recycled materials. In 2017, we used more than 140,000 tonnes of post-consumer recycled polyester (rPET) in our products globally – an equivalent weight of 85,000 cars.

Our award-winning Rfresh® Elite tray is a revolutionary packaging solution and an example of the breakthrough

innovation needed to transform the value chain. Made with up to 95% rPET and fully recyclable after use, this mono-material tray for meat, poultry and fish is super lightweight and also benefits from high clarity, adding to shelf appeal and driving consumers' positive product perception and intention to buy.

Significant investment in product design and advanced engineering skills have been applied to the development of Rfresh® Elite, which is designed to assist meat retailers and packers across Europe to comply with rigorous eco-taxes designed to cut the amount of packaging entering the waste stream.

Providing both a drastic improvement in packaging integrity and the possibility to recycle after use, Rfresh® Elite can deliver substantial savings and an end of life circular economy for PET products.

In production, the Rfresh® Elite system provides greater throughput and a higher sealing speed for faster, consistent operations (up to 10% line throughput); it reduces converting costs; and frees up capacity. Additional benefits are higher sealing strength compared to the industry standard and up to three times better leakage performances.

Design and technology innovations remain key to delivering outstanding performance alongside sustainability improvements. Going forward, we are looking to develop new, more sustainable materials, some of which are already in the research pipeline. Scientific research is a critical part of ensuring we invest in the right solutions.

Engaging and Collaborating

We understand our obligations need to go further than what we design and manufacture. We already invest to educate and encourage others, but that will only take us so far.



We encourage other players within the circular economy to do their bit. For example, we use expanded polystyrene (EPS) for some of our products, including absorbent fresh meat trays. EPS is a very sustainable material. It is protective, lightweight and resource-efficient. It is also easy to recycle. Yet the necessary collection and recycling infrastructure is not readily available in the UK, because it is so lightweight and a challenge to collect in large volumes.

Another example is the collection and recycling of PET pots, tubs and trays. PET is a valuable raw material and should not go to waste. Not enough is being collected, sorted and recycled despite there being a high-end market for rPET. We need incentivised mechanisms and investment in infrastructure to dramatically improve this situation.

With our Positive Plastics Pledge, we are calling for joined-up thinking – from raw material suppliers and plastics producers, food processors, retailers, brands and consumers to local authorities, waste management, recyclers and governments. kp is committed to playing its part and continuing to collaborate and engage. Only through a coordinated, considered approach can the industry and society create a truly sustainable future for plastic packaging in the meat, poultry and seafood value chain.

The Klöckner Pentaplast Group is a global leader in rigid and flexible packaging, printing and specialty solutions, serving the pharmaceutical, medical device, food, beverage and card markets, among others.

www.kpfilms.com

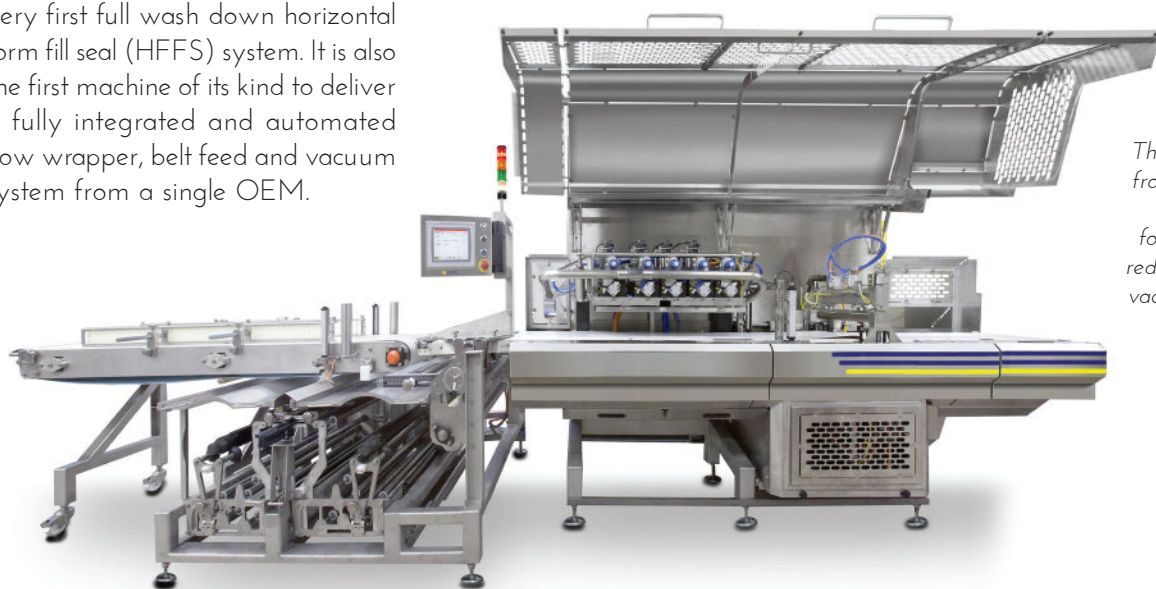


ANSWERING CALLS FOR MEAT PACKING ON A ROLL

In order to minimise the likelihood of food poisoning bacteria cross contaminating meat and associated products, ILAPAK has designed the very first full wash down horizontal form fill seal (HFFS) system. It is also the first machine of its kind to deliver a fully integrated and automated flow wrapper, belt feed and vacuum system from a single OEM.

If meat factories wanted to pack fresh cuts in a vacuumed flow wrap format, they usually had to buy three

food particles, water droplets and other contaminants could accumulate. Being a high protein food that's particularly



The Delta 6000 BM from Ilapak, answers packer's demands for an easy to clean, reduced maintenance vacuum meat sealing system.

Answering packer's demands for an easy to clean, reduced maintenance vacuum meat sealing system, the Delta 6000 BM brings industry leading levels of product integrity to the busiest fresh meat factory and packing lines. By offering complete IP65k-rated protection, with full washdown capabilities, even of the sealing elements, it delivers peace of mind to meat processors and fulfils retailer hygiene mandates too.

Even though most meat packers and processors today prefer to pack in a vacuumed flow-wrap format to reduce the risk of spoilage and cross contamination, for large meat cuts ILAPAK's engineers observed that many factories continued to buy in expensive pre-made shrink bags. The reason claims Tony McDonald, Director of Sales and Marketing at ILAPAK, is until now the options for vacuum packing whole hams, poultry, legs of lamb or beef joints from a rollstock were extremely limited.

separate units - a flow wrapper, a multi-belt infeed and a vacuum system. In most instances these were supplied by three different OEMs, each with separate service contracts.

Tony continues: "Because these systems usually featured equipment that was bolted together, there were more recesses and areas where meat juices,

vulnerable to biological contamination, the risk of bacteria thriving was a high threat to product integrity and a meat processors reputation. What's more, maintaining three separate machines meant any labour savings from automating meat vacuum packing were swiftly negated."

Alternatively, the process was done manually, which Tony notes is far from ideal. "Processors



With top speeds of 50 packs per minute, the Delta 6000 BM is especially suited to lines running a selection of meat products of varying weights and dimensions.

today want equipment that is efficient and hygienic, and a reduction in manual handling. We are seeing a real drive across the meat industry to reduce manual intervention, as it introduces the risk of contamination. By reducing the number of product touchpoints you naturally cut the risk."

With a top speed of 50 packs-per-minute, the fully automated HFFS unit presents a much more economic and hygienic alternative. The unit incorporates a full box motion sealing head for creating exceptionally strong hermetic seals that can easily withstand a vacuum cycle. And because the machine automatically cuts each pack size individually to each product's dimensions, it is especially suited to lines running a selection of meat products of varying weights and dimensions.

Aside from reel film being a lower cost solution, the Delta 6000 BM can enhance retail shelf presentation with the vacuum process shrinking the film to fit the product. For added flexibility, film can be dispensed from the top or bottom of the machine. Bottom reel mountings aid manual handling of heavy 50kg rolls, whereas companies with high hygiene standards choose top level film holders where there's no risk of floor splash.

Extending Meat Shelf Life

In a recent WRAP report¹, the fresh meat sector was identified as one of the largest producers of manufacturing waste, with meat, poultry and fish accounting for approx. 18% of the avoidable 870,000 tonnes that's classed as manufacturing waste. Extending


the shelf life of meat products by as little as a day could help to slash this avoidable waste bill considerably suggests Tony.

"Vacuum packing helps enormously to reduce meat waste, especially beef and lamb as it helps to prevent oxidation and spoilage," highlights Tony. "Our Delta 6000 BM repeatably delivers a strong hermetic seal. Loss of vacuum as a result of poor seals tends to be the main source of leakers which speed up meat spoilage and affect product integrity," he adds.

By isolating the electrical cabinet from the main frame of the system, ILAPAK has also removed the high risk item from potential damage during high pressured washdowns.


www.ilapak.co.uk

¹ http://www.wrap.org.uk/sites/files/wrap/Estimates_%20in_the_UK_Jan17.pdf




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www.globalgap.org/aquaculture

PLANT & MEAT: PROTEIN IN HARMONY

By Henk Hoogenkamp

Part 2

No Self Reliance

Increasing meat consumption has manifested itself in China, losing its near self-sufficiency in soybeans. Chinese soybeans imports have steadily increased and now represent about 85 percent of consumption. Similarly, corn imports are now also at the beginning of the soy-trajectory as compared to the past when China was self-sufficient.

Chinese adult consumers took in about 1860 calories per day in 1971, rising to 2800 calories by 2011. In 2016, this number rose to about 3100 calories daily. For the same years, in 1971, the average Chinese consumer's animal protein intake was only 125 calories daily, increasing to almost 700 calories daily in 2011, which is expected to rise to 760 calories in 2018.

The Chinese consumption of plant foods has risen by approximately 30 percent since 1955, while meat and dairy consumption has increased by about 45 percent over the same period. It is clear that Chinese food consumption is being transformed rapidly into a typical American diet. Most likely, the conclusion is that the Chinese demand for meat and dairy will remain very strong in the years ahead.

Physically Growing

A country in rapid transition, such as China, is usually confronted with opposite medical observations. Improved nutrition has made Chinese people markedly taller on average since 2000, with women having grown more than men. The average height of fully-grown Chinese men

increased 4mm to reach 167.1 cm while women grew by an average of 7mm to 155.8 cm.

These are significant growth numbers and mostly the result of increased intake of animal protein, such as meat and dairy. However, with more prosperity also come signs that China is shifting to typical Western chronic diseases. Smoking, excessive alcohol use, insufficient physical exercise, as well as high sodium and increased fat consumption are the main causes. About 30 percent of Chinese adults are overweight, and more than one in ten are obese, a number that is quickly reaching Western standards. In plain numbers, China has the largest number of obese people in the world: 46.2 million men and 49.4 million women (2018).

As Chinese citizens generate more disposable income allowing to buy more meat and processed foods, there still lingers a lack of nutritional education. Subsequently, relatively few Chinese know about the importance of a balanced diet and the importance of regular physical activity.

Sustainable Livestock Farming

There is no question that the sustainable production and consumption of animal-origin foods is the biggest environmental challenge. The Western world, spoiled with high levels of meat availability at relatively low prices, cannot point fingers at developing countries since they also increase consumption of these premium high-impact animal protein-based foods and meat products. After all, many developing countries have always been deprived of

eating quality meat and enjoying dairy foods. With the economic standard in developing countries improving, it is very likely that the consumption of animal origin foods will rise exponentially through to at least 2050. In fact, it is projected that the world's meat and dairy consumption will increase by at least 50 percent as compared to the 2018 numbers.

Needless to say that the sharp increase in demand for dairy and meat



products has raised environmental and ecological concerns. The UN estimates that livestock production is responsible for about 15 percent of global greenhouse emissions. It is clear that meat is a relatively ineffective source of protein, and it would be smarter to convert crops directly into food, instead of feeding and raising animals first. However, animals should be part of a sustainable and ecologically balanced agricultural infrastructure, since its products contribute to a nutritionally sound and good-tasting healthy diet.

Although food production accounts for about 8 percent of greenhouse

gas emissions, in general terms, animal-based foods are responsible for more greenhouse gas emissions than plant-based foods. For example, while beef accounts for only 4 percent of the weight of available food, it contributes 36 percent of the associated greenhouse gasses. Cattle –which has a long outgrow cycle- does not efficiently convert plant-based feed into muscle meat and milk. Growing feed often involves the use of fertilizers and other substances through energy-intensive processing methods.

Cows, in particular, are not very efficient at converting feed to muscle protein for human consumption.

Only one of every 25 calories a cow ingests becomes edible beef: a very inefficient feed-to-yeild ratio. Compared to other farmed and harvested animals like hogs, poultry and fish, beef produces five times more heat-trapping gasses per calorie, takes 11 times more water for irrigation, and uses 28 times the land. Also, cows burp major amounts of methane, a greenhouse gas that is significantly more potent than carbon dioxide (Journal Proceedings of the National Academy of Sciences, July 21, 2014). Methane is the greenhouse gas most often associated with the depletion of the ozone layer.

Pork, poultry, dairy and eggs all have comparable environmental footprints. US government data calculate air and water emissions and how much water and land are used in the lifetime production of the harvested animals: beef, pork, poultry, dairy, and eggs. This calculation gives a rather accurate environmental cost profile of different meats and other types of animal proteins.

Water Diversions

Erratic weather patterns can quickly wreak havoc on harvest yields. It does not take much to create an imbalance when projected crop yields of wheat, corn, soy, rice and potatoes do not meet the needs of the world population. The pressure on resources is intensifying, not only due to soaring populations but also because of desertification, droughts, floods, land grabbing, and lack of GM progress.

Prolonged spells of drought, like those happening in California 2010-2015 -or Cape Town, South Africa in the beginning of 2018- ultimately require mandatory regulation to reduce water use. By



denying irrigation water, farmers are forced to leave agricultural land unplanted. Farmers who don't have access to surface water may decide to increase the amount of water pumped from limited groundwater supplies, though this option can only go so far until dead zones start to occur. Limited fresh water supply is a wake-up call and may require drastic action in order to curb water use for landscaping, lush lawns, golf courses, shower, car wash, industry, and food production. The pressure on food security is further compounded by the availability of suitable agricultural farmland, biofuels, climate change, clean energy, and manpower.

Precision Farming

It is estimated that the world's supply of vegetables and fruits falls 22 percent short of global nutritional needs, and the shortfall is expected to worsen. Massive indoor farms, such as hydroponically, or aquaponically-grown crops, to cultivate greens and some types of fruit might be the answer to the global nutrition gap as an alternative

novel method to conventional farming. Indoor vertical farming, as developed by Plenty's botanists, presents a compelling solution to a series of connected problems like the scarcity of arable land, clean water shortages, and a farming population that is aging, as fewer young people are attracted to this industry. In addition, indoor farming systems can be set up close to the large mega-cities, so there is no need for ultra-long transportation routes to get produce to the supermarket shelves. Shortening the length of the supply chain is a real advantage in freshness, taste and economics.

The Dutch have pioneered much of the indoor growing or greenhouse technologies and have created systems for lettuce and other leafy greens, as well as fruits that yield as much as 10 outdoor harvests and cut the need for chemicals by some 95 percent.

"Precision farming" is the answer to sustainable agriculture using fully automated and uniquely engineered drones, tractors and

equipment to provide detailed readings on water content, soil condition, nutrient needs and growth progress of the individual plant. As an example: the use of chemical pesticides has almost been eliminated and the dependence on fresh water for crops reduced by a staggering 90 percent, compared to conventional outdoor farming. Climate-controlled farms managed by a new generation of computer savvy and visionary farmer entrepreneurs have propelled the Netherlands as a world authority on science driven plant pathology, which is able to deliver massive amounts of nutritious, tasty and freshly-harvested fruits and vegetables.

Food Depression

The dynamic change of basic food prices cannot only stress economies all over the world but may also exacerbate hunger and spark political unrest in poorer countries. Food costs must be taken into perspective: The cost of growing food accounts for only 15 percent of the final consumer price. The balance goes to processing, packaging, marketing, transportation, and profit.

How much longer can political inaction continue, if even highly affluent countries like the US, Germany and the UK have millions of people living off food stamps and receiving emergency food supplies from food banks? Another 2 billion+ people will populate Earth by 2050. Every single day, 210,000 more mouths need to be fed. The challenges ahead to manage food security are immense and very complex.

Food and Land Waste

Food waste is an environmental, economic and ethical problem of huge proportion. It is difficult to



comprehend that large parts of the globe still is suffering from food shortage, while in the affluent societies food often is considered an afterthought.

Consumers in the developed countries are by far the largest component that dumps food, even if it is still in good condition for consumption. Fruits and vegetables are the most wasted category, particularly within households, though it is true that lots of (imperfect) fruit and vegetables don't even get past the farm gate. Consumers need to be made aware that improving food management will not only benefit the environment, climate, and human health, but also reduce municipal waste in terms of increased use of biodegradable and renewable packaging.

However, first and foremost, the mindset of consumers in developed countries should be reprogrammed in which unsold food products remain available for safe redistribution. For example, manufacturers and supermarkets now frequently donate food to local charity through organized programs.

US Government data estimate that nearly a third of food available for consumption in the US goes uneaten. Probably, similar numbers are true for many EU countries. Consumers don't understand the impact of food waste and most of them underestimate how much food is thrown away. Although consumers are now more attuned than ever to the purity of ingredients, organic, natural and locally grown, most consumers unfortunately don't care (yet) about the environmental impacts of food waste.

It is estimated that in affluent societies, food waste makes up more than 20 percent of what's

in landfills, which is a significant source of methane gas as it rots (US Environmental Protection Agency/2015). Methane is a potent greenhouse gas that contributes to global warming. The wasted food accounts for about 2 percent of greenhouse gas emissions, not to mention huge freshwater losses,

cropland and fertilizer inefficiencies (John Hopkins -Public Health, PLOS Journal). A possible future solution could be the development of technologies to convert methane in biodegradable plastic.

It is indeed true that a very large amount of food is wasted between



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To conclude: plant-based nutrition is more sustainable with less greenhouse gas emissions, less use of clean water, selective elimination of animal sourcing, and increased land utilization. Slowly but surely, plant-based foods will achieve considerable consumer popularity and wellness status. No doubt, the protein paradigm will shift to increased plant protein formulated foods. Do not however, make the mistake of ruling out meat. Meat is not only a valuable source of high-quality protein but also a universal favorite across most societal cultures and will continue to dominate meal solutions for many years to come.

Although meat and dairy consumption in developing countries will skyrocket, plant protein is the new normal. For the sake of health and eco-sustainability, the developed and affluent world has no other choice but to embrace these changes.

About the author:



Henk Hoogenkamp

Former President DMV USA
(a Friesland Campina company), Senior Director Strategic Technology Dupont Protein.
Board member RIBT.
Author and Publicist.

harvest and consumption. Bad-harvest, poor storage, hoarding, political maneuverings, processing, the point of sale inefficiencies, and consumer waste are all guilty parameters as to why food does not reach actual consumption. It can, therefore, be stated that the greater the affluence of society, the higher the food waste. For example, on a worldwide basis, it is estimated that nearly 25 percent of bread and cereal products waste occurs in high-income countries. Of 263 million tons of meat produced globally (2017), more than 20 percent is lost or wasted, of which about 8 percent on average in most regions happens during processing and distribution. (FAO, September 2017).

Seen from a different angle, American consumers waste food that equals roughly 30 percent of the average daily calories. This amounts to about 150.000 tons of food daily or some 430 grams per person each day. These staggering food waste numbers correspond with the use of 12 million hectares of total US cropland, and 15.9 trillion liters of irrigation water each year.

It seems that if consumers, who opt for a healthy diet by choosing more fruit and vegetables, are inclined to waste more food. Yet, these healthy fruit and vegetable

diets typically use less cropland than lower-quality diets, though higher in irrigation water waste and higher use of pesticides.

Plant-based Solutions

A new approach is needed to determine how food is grown and shared, while assuring affordability and ecological sustainability. Apparently, one can still argue that the world is capable of growing sufficient food for future generations, and that inequality is not a matter of sufficient food but rather of shameful waste and unequal sharing.

Feeding valuable plant protein to animals with the objective of converting into animal protein - meat, milk and eggs - can be considered waste to a certain extent. To sustain healthy diets for current and future generations, it is essential to capture the abundant nutritional value of plant protein ingredients -such as rice bran- that remains largely wasted.

All these variables make it imperative to put more emphasis on the use of plant protein ingredient solutions, such as to formulate sustainable and healthy foods like "plant meat" as well as hybrid meat products. The world can ill-afford to continue business as usual, knowing that about 83 million more people will

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INNOVATION TO ENJOY

Industry and Consumer Trends in The Savory & Ready Meals Sector



photo: FRUTAROM Savory Solutions

Harald Bender, Technical Support at FRUTAROM Savory Solutions

"An increasing number of consumers are giving weight to low environmental impact and sustainable origins when choosing their food."

Q Which consumer trends are driving development in the savory/ready meals sector?

Country-specific flavors and dishes are still in vogue. International cuisine, especially Asian and oriental meals, continues to enjoy widespread popularity. The reason for this is obvious: the world has grown smaller, we've become familiar with international cuisine in our travels, and we want to bring these memories back to our own kitchen. Those who don't have enough time, or don't want to put in the effort, opt for ready meals that convey an authentic flavor - based on original recipes or made with raw ingredients from the original countries.

Q How important is clean & clear labelling becoming in ready meals and marketing around sourcing and sustainability?

An increasing number of consumers are giving weight to low environmental impact and sustainable origins when choosing their food. However, it is not only the natural food trend that is leading more and more people to opt for products with "more streamlined" ingredients lists: allergies, food intolerances and reports of food scandals are doing the rest. Also, in the convenience cooking sector, products without flavor enhancers, allergenic ingredients or artificial flavors are in high demand. With the Pure range, FRUTAROM Savory Solutions relies on pure unadulterated flavor. The seasonings and combinations from the Novapure, Pure Plus and Pure Spice

FRUTAROM Savory Solutions is constantly creating new, innovative ways to satisfy current trends, break new ground and tantalize the taste buds under the three brands of WIBERG, Gewürzmüller and Gewürzmühle Nesse. This also applies, of course, to the ready meals sector and convenience cuisine. Harald Bender, an technical support at the company, answers a few questions on the topic of the hour:



product ranges contain unprocessed raw ingredients, the most essential functional ingredients - and nothing else. These can be used for a wide variety of products, giving them "clean", original enjoyment with a full-bodied flavor.

Q There is a major trend towards meat reduction and the use of alternative proteins. How do you expect this to pan out and how are you innovating from this regard?

The long-prominent veggie trend shows no signs of stopping. Ready meals without meat, but with a high nutritional value and cleaner declaration are extremely popular. In addition, the focus is now no longer on meat replacement products but rather on actual meat alternatives, which appeal to a wider target group - not just vegans and vegetarians, but especially flexitarians as well as the modern consumer who has little time but still wants to eat healthily.

Q Which flavor trends hold the most potential going forward in savory foods? Are there any specific regional tips that we should look out for?

Here we have to mention the most obvious trends, Asian and oriental cuisine, with all their aspects and flavors. Spices and herbs play a crucial role in these dishes, as they are largely responsible for the authentic flavor of a dish. This fact is becoming more and more widely accepted within the ready meals sector.

Q What is the role for stealth reformulation and how has impacted

your efforts in helping manufacturers cut back on the salt, sugar and fat?

Salt, sugar and fat are essential building blocks of our diet and occur in all (food) cultures in the world. For example, salt is the original seasoning ingredient and preservative agent. Excessive consumption of all three is widely known to lead to life-threatening illnesses, for, as with everything, too high a dosage can be toxic. Today, however, we are focusing more and more on the

beneficial effects and value of salt, sugar and fat as essentials and luxury foods. By adopting a thoughtful and conscientious approach to seasoning, we can avoid consuming too much salt and even sugar: spices and herbs can take their place in the dish and provide, accentuate or enhance the desired flavors. All the FRUTAROM Savory Solutions brand product ranges include a variety of harmonious mixtures, such as the low salt content option which cancels out the increased use of refined table salt.



photo: FRUTAROM Savory Solutions

MEAT EXTENSIONS - PRODUCTS WITH ANIMAL AND VEGETABLE COMPONENTS

Products With Reduced Meat Content as Alternatives to Vegetarian and Vegan Meat Analogues

By Herbert Weber

Meat extensions containing components of both animal and vegetable origin have convincing sensory characteristics, and offer benefits in terms of animal welfare, environment, climate, sustainability and health. As a result, it can be assumed that in the future they will gain importance in Germany as well as elsewhere. In formulations, this means using less meat and more plant protein and vegetable ingredients; the technical possibilities provided by additives also come into play. In the growing segment of alternatives to conventional meat products, the meat extensions discussed in this article are a step in the right direction. They are also an alternative to other meat analogues currently being researched.

Among the important concerns facing modern society are CO₂ reduction, resource conservation, raw material scarcity, climate change and environmental protection.

The resulting developments will cause changes in society in the coming years, and influence processes and products in business.

Changes are always engines for dynamic growth markets. The implementation of new concepts also affects the viability of companies, since innovation creates growth. The world belongs to those who innovate. This is true in all industries, not just engine and

automotive technology but also in food. Nothing is more constant than change, as the ancient Greek philosopher Heraclitus said.

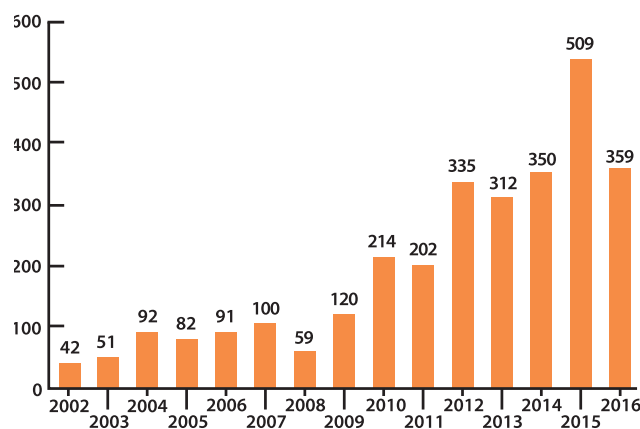
Market Analysis

"Meat is strength" – this slogan from 1967 by agriculture marketing company CMA reflected the attitude of many consumers for decades, especially in Germany. But now there seems to be a shift. Meat production

Since 2014 these products have seen steady growth (Fig. 2), while meat eating has stagnated in some parts of Europe. From June 2016 to May 2017 sales of meat substitute products in Germany totalled 209.1mill. euros, per market research institute IRI. In this country, established meat producers have brought movement to the market. Among the pioneers of meatless products are companies that formerly made only meat products. Today they have a lead in meat

analogues. Earlier, meat-free was a niche category and the products mostly did not have the requisite sensory properties; they were sold almost exclusively in health food retail. But today supermarkets and other food retail offer vegetarian and vegan meat analogues, often placed right next to meat products. These meatless alternatives are typically integrated into normal meat product lines without much structural change. They are generally additions to existing

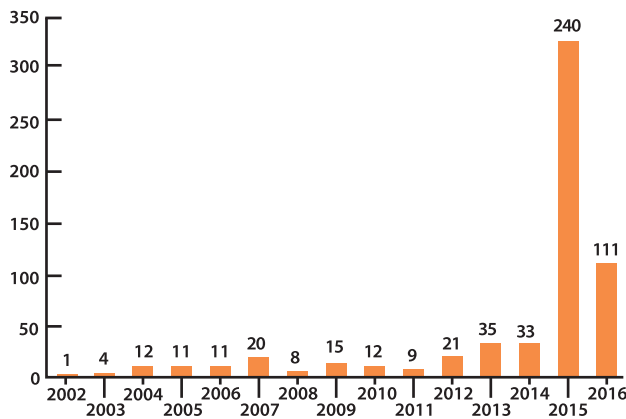
product lines, and in advertising are often presented in the same way as conventional meat products – although they are far removed from traditional German sausage culture. In addition to the pioneer and market leader Rügenwälder, there are other companies that have jumped on the vegetarian and vegan bandwagon. Can this be sustained or will it only be temporary? It remains to be seen how this development will pan out.



Source: Innova NPD

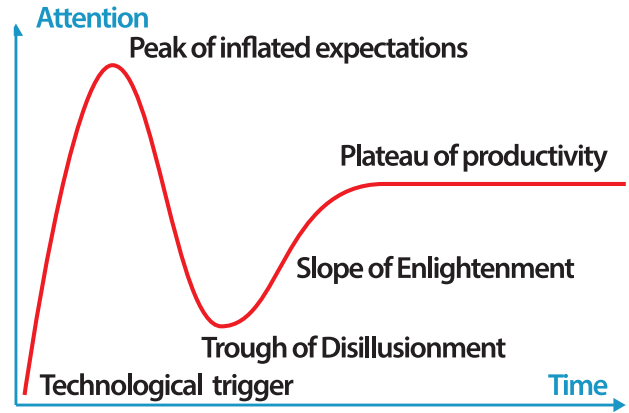
Fig.1: Product launches in Europe (excluding Germany) in the substitute category like meatless sausages and other alternative products

and consumption are coming under criticism, and perceptions of animal products have changed. People are looking for alternatives to current meat production methods, especially in view of the growing world population. For some years the vegan and vegetarian product category has been growing. The trend to eating exclusively vegan or vegetarian started in EU countries outside Germany (Fig.1), but has now reached Germany.



Source: Innova NPD

Fig.2: Product launches in Germany in the substitute category



Source: Gartner Inc

Fig.3: The five phases of the Hype Cycle according to Gartner Inc

The "Hype Cycle" is often cited in the context of new technology or product introductions. The term comes from the IT industry and was coined in 1995 by Jackie Fenn. The basic hype cycle has five phases, based on the amount of attention a new product gets. The cycle is shown in Figure 3 and explained in Table1.

Trend Analysis and Further Development

Following their successful start, vegetarian and vegan meat substitutes seem to be experiencing a market saturation. Die Welt and Spiegel Online reported that in Germany the market has been shrinking since the summer of 2016, based on the latest figures from Gesellschaft für Konsumforschung (GfK). The initial euphoria seems to have worn off, and repeat sales are not brisk. Obviously, the desire for meat is not that easy to switch off. Vegan sausage doesn't taste as good as many consumers expected. So has the veggie boom peaked? If so, why? Obviously, meat substitutes have not been able to come up to expectations in terms of flavour and texture. What's next? What trends are on the horizon? Are there alternatives? Might there be a middle way?

Meat Extensions as Alternatives to Vegetarian and Vegan Products

According to food trend researcher Hanni Rützler, meat substitutes are a helpful transition, but not the solution. The meat extensions category is an alternative to vegetarian and vegan products that have reached a certain market share and then stagnated. Meat extension products contain both animal and plant-origin components. They have better sensory qualities than vegetarian and vegan products, since there is a certain amount of meat in them. They are not yet addressed in guidelines, and there are as yet no regulatory mandates. They are their own product category. Products with reduced meat and added vegetable components can be considered hybrids. In technology, a hybrid is a system that combines two technologies. There are successful examples in all kinds of industries. For example, for a long time, metal and plastic were considered competitors in industrial products, but those days are over and today the different strengths of metal and plastics are combined. At the same time, there is room for further innovation. "The best of both worlds" is the tenor of the advertising for such products. As another example, mixed products combining butter and vegetable

oil are an established and growing category in spreads. Table 2 shows other examples of innovation with hybrid products outside the food industry.

Meat extensions are right for consumers who have a moderate attitude towards eating meat. They don't want to go entirely without meat or meat products, but would still like to do something for animal welfare and their own health. Market researchers term this group "flexitarians".

Nuremberg market research firm GfK is of the opinion that there are about seven times as many flexitarians as there are households with at least one vegetarian. According to market research firm TNS Infratest, 56% of Germans said they eat flexitarian, i.e. more than half of Germans are flexitarians. This would appear to indicate that flexitarians will have much more influence on the market success of meat alternatives than will true vegetarians or vegans. According to GfK, flexitarians buy four times as many substitute products than non-flexitarians. Food with both meat and plant components harmonise with the recommendations of the German Nutrition Society (DGE), which recommends a reduced meat and sausage consumption of no more than 300 to 600 g per week.

Tab. 1: Hype cycle phases, and what happens in them

No.	Phase	Description
1	Technology Trigger	A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.
2	Peak of Inflated Expectations	Early publicity produces a number of success stories – often accompanied by scores of failures. Some companies take action; most don't.
3	Trough of Disillusionment	Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investment continues only if the surviving providers improve their products to the satisfaction of early adopters.
4	Slope of Enlightenment	More instances of how the technology can benefit the enterprise start to crystallise and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.
5	Plateau of Productivity	Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off. If the technology has more than a niche market, it will continue to grow.

Source: Gartner Inc

For many consumers, including flexitarians, the flavour of food is clearly a decisive criterion for repeat purchase and appreciation. And this is where current meat substitute products disappoint many customers. The sensory profile may also be unaccustomed. According to TNS Infratest, 27% of Germans have considered reducing the amount of meat they eat, but have not followed through on it. Meat extensions are a possibility for this relatively large group as well. The manufacture of these mixed products was promoted at IFFA 2010. The possibility of more sustainability was mentioned as a benefit, with the use of more plant and less animal protein. In this context, it was mentioned that in 2050 there will be about 30% more people on the earth, that alternatives to animal protein are a part of EU policy in the area of sustainable food production, and that less greenhouse gas is emitted in the production of these foods (WEBER, 2010). Many children and adults don't like vegetables and eat much less of them than the German Nutrition Society recommends. Making meat extensions with vegetables is an attractive way to increase the consumption of vegetables and thereby fibre. This is positive from a health perspective, as is the added value of

using plant protein. Meat extensions are also an alternative to other meat substitute products currently being researched, mostly with ground meat as inspiration. At this year's Green.

Week in Berlin, burger patties made of insects aroused great interest at the booth of the Federal Association of the German Food Industry. Numerous visitors tasted these meat alternatives made of ground beetle larvae and vegetables. In many Asian countries insects like grasshoppers, mealworms, larvae and tarantulas are on the menu. Insects are protein-rich and also inexpensive. It remains to be seen whether these multilegged creatures will join algae as part of the western diet. The situation is similar with "in vitro" meat, which is meat grown in a laboratory from animal stem cells. Here again it is an open question whether the burgers on our plates will come from petri dishes. Philosopher Richard David Precht is optimistic. At Meat Vision Day 2017 in Frankfurt, he predicted that in twenty years meat production will have changed dramatically, saying that the meat industry faces profound shifts. He is convinced that mass production at cheap prices does not have a future (PRECHT, 2017). That we are in a time of change is evident from the fact that

companies are being founded with the goal of minimising the negative consequences of meat production for the environment. Microsoft founder Bill Gates and Google Ventures have invested in the US startup Impossible Foods, which develops vegetable foods in a lab that taste like meat and bleed like real ground beef. The company gives as a reason the fact that current meat production methods are not viable in the long term. The company examines animal products at the molecular level and then selects specific proteins and nutrients from plants to reproduce the flavour of meat and dairy products. The future of meat-eating was also discussed at this year's world economic summit in Davos. The business and political elite determined that today's meat production is not sustainable. Possible ways to improve it are to replace animal protein with plant protein, use artificial lab-grown meat, and implement precision farming in large scale.

Current world meat production is 229 mill. t. According to a report by the UN agriculture organisation, by 2050 that will climb to 456 mill. t. FAO experts fear that this will bring major environmental problems. Meat extensions with components of animal as well as plant origin are not just high in sensory

Tab. 2: Examples of innovations with hybrid products outside the food category

Hybrid piano	A musical instrument that combines the advantages of the acoustic and electric or digital keyboard. It brings together two different sound sources in the truest sense of the word.
Hybrid car	Hybrid drive systems combine two different energy storage and propulsion systems. As a rule, hybrid cars have a petrol engine and an electric motor. The first hybrid vehicles were steamships with sails.
Hybrid rocket motors	Mix of solid and liquid fuel propulsion.
Hybrid heating	Combination of two heaters, such as gas or gas-oil burner plus electric heat pump.
Metal-plastic	Components made of both plastic and metal, used successfully in the automotive industry, communications, electronics and electrotechnics, and dental technology.
Car bumpers	Combinations of plastics and metals for more efficient production, weight savings, and better handling.
General	In technology, a hybrid system is one in which two technologies are combined.

Source: Weber

quality, but also positive in terms of animal welfare, the environment, the climate, sustainability and health.

As regards protein content, meat extensions are absolutely the equal of traditional meat products. These new products contain protein of high biological value and take into account the composition of the proteins, i.e. the amino acids they contain. Animal proteins consist of 20 amino acids, some of which the human body can synthesise. Those it cannot must be supplied by food. These are the essential amino acids. The biological value of proteins is based on their content of essential amino acids and ranks proteins in how well they meet human nutritional needs. High quality plant protein can have the biological value of pig protein (PEIN, 2016).

An important argument in favour of meat extensions is also the fact that fewer animals need to be slaughtered to supply the raw materials. This is another reason that this product category can be expected to become more widespread here in future. In other countries, recipes are already calling for less meat and making use of the possibilities afforded

by additives. In England, the firm of Debbie and Andrew's presented a line last year for flexitarians that contains both animal and plant components. This is a welcome development, and constitutes an image shift.

Sustainable Solutions for Meat Products

In the growing segment of meat alternatives, the Hydrosol company in Ahrensburg, Germany, has developed various formulations for making meat extensions. These stabilising systems make it possible to use considerably less meat, opening up the possibility of products made of meat and vegetables, for example. This enables conservation of valuable meat resources, which is a step in the right direction for the environment. With these ingredient combinations it is possible to use formulations that give high-quality products with lower meat content. The spectrum of these stabilising systems ranges from low-cost to premium qualities. These individual all-in solutions from a single source make it possible to produce foods that combine enjoyment, convenience and healthy nutrition.

About the author:



Herbert Weber

is a retired professor. Until April 2015 he taught food and packaging technology at the Beuth University of Applied Sciences in Berlin. He was an instructor at the University of Hohenheim, and is co-founder of the ifp Institute for Product Quality in Berlin. A butcher and food technologist by profession, prior to entering academia he worked in the seasonings and additives industry. Today he is active as a senior consultant.

Source:

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VEGAN ALTERNATIVES TO MEAT AND SAUSAGES

Modern System Solutions Combine Enjoyment, Convenience And Healthy Nutrition

More and more consumers are giving up meat. The main growth drivers in this category are flexitarians, who are reducing their meat consumption for health or ethical reasons. The demand for alternatives to sausage and meat is rising accordingly. The success of modern vegan and vegetarian products is due to the fact that they offer consumers familiar flavours and textures despite not containing meat.



Hydrosol has developed individual stabilising and texturing systems for a wide spectrum of meat alternatives. The latest innovation is the "Sundogs". An all-in compound for vegan sausages for eating hot, and is based on plant proteins from sunflower and peas. "Sunflower proteins are completely new in the manufacture of vegan meat alternatives," explains Product Manager Florian Bark. "It's based on sunflower flour with high protein content, which is made by a special process during oil pressing. We use this very high-quality, attractive

plant based protein in our new all-in compound, Sundogs."

Like the name indicates, this stabilising and texturing system is used to make vegan hotdogs. Naturally it can also be used for vegan alternatives to all other types of bockwurst (Hot Dogs) as well as bratwurst. The final products have a very authentic texture and bite. They also have a special flavour profile, with a pleasant, slightly nutty sunflower note that is an excellent fit with the product. It enhances the typical sausage seasonings and smoke flavour very well and has no after-taste, as is often the case with soy and legumes.

Another plus point for marketing is the declaration benefits. This all-in compound is free of allergens like soy and gluten, as well as of egg and dairy components. Like all

Hydrosol vegan sausage alternatives, Sundogs are also phosphate- and nitrite-free. Naturally the compound contains no flavour enhancers. A further health advantage is that the vegetable sausages contain no cholesterol. Plus, sunflowers from domestic or regional sources have a low climate and resource footprint and are non-GMO.

In addition to sunflower and pea protein, the all-in compound contains hydrocolloids and starch. Special seasonings give each sausage variety its own individual flavour profile. Trendy new flavours can also be easily implemented as desired by the customer. The plant-based sausages are made using conventional cutting and filling equipment.

Besides Sundogs Hydrosol offers all-in compounds for vegetarian and vegan cold cuts and for alternatives to boiled sausage and ground meat. They deliver familiar bite, authentic mouth feel, appetising appearance



and pleasing basic seasoning. They also have clear health benefits – the resulting meat substitutes have much less fat and a favourable fatty acid profile, and are free of cholesterol, nitrites and phosphates.

Vegan Burger Patties Quickly and Easily Produced

More and more meat producers are adding plant-based products to their portfolios. The burger product category is very trendy right now, and there is a lot of movement internationally with some spectacular announcements of product innovations. However, in many cases implementing these involves very high investment in new product plant. But it doesn't have to be that way, as Hydrosol shows. Its new stabilising systems makes possible the simple, safe production of burger patties and many other products on existing production lines.

Vegan burger patties are based on texturates that give the final product a hamburger-like texture. HydroTOP High Gel 30 provides these texturates with the necessary binding. "The system is based on a tailored hydrocolloid fibre

combination of emulsifying and stabilising components," explains Florian Bark. "First an emulsion is made with HydroTOP High Gel 30, oil and water, that stabilises the texturate. This gives a compact, formable mass comparable to bound ground meat. This meat substitute mass can be seasoned to taste and produced on conventional machines like cutters or mixers, and then shaped as desired in normal moulding machines.

HydroTOP High Gel 30 is suitable for binding all normal texturates on the market. In addition, Hydrosol offers all-in compounds for the simple production of ground meat substitutes. Florian Bark comments, "there are significant quality differences among texturates, which have a major effect on the texture of the final products. We have tested many texturates, refined them and taken the raw materials into our portfolio. That means customers can get the whole package of texturate plus binder, or just the binder to use with their own texturate." Investments



in complex extrusion technology, which can quickly run into the seven figures, are not necessary. Hydrosol's all-in compounds contain all the ingredients needed for making vegan burger substitutes – texturate and binder plus flavouring, seasoning and colour. The final products feature classic meat flavour and product-specific aroma. The product portfolio includes soy-wheat as well as soy-free texturates.

These all-in compounds can be used to make a wide range of meatless products, from burger patties, meatballs, köfte and cevapcici substitutes to vegan shish kebab. Meatless nuggets, schnitzel, filet strips and fish sticks and other breaded products are also possible.

The ground product mass is freeze-thaw-stable and can also be used in ready meals. "The final products can be pre-cooked so that before eating they only need to be heated up in the oven," explains Florian Bark. "If the burger patties are frozen raw they can go directly into the frying pan. That's a big advantage, especially for short order restaurants." The vegan köfte and meatball alternatives are also sterilisation-stable, so they can be canned as ready meals without problems.

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Erik Blom, Managing Director at Meyn

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Q *How did you evaluate this year's edition of VIV Europe?*

It is the perfect platform to meet with our customers from Europe,

the Middle East, Africa and beyond. Our customers are competing at the highest level, every day. That is why we were excited to present our next generation solutions at 15,000

bph with maximum food safety. We met the right people, most with serious investment plans, and shared with them our new, unique solutions. Moreover, the customers and the press were highly positive about our booth concept and how we communicated our innovations.

Q *Why is Sharing Data so important? What are the benefits of sharing and digitizing it?*

The quality of the final end-product depends on many factors. Big Data is not about just one piece of equipment; it's a new approach to how processors can bring together everything that goes into producing the finished product. Software programs enable previously scattered information to be monitored in real time and combined into integrated reports. Processors can now share their data with farmers for flock optimization and with their customers to maximizing traceability.

Q *Each poultry producer strives for higher capacity. What is efficient for one manufacturer may not be seen as effective for another. Is there a need for multiple types of one and the same product or their modification?*

As every country has its own regulations and the size of the birds may vary from country to country, there is a large number of variations in equipment. For example, the permitted line speed in the United States is 9,000 chickens per hour, while in the European Union there is no limitation on line speed. Meyn introduced the line speed standard of 15,000 chickens per hour. Apart from this, regions and customers often want their own specific solutions because of the differences in consumer preferences. Some of the Meyn equipment like



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the ones for breast deboning are modularly designed. The customer can decide himself how to configure the equipment, and it can grow along when capacity needs to be increased.

Q What do you consider to be the greatest achievement or breakthrough of your company?

Over the years, Meyn has introduced a large number of revolutionary innovations, including the first automatic eviscerator, Apollo, in the early seventies, automatic rehangers in 1980, the renowned Meyn Maestro in 1993, the Rapid breast deboner and recently poultry processing at 15,000 bph. And there is more to come soon!

Q How do you develop the relationship between innovation and sustainable development?

Meyn puts great effort into research and development to create the most sustainable solutions. Since 1959 Meyn has always produced high quality and durable equipment with a technological lifecycle of up to twenty-five years. Therefore, Meyn equipment is always a sustainable investment. Most processing machines are standardized to the maximum possible so, without effort, some parts can also be reused for other machines, thereby resulting in an additional reduction in waste. With every new development, critical parameters like water consumption, energy use, animal welfare, and employee ergonomics are top of mind for Meyn and our customers.

Q When did you issue your first sustainability project? Which is your best sustainability project? How do you advance sustainability?

In practice, it is the customer's decision to invest in sustainability or not.

What we do is offering sustainable solutions like our scalding principle. In the past this was done with a "jacuzzi" type scalding tank; the air was mixed with water resulting in escaping warm air and evaporation of water. The new Meyn Jet stream uses a water flow instead of water with air bubbles. The new design creates an energy saving of more than 16%. While seemingly a small improvement, when applied at a throughput of 15,000 birds per hour, it really can make a difference.

One of the most recent sustainable projects is a completely new poultry processing plant on Jamaica island. Meyn is heavily involved from design and construction to the operational phase. The poultry processing plant is part of a larger \$30 Million investment plan that includes energy production and renewal, water purification and sustainable waste management.

Q What are your key business solutions for sustainable water management, infrastructure, logistics and traceability of materials across the value chain? What is the sustainable future of your company?

One of the most recent sustainable projects is a completely new poultry processing plant on Jamaica island. Meyn is heavily involved from design and construction to the operational phase. The poultry processing plant is part of a larger \$30 Million investment plan that includes energy production and renewal, water purification and sustainable waste management.

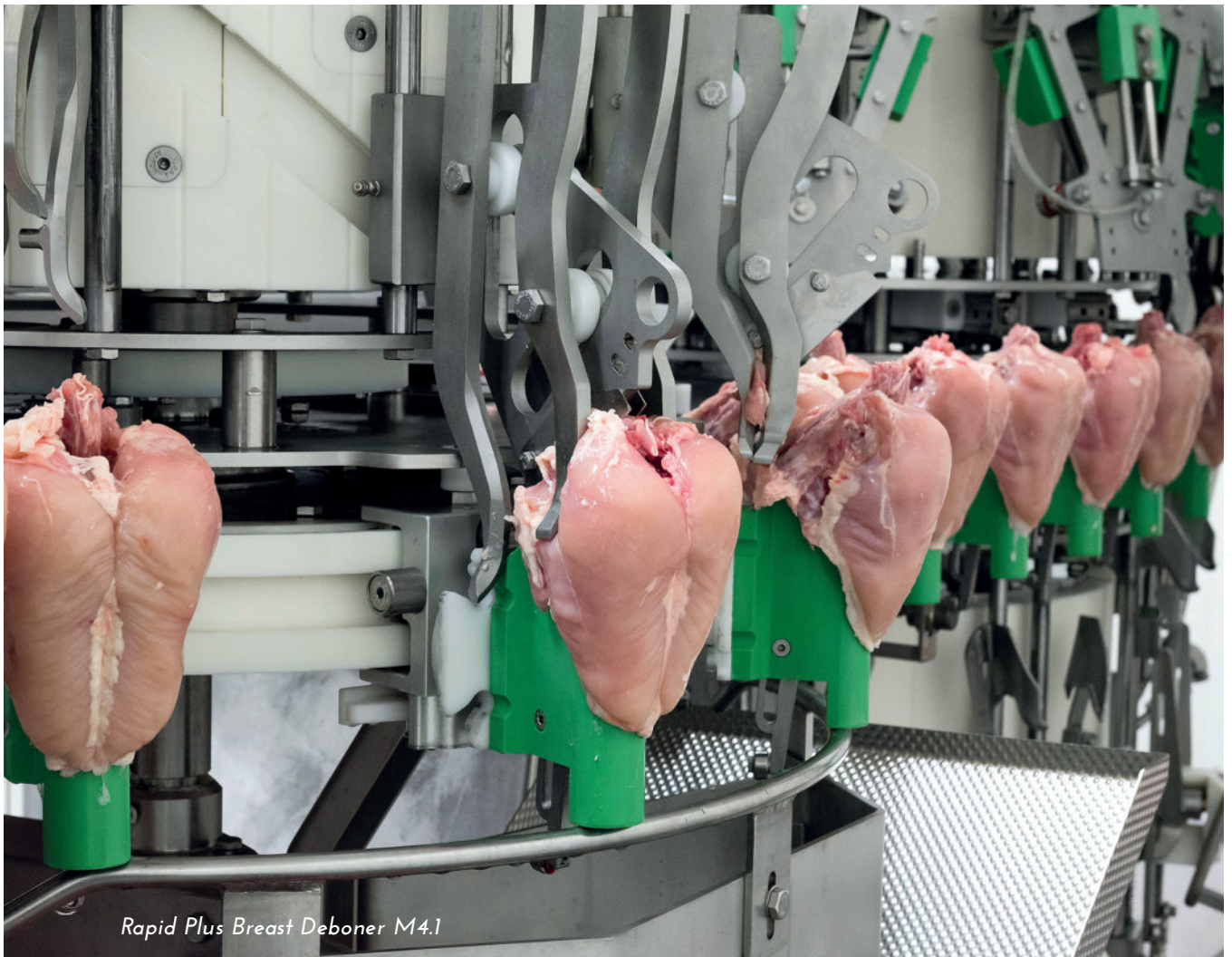
Oxford University has recently published an article in Science, stating that from all meat sources poultry meat has the lowest impact on the earth. Meyn looks confident towards the future.

Q Do you think that the meat chain transparency will lead to a social appreciation of increased animal welfare?

For some, meat chain transparency won't make a difference. They will always disapprove of the consumption of meat. But for the majority of consumers, meat chain transparency can make the difference between trust and distrust. Those who want to know more about the origin of what they eat, now have the option to acquire that information. Meyn stands for animal welfare, transparency in the treatment of animals is the benefit of each consumer and the industry.

Q How has your experience as a Director of Human Resources led you to your present position? What part of being a Managing Director do you personally find most satisfying? Most challenging? What do you like most about working in this industry? Is it easy or difficult to manage a 59 year-old company?

For me, my HR job was about creating value for the organization, which has to lead to added value for our customers. Human Resource management is all about crafting an environment where employees are inspired, motivated and empowered. Being a Managing Director is not that different. It is my job to create value for our customers, through innovation, sales, production, and service. The big commonality in both positions is the fact that whatever we do for our customers is done by people, and there is my HR background of great value to me. For me, the most satisfying part of my job is if all things come together and we can successfully serve our customers.



Rapid Plus Breast Deboner M4.1

The biggest challenge leading to a 59 years old company is to make people aware that yesterday's success is no guarantee for tomorrow's success. This requires a continuous effort to drive innovations and surpass the customers' expectations.

Q *What was your company's greatest accomplishment this year? Do you have a certain pattern of progress?*

"Due to the rising demand for poultry meat, changing customer preferences, our customers have been forced to increase production volumes. In response to the growing demand for even higher line speeds, Meyn has

upgraded its machines, to increase the poultry processing line speed, achieving high levels of quality and maximize yield. So, Meyn is very proud that this year alone, machines for at least three new 15,000 bph high-speed processing plants will be delivered." Another successful product which is getting even better is our Rapid breast deboner. It is not only the fastest breast deboner but also the most robust, efficient and gives the highest yield with the minimum labor involved.

Q *How are you going to celebrate your 60th anniversary next year?*

"The year 2019 marks the 60th anniversary of the Meyn company.

This stands for 60 years of knowledge of, experience, service, and dedication to the worldwide poultry industry. When Piet Meyn Senior started it in 1959 in the small town of Oostzaan, the Netherlands, no one could have imagined that it would become the company it is now. That's why we want to celebrate this special year together with the local community. Additionally, we will organize a high-level congress for the industry to talk about the future of poultry processing. The day will be interactive with plenty of opportunities for participants to talk with Meyn engineers to share ideas."

SANACEL® ADD 042

THE HEALTHY ALTERNATIVE TO PHOSPHATES IN THE MEAT INDUSTRY

Abstract

Based on current discussions about the increased consumption of phosphates coming from food additives the company CFF realised trials with a fibre blend as an alternative to phosphates made from natural and renewable raw materials and evaluated the results. The test series has been performed with ring bologna (German Lyoner). The phosphates have been exchanged by the dietary fibre blend SANACEL® add 042.



Nutritional values, microbiology and textures were analysed. The sensory properties were assessed by a trained expert sensory panel. By analysis no difference between the conventional ring bologna and the ring bologna with fibres could be determined in regards to taste, texture, odour and appearance.

1 INTRODUCTION

The phosphate content of industrially processed food is much higher than that of natural food, because polyphosphates are commonly used as an additive in industrial food production. In the European Union, sodium phosphate (E 339), potassium phosphate (E 340), calcium phosphate (E 341), and salts of orthophosphoric acid diphosphate

(E 450), triphosphate (E 451), and polyphosphate (E 452) can legally be added to food as preservatives, acidifying agents, acidity buffers or emulsifying agents. Phosphate salts are also added to many foods as stabilizers or taste intensifiers. Fast food and ready-to-eat processed foods are the main contributors to today's rising dietary consumption of phosphate. Because of the increased use of food additives, the estimated daily intake of phosphate containing food additives has more than doubled since the 1990s, from just under 500 mg/day to 1000 mg/day. It is clear that phosphorus-containing food additives significantly increase the phosphorus load from food sources of protein. The phosphorus content is about 70% higher

than foods which did not contain additives. Phosphate is thought to cause vascular damage and to induce aging processes. (Benini et al. Extra - Phosphate Load From Food Additives in Commonly Eaten Foods: A Real and Insidious Danger for Renal Patients. Journal of Renal Nutrition, Vol 21, No 4 (July), 2011: pp 303-308)

Phosphate additives have an important part in the meat industry, where they are used as preservatives. Especially processed meat and poultry products are rich in phosphates, the phosphate content is nearly twice compared to the natural product because of added phosphates. (Sherman & Mehta: Phosphorus and potassium content of enhanced meat and poultry products:

implications for patients who receive dialysis. CJASN 2009; 4: 1370-3).

Unlike naturally occurring phosphate in food, which is only partially absorbed by the gastrointestinal tract (40-60%) due to the fact that they are mainly organically bound phosphate esters, phosphate additives are soluble and be absorbed more easily. This creates a special concern because this extra amount of phosphorus is almost completely absorbed by the intestinal tract. This extra-phosphorus burden dramatically worsens the phosphate balance. (Ritz et al. Phosphate Additives in Food - a Health Risk. Dtsch Arztebl Int 2012; 109(4): 49-55)

On request of the European commission Request Nr. EFSAQ- 2013-00311, the European Food Safety Authority (EFSA) issued an assessment of the publications on health risks related to phosphate additives in food. As a result of the evaluation, the following recommendations were published:

Phosphoric acids and phosphates (E 338-341; E 343) as well as polyphosphates (E 450-452) for the usage as food additive will be new assessed by EFSA with high priority until 31st of December 2018 according to regulation (EG) Nr. 257/2010. In this context, EFSA has stated that the maximum levels of phosphates in meat preparations should be reduced. (European Food Safety Authority. Assessment of one published review on health risks associated with phosphate additives in food. EFSA Journal 2013;11(11):3444)

CFF GmbH & Co. KG, one of the world's largest producers of natural and functional fiber concentrates, regularly provides the food industry

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with new ideas for improving the health and quality of food. In search of an alternative to phosphates, CFF has developed a fiber blend of natural and renewable resources specifically for the elimination of phosphates in boiled sausages. In addition to the high functionality, special attention was paid to texture and sensorial technology. The new blend SANACEL® add O42 consists of highly soluble fiber from the seeds of *Plantago ovata* (better known as psyllium) and insoluble fiber of the bamboo plant *Dendrocalamus asper*.

2 ANALYSIS AND METHODS

Absolute comparability in appearance, taste/mouthfeel, consistency and bite are essential requirements for new products. In order to prove that the ring bologna without stabilizers corresponds to a standard sausage with phosphates, extensive sensory tests and texture measurements were carried out. Microbiology and nutritional values were also analysed.

The recipe of the ring bologna was provided by CFF GmbH & CoKG and can be shared upon request. The phosphate alternative SANACEL® add O42 is a functional fiber blend with outstanding quality:

- * fiber content > 90 %
- * clean label, without E number
- * bright color
- * neutral in smell and taste
- * high water binding
- * texturing properties

SANACEL® add O42 is easy to process. The mixture is added in dry condition instead of phosphate and other stabilizers to the bowl chopper. The dosage is 0.2-0.4%.

Investigations were carried out using the following parameters and procedures:

Nutritional Values

The nutritional values were calculated on the basis of nutritional tables and nutritional databases.

Microbiological Stability

it was investigated:

- * aerobic plate count according ASU L 00 00-88, DIN EN ISO 4833
- * enterobacteriaceae according ASU L 00 00-133, DIN EN ISO 21528-2
- * lacto bacterias (aerobic) according ASU L 06.00-35, DIN 10109
- * mesophile sulfite reduced Clostridia's according ASU L 06.00-39, DIN 10103
- * spore-forming bacteria (aerobic) according Baumgart/Becker 2003

Sensory Preference Tests

The ring bolognas were subjected to a sensory quality test by a trained experts panel from the Landesinnungsverband des Fleischerhandwerks Thüringen e.V. (State Guild Federation of Butchers Trade Thuringia e.V.). The tests were conducted in the context of the public tender for the 22nd sausage test of the Landesinnungsverband des Fleischerhandwerks Thüringen e.V. as a blind tasting according to product-specific testing schemes.

In order to obtain a comprehensive evaluation spectrum, 15 samples of ring bolognas without stabilizers but with the fibre blend alternative were submitted. Thus, 15 different expert panels have tested and evaluated the sausage.

The rating was a 5-point system where 1 is the lowest point and 5 is the highest possible point (0 would mean it is not assessable).

Each product feature was rated with different weighting factors:

- * outer appearance & condition was rated with factor 1
- * appearance, colour & composition was rated with factor 3
- * consistency was rated with factor 2
- * taste & odour was rated with factor 4

The given points were multiplied with the weighting factors and the sum of these results were divided by 10. This resulted in the calculated quality number, which was awarded according to the following criteria:

Quality number	5.0 points	4.50 – 4.99 points	4.00 – 4.50 points
Award	Gold medal	Silver medal	Bronze medal

A gold medal is awarded only if all parameters are 100% fulfilled

A gold medal is awarded only if all parameters are 100% fulfilled.

Texture Analyser

For the additional texture analysis the texture analyser TA.XTplus 100 of Sable Micro Systems was used. Based on fundamental and empiric data the texture analyser simulates a process that analyses the firmness or bite of the product. The texture is measured with a measurement body that encounters the surface of the sausage with constant speed. The measurement body is a standardized cylinder with a surface of 25 mm diameter (DIA CYLINDER LAP; 25 mm). The peak value is reached when the ring bologna breaks apart. The parameters of the measurements are weight and time. The peak value conforms the highest weight and therefore the highest resistance that means the highest bite/texture.

	standard	without stabiliser
energy	269.7 kcal/100g	268.90 kcal/100g
fat	24.50 g/100g	24.50 g/100g
saturated fatty acids	9.78 g/100g	9.78 g/100g
protein:	12.35 g/100g	12.35 g/100g
carbohydrates	0.83 g/100g	0.83 g/100g
of that sugar	0.83 g/100g	0.83 g/100g
dietary fibres	0.00 g/100g	0.26 g/100g
salt	1.91 g/100g	1.66 g/100g

Table 1: Nutritional values in 100 g

parameter	method	result	unit	guide value	warning value
total aerobic bacterial count at 30 °C	ASU L 00 00-88, DIN EN ISO 4833	4.0 x 10 ²	germs/g	5x10 ⁴ DGHM[F01]	–
Enterobacteriaceae	ASU L 00 00-133, DIN EN ISO 21528-2	< 100	germs/g	100. DGHM[F01]	1.0x10 ³ . DGHM[F01]
Lactic acid bacteria (aerobic)	ASU L06.00-35, DIN 10109	< 100	germs/g	5.0x10 ⁴ . DGHM[F01]	–
Mesophilic sulfite-reducing clostridia	ASU L06.00-39, DIN 10103	< 100	germs/g	100. DGHM[F01]	1.0x10 ³ . DGHM[F01]
spore former (aerobic growing)	Baumgart/Becker 2003	< 100	germs/g	–	–

Table 2 Microbiological Investigation
Valuation base DGHM[F01]: Mikrobiologische Richt- und Warnwerte zur

3 RESULTS

Nutritional Values

The nutritional values comply with the nutritional values of a standard ring bologna. Table 1

Microbiological Stability

The microbiological stability was analysed from SYNLAB Analytics & Services Germany GmbH.

All values are within the norm and are classified as safe. Table 2

Sensorial Preference Tests

Following diagrams show the sensorial properties of the ringbologna with the phosphate alternative SANACEL® add 042. The testing panel was consisting of 60 experts of the Landesinnungsverbandes Fleischerhandwerks Thüringen e.V. divided into 15 groups. Highest valuation was 5 points that the panel could give when there was nothing to complain. The analysis of these quality points are evaluated in figure 1 and this resulted in the awarding of medals displayed in figure 2.

Evaluation According to Selected Specific Criteria

In the following, individual evaluation parameters are considered more detailed in order to specify the sensory quality.

In the following, individual evaluation parameters are considered more detailed in order to specify the sensory quality.

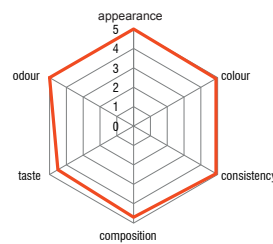


Figure 1
Total Sensorial Evaluation: Points

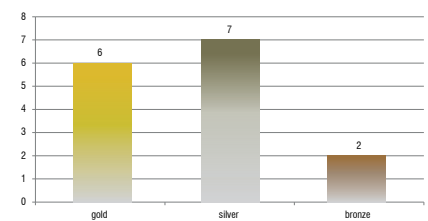


Figure 2
Total Sensorial Evaluation: Award

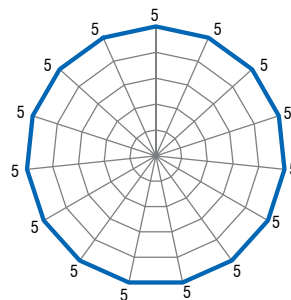


Figure 3
Appearance: No Deviation

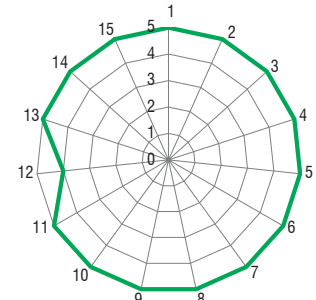


Figure 4
Colour 1 x Deviation: Too Pale

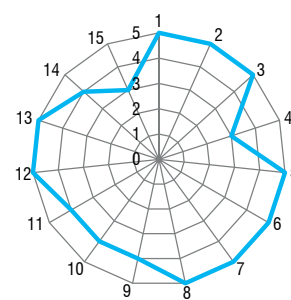


Figure 5
Taste: 4 x Deviations Too Low Seasoned

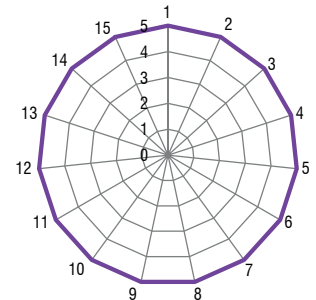


Figure 6
Odour: No Deviation

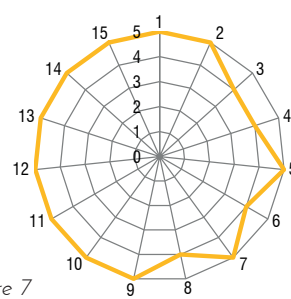


Figure 7
Composition: 3 x Deviations
Insufficient Cutting Process

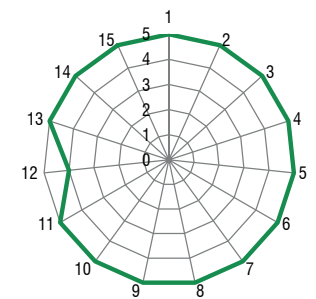


Figure 8
Consistency: 1 x Deviation Rubber-Like

Texture Analysis

For the texture analysis 3 different types of ring bologna were produced as follows:

V1: Standard with phosphates and other stabilizers

V2: SANACEL® add O42 as alternative for phosphates

V3: SANACEL® add O42 as alternative for phosphates plus additional dietary fibre enrichment > 3 %

The parameters were the same for all measurements. 10 samples were measured of each produced ring bologna. The samples were sliced into 20mm thick pieces.

The texture measurements of the individual samples V1, V2 and V3 show no significant differences. The peak values of the different types vary only between 4.00 and 4.35 kg. The bite resistance of the ring bologna with SANACEL® add O42 as alternative for phosphates (V2) and the ring bologna with the

phosphate alternative and additional fibre enrichment (V3) is comparable to the standard product (V1).

4 DISCUSSION

The results of the sensory and analytical tests clearly prove that SANACEL® add O42 is a healthier alternative for using phosphates in boiled sausages e.g. ring bologna without changing the properties of the finished product.

Despite the sensory testing was done by trained experts, the judgements are perceived subjectively.

- * Taste: according to 4 out of 15 rating panels, the seasoning is a bit too weak.
- * Anyway seasoning is a matter of taste. The recipe can be easily adjusted in salt and spices without changing other properties of the ring bologna.
- * Composition: according to 3 out of 15 rating panels the unfinished chopping was complained, there were some meat pieces visible in the ring bologna.

This is depending on the chopping process. This small production trial was made at the production plant of a Thuringian butcher with the lowest filling quantity of the industrial bowl chopper. In discussion with the producer this mistake was analysed and it was stated that rougher sausage meat could have fallen from the upper edge and/or the cover of the bowl chopper into the fine mass inside the bowl

chopper. The texture analyser did not show significant differences of the product with the SANACEL® add O42 fibres blend compared to the product with phosphates and stabilizer. This achievement clearly shows it is possible to change the composition of a ring bologna from traditional recipe to a healthier one without changing taste or texture and in the same time produce an innovative high quality food. The use of SANACEL® add O42 offers the possibility of varying the dosage and thus influencing the firmness of the final product.

5 Conclusion

In consideration of the potential adverse effects of excessive phosphate consumption, research and development is working on new solutions in all areas of the food industry. Also the German fibre producer CFF GmbH and Co. KG takes on this task. CFF successfully developed the plant based fibre concentrate SANACEL® add O42 and tested it in boiled sausage type ring bologna with optimal results. The results were hugely satisfying proved by an expert panel regarding appearance, composition, colour, taste & odour and consistency.

Now a next objective is to test phosphates in further experiments in comparison to vegetable fibers in other meat products, e.g. in cooked sausages and minced meat products.

Those who want to make sure they eat as little phosphate as possible should rely on natural foods. SANACEL® add O42 is a natural fiber concentrate based on plants. By developing natural alternatives to phosphate additives, CFF GmbH & Co. KG has revealed a new opportunity to make our food healthier without losing the enjoyment.

www.cff.de

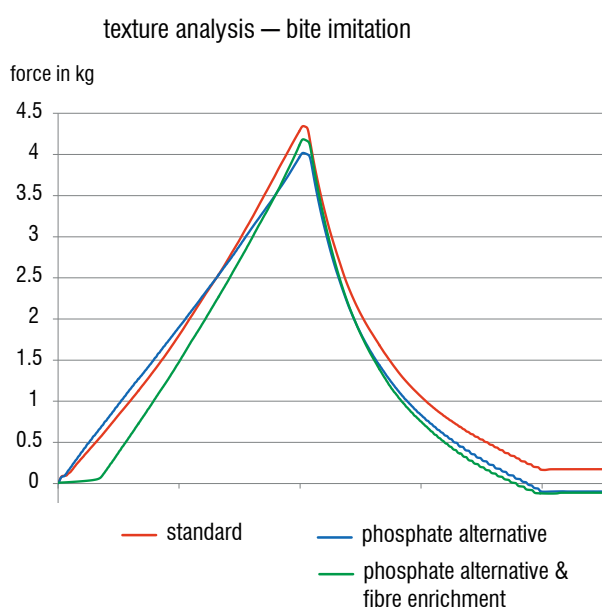


Figure 7
Composition: 3 x Deviations Insufficient cutting process



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CLIMATE CHANGE RESHAPES AGRICULTURE; GLOBAL TRADE TO BE INCREASINGLY PIVOTAL



GLOBAL - With climate change poised to alter significantly the ability of many world regions to produce food, it is expected that international trade in agricultural products will have an increasingly important contribution to feeding the planet and responding to climate-related hunger flare-ups, says a new report by the UN's Food and Agriculture Organization (FAO).

International trade rules established under the auspices of the WTO and newer mechanisms created under the Paris Agreement aimed at responding to climate change can be mutually supportive, argues *The State of Agricultural Commodity Markets, 2018*.

To achieve this, national agricultural and trade policies may need to be readjusted to help transform the global marketplace into a pillar of food security and a tool for climate change adaptation, FAO's report says.

This is because climate change will affect global agriculture unevenly, improving production conditions in some places while negatively affecting others - creating sets of "winners" and "losers" along the way.

Food production in countries in low latitudes -- many already suffering

from poverty, food insecurity and malnutrition -- will be hardest hit, the report notes. Regions with temperate climates, on the other hand, could see positive impacts as warmer weather lifts agricultural output.

According to FAO Director-General José Graziano da Silva, to prevent economic and food security gaps between developed and developing countries from widening even further, "we must ensure that the evolution and expansion of agricultural trade is equitable and works for the elimination of hunger, food insecurity and malnutrition."

"International trade has the potential to stabilize markets and reallocate food from surplus to deficit regions, helping countries adapt to climate change and contribute to food security," he wrote in his introduction to the report.

"The uneven impact of climate change across the world and its implications for agricultural trade, especially for developing countries, underlines the need for a balanced approach to policies, which should enhance the adaptive role of trade, while supporting the most vulnerable," said Graziano da Silva.

For that to happen, however, "wide-ranging policy actions are necessary," the FAO Director-General added. Trade policies that promote well-functioning global markets, combined with climate-smart domestic measures, investments and social protection schemes are needed.

Trade as a Safety Net

Many countries already rely on international markets as a source of food to meet their deficit, either due to high costs of agricultural production (as for example in countries with limited land and water resources) or when climate or other natural disasters undercut national food production.

For example, in Bangladesh, in 2017, the Government slashed custom duties on rice to increase imports and stabilize the domestic market after severe floods saw retail prices of the staple grain soar by over thirty per cent.

Similarly, South Africa - a traditional producer and net exporter of maize - recently increased imports to dampen the effect of successive droughts.

In general, FAO's report says that open, predictable and fair international food markets are important for trade to help support food security and climate adaptation.

However, while better-integrated markets reinforce the adaptive role of trade to climate change, for countries already highly reliant on food imports, it would deepen that dependence, the report notes. Thus the importance of considering national priorities and objectives.

Additional Policy Options

Beyond market integration measures, an even wider range of non-distortionary policy approaches exist that could be used to better harness agricultural trade to help farmers build up their resilience, boost farm output, support food security, and reduce the food sector's greenhouse gas emissions, FAO's report argues.

At the national level, these include spending more on research and development and on agricultural extension services to encourage the use of climate-smart approaches by farmers. Expenditures on environmental programmes and ecosystem services that reduce the negative effects of emissions from agriculture also would not affect trade.

Especially in developing countries at risk of climate change, support to farmers will be key to helping them become competitive, and achieve a better balance

in export and import performance. All of these options could be aligned with WTO rules as well as with newer commitments made under the Paris Agreement -- there is no fundamental conflict between climate change policies under the agreement and multilateral trade rules, the report says.

Recent Trends in Global Agricultural Trade

The report also provides an overview of the performance of the international agriculture trading system in recent years, and the direction in which it is headed.

While fast agricultural trade growth between 2000 and 2008 gave way to contractions during 2009-2012 and then to sluggish growth ever since, the bigger picture is that in value terms agricultural trade grew significantly between 2000 and 2016 - from \$570 billion to \$1.6 trillion.

Much of this was driven by economic expansion in China as well as increased global demand for biofuels.

Notably, the profile of emerging economies in global agricultural trade has greatly increased, with rising per capita incomes and reduced poverty levels. This has boosted food consumption and imports and led to gains in agricultural productivity, driving up food exports, not only to markets in the industrialized world but also to other countries in the Global South.

Indeed, while traditional food exporting giants like Europe or the United States remain top agricultural exporters in value terms, newcomers are challenging their supremacy.

For example, between 2000 and 2016, Brazil increased its share in global food trade from 3.2 to 5.7 per cent, China leapt ahead of Canada and Australia to become the world's fourth most

important agricultural exporter, and Indonesia and India increased their agricultural exports enough to place them among the world's top ten biggest food exporters (8th and 10th, respectively).

Over the same period, the combined share in total export value of the United States, the European Union, Australia and Canada declined by ten percentage points.

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ENVIRONMENTALLY FRIENDLY CATTLE PRODUCTION



Three hundred years ago, enormous herds of bison, antelope and elk roamed North America, and the land was pristine and the water clean.

However, today when cattle congregate, they're often cast as the poster animals for overgrazing, water pollution and an unsustainable industry. While some of the criticism is warranted, cattle production - even allowing herds to roam through grasslands and orchards - can be beneficial to the environment as well as sustainable.

In a study published in the journal *Agricultural Systems*, Michigan State University scientists evaluated adaptive multi-paddock, or AMP, grass fed operations as well as grain-fed, feedlot herds.

"Globally, beef production can be taxing on the environment, leading to high greenhouse gas emissions and land degradation," said Jason Rowntree, MSU associate professor of animal science, who led the study. "Our four-year study suggests that AMP grazing can potentially offset greenhouse gas emissions, and the finishing phase of beef production could be a net carbon sink, with carbon levels staying in the green rather than in the red."

In addition to reviewing past studies, Dr Rowntree's team conducted new research at MSU's Lake Station AgBioResearch Center. (The feedlot data were collected in East Lansing at the cattle property south of MSU's main campus.) On any given day, the Lake City fields see a herd of more than 200 steers ambling through 600 acres of wavy grass.

The scientists tallied finishing phase stats, such as carcass weight, daily weight gain and more, and compared them to GHGs (methane, nitrous oxide and carbon dioxide) from digestion and fermentation, manure storage and handling and feed production and energy use on the farm. They also measured carbon losses arising from soil erosion.

Environmentally, AMP systems came out in the green, while feedlot emissions were in the red primarily because of feed-based nitrogen emissions from fertilizer. However, beef production is a complex equation, not one solely tied to environmental factors. For instance, the feedlot model was considerably more productive, producing the same amount of beef on only half the land. This leaves more land for various purposes such as growing human food or rewilding. It is also important to note that the carbon sequestration changes over time and the researchers figure to see less over time. There is great potential that managed-grazing can offset the methane produced for many years to come, Dr Rowntree said.

"AMP is not as productive as feedlots, based on yields, but the AMP grazing system produced considerably greater amounts of beef on a land basis as compared to continuous grazing, showing that improved management can increase the output of grass-fed beef," he said. "Ultimately, in a closed system, this implies somewhat lower per capita beef consumption, but greater environmental benefits from what is consumed."

Likewise, the same environmental benefits could be seen on the cow-calf system providing cattle for the feedlot, matching greater production per unit land with the environmental benefits of grazing, he added.

Dr Rowntree, who can talk hex hatches and fly-tying as easily as agriculture research, believes that beef production and blue-ribbon trout streams can co-exist harmoniously. Lake City is less than 50 miles from many of Michigan's fabled streams, some of which are hailed as the best fishing spots in the Midwest. Dr Rowntree's research focuses on cattle but remains respectful of its impact on waterways and other natural surroundings.

"I grew up on the Gulf Coast of Texas and I've seen the damage firsthand that nitrogen leaching, sedimentation and run-off can cause to fisheries," Dr Rowntree said. "We're not advocating for one approach over another, but rather we looked at different cattle production methods, and we see best practices and areas of improvement that support environmental stewardship in grass- and grain-fed systems."

In that vein, feedlot operations could be more environmentally friendly if they used less fertilizers and cover crops in the grain production component for their feed. Using AMP grazing, land managers can allow cattle to graze an area with relatively high density, like wild migrating herds, but then

allow for adequate plant recovery. This allows for a deeper, healthier root system and builds organic matter in the soil, which acts as a sponge for available moisture.

Dr Rowntree is fond of saying, "However you need to get there, get there." Seeing the Lake City herd graze in the bucolic setting and listening to Dr Rowntree's presentation, it seems like it's quite possible to achieve that sweet spot of sustainable yet optimal production.

www.thebeefsite.com

A WORLD FIRST: UK FOOD INDUSTRY COMMITTS TO A LANDMARK ROADMAP TO HALVE FOOD WASTE



UK - The UK's largest retailers, food producers, manufacturers, and hospitality and food service companies have committed to ambitious milestones laid out in a new ground-breaking industry Food Waste Reduction Roadmap; developed with IGD and WRAP to further reduce the UK's food waste problem

* Businesses take the lead to drive down UK's annual £20 billion food

waste bill, equivalent to more than £300 per UK citizen.

* All major retailers and 50% of larger food businesses to Target-Measure-Act and report on food waste by September 2019.

* 89 organisations begin epic journey - taking a 'farm to fork' approach to commit to a ground-breaking Food Waste Reduction Roadmap to halve food waste.

The Roadmap encompasses the entire supply chain from field to fork, and clearly shows the actions large businesses will take to address food waste both in their own operations, and by working to support their suppliers. It also sets out how these businesses can engage with consumers to help reduce their food waste.

The Roadmap has the support of the UK's largest food trade bodies, businesses across the supply chain and Defra, Welsh and Scottish Governments. Widespread adoption of Target, Measure, Act is vital to achieve national policy objectives and targets on food waste reduction, including Courtauld 2025 and the Sustainable Development Goal (SDG) 12.3.

Today we announce 89 early adopters who are supporting the Food Waste Reduction Roadmap. By September 2019, the first major milestone on the Roadmap, the aim is to have fifty per cent of the UK's largest 250 food businesses measuring, reporting and acting on food waste. With all 250 companies doing so by 2026. To make this happen, the Roadmap is published with a wide range of new resources to enable businesses to act consistently, and support work already underway by many companies through setting out a clear collaborative journey the whole industry can follow.

Marcus Gover, CEO of WRAP, explains "Together, WRAP and IGD

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have mobilised industry leaders to create a bold sector-wide Roadmap, showing clearly what UK businesses must do. This Roadmap is hugely ambitious, and I'm delighted that the UK is the first country anywhere to set a nation-wide plan towards delivering its part in SDG 12.3. There are many businesses working hard already, but many more need to focus on food waste. If the food sector follows this Roadmap it will significantly accelerate work to achieving both Courtauld 2025, and SDG12.3 targets. And I urge other companies to adopt the principles laid out in the Roadmap and join the rest of the sector on this historic journey."

Joanne Denney-Finch, Chief Executive of IGD said "The Food Waste Reduction Roadmap presents a huge opportunity for every business within the UK food and grocery industry to provide reassurance for shoppers. UK shoppers see industry food waste at the top of their priorities and by working together with the total food chain, we're delighted to have secured a world first, with the UK leading the way in this important area. As a result, I'm confident we will see continued momentum on this high profile initiative."

Marcus Gover will also launch The Food Waste Atlas in New York at the annual event of Champions 12.3; organised by the World Resources Institute (WRI). Atlas is the world's first global reporting portal to allow the capture and reporting of global food loss and waste data in one place. Developed between WRAP and WRI, Atlas allows companies and Governments to publish and compare their data with others, including businesses supporting the UK Roadmap.

Businesses wishing to access the free resources and find out more about the using the Food Waste Reduction Roadmap should click here.

www.thepoultrysite.com

EROSKI INCREASES PROCUREMENT OF CERTIFIED SUSTAINABLE FISH BY 24% AND PASSES THE ONE MILLION KILO MARK



* EROSKI is the first chain of retail distributors in Spain to pass the audits for both the MSC and the GLOBALG.A.P. certifications for the sale of sustainable fresh fish.

* With its Sustainable Fishing Policy, the cooperative supports the development of fisheries which respect the marine ecosystem.

* Its Health and Sustainability Commitments announced last April are aimed at promoting more sustainable activity.

* A commitment to sustainable eating

EROSKI is making progress in its commitment to a more sustainable nutrition model, having increased its procurement of sustainable fish with the MSC and GLOBALG.A.P. certifications by 24%. The chain markets this seafood under its own fresh food brand, EROSKI Natur, and managed to break through the one million kilo barrier in the first half of this fiscal year.

With this step, it is further consolidating its position as a leading supplier of fresh food and purveyor of more responsible foodstuffs as a basis for healthy and sustainable eating, a basic pillar of its "contigo" (with you) business model. The cooperative is a pioneer in Spain with its commitment to GGN (GLOBALG.A.P.) and the

MSC ecolabel for the sale of fresh fish, a commitment which demonstrates fundamental support for the fishing industry investing in this sustainability.

"We are devoting more space on our fish counters to catches with certified sustainability. In doing so, we are offering consumers additional guarantees that the fresh fish with the ecolabel that they find in our stores comes from sustainable fishing grounds and production facilities. At EROSKI, we monitor all the processes, from the source of the products right up to their processing in our stores, to ensure they are as responsible as possible. Our Health and Sustainability Commitments, which we renewed this year, aim to promote and encourage more sustainable eating," said Alejandro Martínez Berriochoa, Director of Health and Sustainability at EROSKI.

Pioneering in the Sustainability Certification of its Fish Counters

Just over a year ago, EROSKI became the first and only chain of retail distributors in Spain to pass the audit by the international organization Marine Stewardship Council (MSC) for the certification of the chain of custody for fresh fish originating from sustainable fishing grounds. The EROSKI fish counters have achieved the certification in stages, and there are currently 348 offering fresh fish, in addition to the EROSKI Group's six logistics centers supplying the fresh fish to its network of stores.

During the first six months of this fiscal year, corresponding to the second stage since obtaining the certification, the cooperative has procured more than 900 metric tons of sustainable seafood with the MSC blue seal including species such as Skrei cod, anchovies, albacore, lobster, desalinated cod, and surimi. The MSC accreditation audits both the fishing grounds and the companies involved in the whole process of handling the fish in such a way that it guarantees the traceability

and good practices all along the chain of custody for products bearing the MSC blue seal. The factors that MSC takes into consideration before awarding its sustainable seafood certification to a fishery are the situation of the fish population, the impact of the fishing method on the habitat, and the management of the fishing grounds. "EROSKI is taking decisive and important steps forward with the progressive certification of its fish counters and the incorporation of new species in order to offer an ever more varied range of fresh fish bearing the MSC blue seal. Its commitment to the health of the oceans and local produce is evident, as we can see from the support shown for the albacore and anchovies sourced from the certified Basque fleet and the incorporation of an ever wider range of product categories with our seal. We would like to congratulate EROSKI on its great efforts to boost sustainable fishing and raise consumer awareness in Spain. EROSKI is without a doubt a responsible cooperative committed to the future of marine resources," affirmed Laura Rodríguez, Country Manager Spain & Portugal at MSC.

Furthermore, less than three months ago, EROSKI became the first chain of distributors in Spain to pass the GLOBALG.A.P. certified aquaculture chain of custody audit. This guarantees that the aquaculture fish on sale at its fish counters have been farmed in a safe and sustainable way. Since then, EROSKI has procured 60,000 kilos of gilt-head bream, meagre, European bass, turbot, and salmon with the GGN label (GLOBALG.A.P. Number).

"The number of consumers looking for reliable information when buying fish and seafood is increasing every day. Questions concerning the origin of the products and the production methods employed as well as the social and environmental conditions play an ever more important role in securing their trust and determining their purchasing

decisions. With its GLOBALG.A.P. certification, EROSKI, as a pioneer in the Spanish distribution market, is responding to the increasing demand on the part of the consumers for guarantees that the foodstuffs are safe and sustainable," said Flavio Alzueta, Vice President & Chief Marketing Officer at GLOBALG.A.P.

The criteria for the GLOBALG.A.P. certification include an analysis of the environmental impact, regular food safety and water quality checks, and verification of the traceability and the welfare of the animals. Among other things, the sustainability label also certifies adequate feed consumption, leading to better care of the seabed and improved use of the fishing resources, measures to prevent escape and thus limit the spread of invasive species, the guaranteeing of proper working conditions, and the introduction of quality management systems.

www.globalgap.org

COMPANIES COLLABORATE OVER AQUACULTURE EFFICIENCY



A project that aims to develop a new innovative software tool to reduce the environmental footprint of the aquaculture industry and optimise efficiencies in the sector is currently being developed by a group of Danish companies.

Organised by the Danish Green Development and Demonstration Programme (GUDP), the project aims to develop an advanced tool that can gather and process data from stakeholders across the aquaculture sector, including suppliers and fish farmers, in a shared cloud-based database.

Over the last few decades, the world of information technology has advanced significantly, and so has the aquaculture industry, although it still falls behind other sectors, such as pig farming.

"The GUDP-project aims at combining IT and aquaculture to develop smart, easy-to-deploy, user-friendly tools that can lead to a new era of connected, responsible and efficient, and thus, sustainable aquaculture," says Paw Petersen, Managing Director, Oxyguard International, who are leading the project.

Other contributors include BioMar, Danish Salmon, AquaPri, Danaqua, Aller Aqua, Kongeåens Dambrug, DTU-Aqua, University of Copenhagen – a diverse group who aim to ensure that all parts of the aquaculture production chain are taken into consideration.

For data processing, the software will build on technologies such as big data, internet of things (IoT) and machine learning. This will help to reduce the environmental impact of aquaculture by enhancing husbandry, optimising the use of feed and oxygen, and a range of other factors.

Ole Christensen, Vice President for BioMar's EMEA Division, said in a press release to mark the launch of the project: "For BioMar, the aim is to help our customers to become more efficient and more sustainable in an economically viable way. Our participation in projects of this kind helps us deliver on our strategy of innovating for a sustainable aquaculture for today and tomorrow".

www.thefishsite.com

FOODTECH STRENGTHENED BY INTERNATIONAL CONFERENCE ON WATER REUSE

When FoodTech opens its doors from 13 to 15 November 2018 at the MCH Messecenter Herning, the trade fair will be complemented by the IFC World Congress, an international conference that focuses on the reuse of water in the food industry.

Water is fast becoming an expensive commodity – it is expensive to buy in the first place and wastewater treatment is also costly. In many places around the world, there are serious shortages of clean drinking water, so there is good reason to save water to safeguard clean drinking water for future generations. The food industry uses large amounts of water and therefore both the Danish and global food industry are very interested in saving water and reusing their process water and wastewater.

In fact, it is possible to reuse wastewater – and that is precisely the focus of the international conference that is being held at the same time as FoodTech. The conference is called the "IFC World Congress" and will be presenting the latest developments and opportunities related to sustainable water use and reuse in the food industry.

Wastewater Can Be Cleaned and Reused

Among the keynote speakers already listed on the programme are the CEO of the Danish Food & Agriculture Council, Karen Hækkerup, and the Chairman of the Carlsberg Group, Flemming Besenbacher.

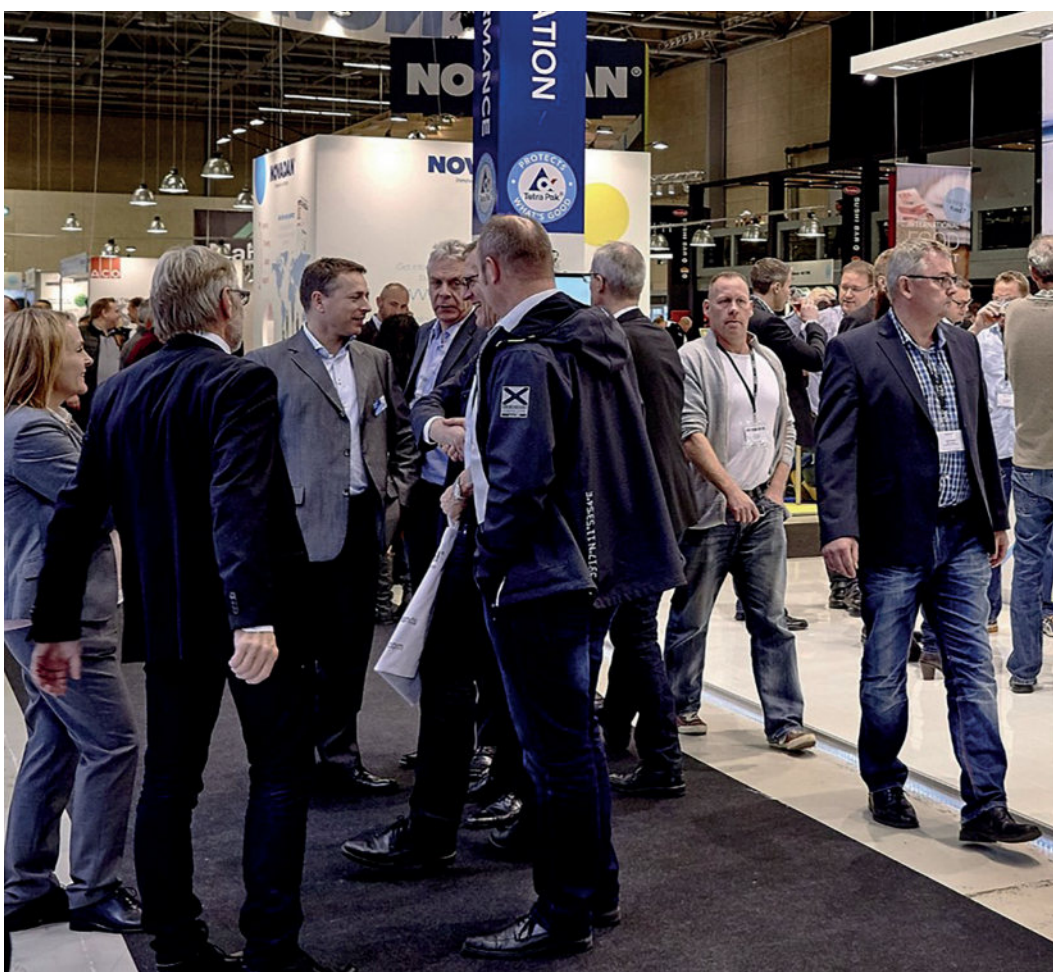
A group of experts with special knowledge of water treatment and reuse is responsible for implementing

the conference. Among them is Søren Nøhr Bak, Segment Director at Grundfos BioBooster, who explains:

"The goal of the conference is to provide participants with insight into the technical and economic

Sustainable Use of Water

The programme has been designed to introduce delegates to the food industry's sustainability goals and strategies. The conference will also examine various future scenarios



This year, FoodTech is playing host to a major international conference. The IFC World Congress focuses on water reuse in the food industry. Photo: MCH/Tony Brøchner

opportunities for reusing water, including how to reuse their water without compromising food safety. In addition, the conference will reveal how far we have come with regard to the sustainable use of water in the food industry. What can we do here and now? And what challenges are we facing?"

with regard to water and water use. Selected experts will present the latest knowledge about water treatment, food safety and measurement methods.

Similarly, process suppliers will present the latest technical solutions, and representatives from the food industry

will give specific relevant examples of sustainable water use, including water reuse and recycling in the food industry.

One of the members of the congress working group is Jan Dalsgård Johannesen, Environment and Climate Manager at Arla Foods. He points to a wide range of areas where technology can help businesses in the food industry to improve the

Excursion to a Dairy that Reuses its Wastewater

On Wednesday, 14 November, there will be an excursion to the Arla dairy in Rødskær. Every day, the dairy cleans around 450 cubic metres of wastewater on site. The wastewater is thoroughly purified to the status of drinking water before it is pumped back into the dairy and reused. This enables Arla to reduce their water resource costs, while at the

FACTS

Remember to Save the Date in Your Calendar

The programme for the IFC World Congress is being updated on an ongoing basis and will soon be published on the IFC World Congress website, ifc-worldcongress.dk, where you can also sign up for the congress.

However, if you are interested in attending the IFC World Congress, make sure you mark the 14th and 15th of November on your calendar now. FoodTech opens on Tuesday, 13 November, so you should also reserve that date for a tour of the many stands.

At least 200 professionals from all over the world are expected to attend the conference on the sustainable use of water.

Event Partners - Ifc World Congress

- * Søren Balling Engelsen, Professor, University of Copenhagen
- * Finn Kjeldgaard, Distribution Manager, Alfa Laval Nordic, Food & Water
- * Søren Nøhr Bak, Segment Director, Grundfos BioBooster
- * Jan Dalsgård Johannesen, Environment and Climate Manager, Arla Foods
- * John Dørr Jensen, FoodTech, MCH Messecenter Herning
- * DANVA (Danish Water and Wastewater Association)
- * Lars Johannes Nielsen, International Food Contest (IFC)
- * Mælkeritidende
www.uk.foodtech.dk



sustainability of their water use. Jan Dalsgård Johannesen says:

"There is a constant need for new knowledge and new technology in the field of water. However, it is also important to implement new water treatment techniques in production as quickly as possible, and ensure that we lead the way in the sustainable development of water."

same time making the production of mozzarella far more sustainable.

With the latest water technology, it is possible to establish a water-neutral dairy. In other words, a dairy where the water is reused to such an extent that the dairy does not need an external water supply – for example, from separate drinking water wells or the public water supply.

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