

# MEATING POINT

magazine

SUSTAINABLE TECHNOLOGY, PROCESSING & PACKAGING

## REIMAGINING PLANT MEAT



SOLVING THE QSR  
PRODUCTION PUZZLE

CONTINUOUS PROCESSING MORE  
EFFICIENT THAN DEALING WITH BATCHES

METAL DETECTION,  
X-RAY - OR BOTH?

# FOOD - TECH

Eurasia  
2023

17<sup>th</sup> International Food and Beverage Technologies Fair

October 11 - 14, 2023

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## Dear reader,

**T**he food industry, especially the meat industry, is facing increasingly demanding regulations and quality standards. Safety is of paramount importance and consumer safety is the cornerstone of every strong brand and leading business, as consumers not only expect food products to be safe, they rely on the companies that process and package those products to assure quality and safety. The complexity of production processes involves the risk of contamination by metal, glass, or other substances. To produce and sell food products today, it is critical to fully understand how to specify, select, and use product inspection systems to fully support your quality policy and thus, your customers. Ensuring the suitability of products with the use of precision technologies is an insurance for the company and allows it to fully automate and control its quality processes.



Jenny Smart

While consumer protection is the top concern, creating a culture of food safety also protects the company itself. To successfully protect packaged goods in the food industry from physical contaminants, companies create policies based on government or industry standards and regulations. Protection from physical food contamination makes good business sense, and it all starts with an understanding of food safety. Product recalls are very expensive, and the costs of damage to brand reputation and lost future sales can be incalculable. These policies rely on selecting the optimum detection technology to eliminate the most -likely hazards in a cost effective manner. Inspection of meat products with metal detectors and/or X-ray is a fundamental part of responsible production. But which inspection method is best for your operations? Find an in-depth analysis of both methods that demonstrate the importance of food safety and maintaining the utmost safety measures to avoid costly recalls and prevent contamination.

As usual, we feature the latest business and industry news, along with interviews, customer stories, research and development

## Enjoy your read!

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## LEADING FOOD PROCESSING EXPERT PROVISUR TO EXHIBIT A RANGE OF HIGHLIGHTS FROM ITS EXTENSIVE FOOD TECH PORTFOLIO



*Provisur – industrial food processing: “Provisur – Pushing Boundaries” – leading established brands for industrial food processing*

Provisur® Technologies, the leading industrial food processing equipment manufacturer headquartered in Chicago, USA, will present an exciting range of machinery and innovations at Alimentaria FoodTech from 26-29 September 2023 in Barcelona, Spain. With subsidiaries across Europe and an Innovation Center in France, the company booth at Alimentaria FoodTech is an opportunity to see some of the latest developments and advanced technology from its DMC (Defrosting, Marinating, Cooking), Separation, Slicing and Further Processing Business Units.

### DMC - Safe, Speedy Defrosting Systems

Lutetia® is a leading Provisur brand for defrosting, tumbling, curing and marinating. To

highlight the patented innovations that make the Lutetia® T3 so outstanding, the machine will be on show at Alimentaria FoodTech. Lutetia® minimizes cycle times and improves product quality. The Lutetia defrosting chamber working with cold convection ensures speedy and safe defrosting of delicate products.

### Separation - Maximum Efficiency, High Yield

With a mix of rotation, belt and pressing technology, the Provisur portfolio is unique in providing all necessary separation systems for the efficient processing of meat, poultry, and other raw materials such as potatoes, fruit, and vegetables. The broad range of applications all have one thing in common: high-yield separation of bone fragments, sinew, cartilage,

and other material. On show at Alimentaria FoodTech will be the latest high-performing addition to this portfolio, the STS800 Belt Separator. It offers outstanding results in terms of product structure, and low calcium levels for fish frames, meat trimmings or wishbones. It can also be used in dairy depacking solutions as well as extractions of cream from vegetables such as avocados, garlic and more. Also, on show at Alimentaria FoodTech, will be Provisur’s Barracuda 1830. The screw and filter technology of this unique system offers an easy-to-use, simple operational mode and ensures low maintenance costs while at the same time maximising yield and preserving a low calcium level.

### Slicing - Cutting-Edge Technology

Provisur’s long-standing expertise in slicing is exemplified by the Hoegger X3 meat press which will be presented at Alimentaria FoodTech. Controlled, gentle forming guarantees maximum slicing yield at minimum operating costs even with large deformations. The machine is ideal for pressing belly, bacon and pork loin to optimize the slicing yield.

A further world-class system on show at Alimentaria FoodTech hails from Provisur’s Formax® range: the Formax® slicer SX330. A small machine with big performance, it offers configuration for a wide range of products, and provides



high-performance slicing of cheese, deli meats, sausage, and fresh meat. It is ideal for manufacturers looking for a small footprint, high throughput and low maintenance, as well as manufacturers looking for a smooth and professional changeover to automated food processing.



**Formax® Slicer SX330** - provides high-performance slicing of cheese, deli meats, sausage, and fresh meat

**Further Processing - Fast, Consistent, Reliable**

The advanced technology of Provisur's NovaMax® 150 and NovaMax®400 Formers is housed in a simple, solid construction that ensures durability and reliability. They are designed to ensure fast processing when forming burger patties, meatballs, chicken nuggets, pharma, bakery goods, and more. Additional groundbreaking forming machines by Provisur are the VerTex®1000 and 660 Formers, featuring VerTex® Tender-Form® rotary forming technology. They provide unprecedented levels of product consistency, texture, while offering the lowest cost of ownership available. Furthermore, Formax® Formers with their solid construction and reliability deliver the highest yields while forming products with a natural texture and excellent appearance.

[www.provisur.com](http://www.provisur.com)



Online auction machinery for the food industry on behalf of Fountain Group Ltd in Nordelph (UK)



Online auction machinery and inventory at former production location Homann Feinkost GmbH on behalf of Progressu GmbH in Dissen aTW (DE)



Online auction food processing machinery, bakery and catering equipment in Eindhoven (NL)



Online auction machinery for the food industry in Raciaz (PL)



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# THE CONTRIBUTION OF PROCESSING EQUIPMENT TO COOKED MEAT PRODUCTS

Selecting the right processing equipment can be the difference between a highly successful cooked meat product and one which vanishes without a trace in what is a highly competitive market. One of the keys to success is consistency in the quality of the product and that is where reliability and controllability of the processing equipment is crucial.

Interfood offers a wide range of equipment used in the production of cooked meat products, from stand-alone machines to fully integrated processing lines. The KK Universal-Circulation System from Maurer Atmos is a good example, offering solutions specifically developed for the controlled cooking of products in the shortest possible time. It is characterised by its high production capacity at a low investment cost. The KK is available with data capture systems to give full visibility of the process graphs on a large user-friendly HMI and networked to a workstation. Heated by steam or electricity, the equipment can be easily integrated into the factory. Loading and unloading doors

are interlocked to ensure the high and low care production areas are segregated from each other. In addition to cooking, the KK system can also pasteurise, with the option available to add the process of showering with cold water. The machine requires only a small footprint, with the potential for tailored solutions to specific requirements. Alongside the KK, Interfood also offers the Maurer Atmos ASR range. Known as the 'all-round-system', the ASR is an ideal solution for smoking and cooking products, offering a wide variety of flavours and colours.

Roasting is also a process associated with cooked meat products and for such applications Interfood offers the Afoheat Select Infrared Roaster. A continuous roaster, the Select combines the efficiency afforded by a combination of gas-fired infrared radiation and convective heat. It is ideal for developing surface colour and flavour, or for setting glazes and coatings on a wide range of meats including slicing logs, poultry, burgers and sausages (as well as seafood, vegetable, plant-based or bakery products if required). Customisation is at the core of the design concept, with each

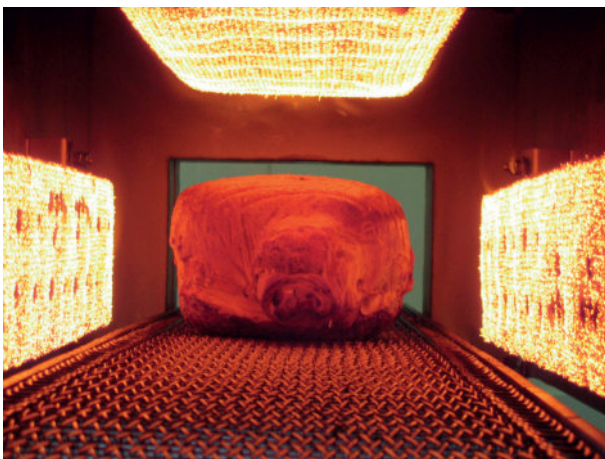


machine designed and built to meet the specific customer requirements.

It can be used for roasting and searing of both bulk and convenience foods, and can work with products in their raw, cooked, chilled or frozen states. In addition to operating as a stand-alone solution, it can also be integrated into a continuous thermal processing line. The control system adjusts the power and fan speeds of each burner independently to ensure precision results, with the capability to roast and sear on up to four sides simultaneously with minimal loss in yield and reduced energy costs compared to batch systems.

For applications which require grill marking, there is the Afoheat Select Grill Marker. This enables the application of authentic chargrill stripes to a wide range of meat products to achieve significant shelf-appeal. It can be integrated with the Infrared Roaster and the Afoheat Select Flame Searer to create a single unit for combined grilling and bar marking.

[www.interfoodtechnology.com](http://www.interfoodtechnology.com)



## HANDTMANN LAUNCHES NEW HIGH-PERFORMANCE LINE FOR SAUSAGES IN PEEL-OFF AND COLLAGEN CASING

With the market launch of the new high-performance PVLH 251 AL system, Handtmann offers medium-scale and industrial sausage producers another automated production process for the portioning, linking and hanging of cooked and dry sausages in peel-off and collagen casing. Vegan/vegetarian products and meat substitute products can also be produced automatically in shirred plant-based casing. The production of sausage products from the pet food segment is also possible.

The new high-performance line comes into its own above all in classic hot dog production and with few product changes. At a maximum output of up to 3,750 portions per minute, the line is ideally suited for the mono-production of boiled sausages and hot dogs in peel-off and collagen casing, but also for dry sausages and meat substitute products. This high level of productivity is made possible by short set-up times and minimal casing change times with only one linking nozzle. The maximum shirred casing length in the standard version



*PVLH 251 with pivoting hanging unit and AHE scales*



is 410 mm. The new PVLH 251 is also available in the L version for extra long shirred casings, extending the practical useful length of the linking nozzle for long shirred casings to up to 580 mm. This again increases the effective machine operating time, particularly in mono-productions. What's adding to this as well is high process reliability due to reliable casing spooling. Reliable casing change is always ensured thanks to centring of the linking nozzle and simultaneous guiding of the shirred casing in the casing spooling unit. The filling product scraper ensures that the linking nozzle is clean at all times, thus further enhancing process reliability. An optical signal in the casing magazine signals the operator promptly when the shirred casings in the magazine reach a critical fill level. The casing magazine can thus be filled with new casings in good time, which contributes to the continuous and uninterrupted operation of the line. An absolute innovation is the equipping of the sausage filling line with a new voider belt and special voider elements, ensuring portioning that is particularly gentle on the casing and consistent in length. An automatic length check prevents operating errors and thus boosts

process reliability, as the set portion length and the voider belts are automatically matched. Generally, the straightforward design of the line offers highly intuitive operation, even for inexperienced operators, preventing incorrect settings and consequently rejects.

The AHE 228-16 and AHE 228-17 (pivoting version) hanging units easily multiply the advantages of the new PVLH 251. Flexible hook spacing, adjustable in 5 mm increments, ensures that all products are conveyed with optimum spacing. This results in maximum smoke stick utilisation and cost savings in the downstream process. The entire production line can be increased in height by 100 mm or 200 mm. This provides not only optimum ergonomic conditions, but also allows the processing of sausage loops up to a maximum length of 850 mm. As an option, the hanging unit can also be equipped with the Handtmann AHE scales. Weighing the products allows for automatic readjustment of the filling volume and thus ensures optimum product weights at all times. Give-away is reduced and cost savings of up to 2 % are possible.

[www.handtmann.com](http://www.handtmann.com)



*Range of sausages produced with the PVLH 251*



## SELLING YOUR SURPLUS MACHINERY? INDUSTRIAL AUCTIONS KNOWS HOW TO HANDLE IT.

Industrial Auctions is the online auctioneer specialized in auctioning used machinery for the food and beverage industry. Over the past 12.5 years, the company has become a household name for many in the industry and they are still working hard to build on their brand awareness. For both buyer and seller, they have the platform to bring both together. The company works weekly with renowned companies such as FrieslandCampina, Gordon Brothers, Nestlé, Refresco, and Vion. In addition, the company organises auctions on behalf of traders where auctions are held on its own premises, as well as with companies that contribute machines to their recurring auctions. Whether you have a few surplus machines, a production line or an entire factory, Industrial Auctions knows how to handle it!

Unlike others, Industrial Auctions focuses specifically on the niche market of the food and beverage industry. This ensures that the company has in-depth knowledge of the machines being auctioned. They have an extensive global customer base, of which they actually know who is participating in the auction.



Personal contact is paramount at Industrial Auctions. A fair offer for a ditto purchase and the company offers that with an optimal return.

The project managers from Industrial Auctions ensure that the auctions are inventoried, the customer's questions are answered, every interested party is received during the viewing day, the auction is conducted successfully and after-care is also provided. Once an auction is over, the lots are collected as early as a week after the closing date, and transport or dismantling can even be arranged. The finishing touch? Even the site is delivered broom clean. Both selling and buying customers are provided with every convenience and support wherever possible.

With social benefits in mind, auctioning and buying used machinery is obviously the sustainable option. A win-win situation in which the seller gets rid of his surplus machines and the buyer can, for example, expand his business activities or replace an obsolete machine. After all, an used machine can provide years of service, especially if the year of construction is still fairly recent. Get familiar with Industrial Auctions' way of working, their casual atmosphere, high level of commitment and enthusiasm, which makes working with the company well worthwhile.



Are you convinced and ready to sell? Send an email or contact the company by phone to discuss the many benefits and possibilities. [www.industrial-auctions.com](http://www.industrial-auctions.com)





## THE PLANTBASER WINS TECHNOLOGY INNOVATION AWARD

“Two and half years of hard work paid off. It’s a great feeling to be rewarded this way,” says Florian Bark, Product Manager Plantbaser. “Our Plantbaser digital product configurator amazed visitors at the Plant Based World Expo in New York.”

With the Plantbaser, companies can get new ideas off the ground in a very short time. From idea to finished product takes just two weeks. Users can put together their desired product in 15 to 20 minutes, with no dedicated plant-based knowledge needed. Test samples are ready to taste two weeks later. With over 1300 recipes

the Plantbaser offers the world’s largest selection of plant-based products in multiple categories, from milk and cheese alternatives to deli foods to meat and fish. “I’ve never seen anything like it. It’s unique” - a reaction that Florian Bark and his colleagues heard many times from show attendees. “Visitors were very interested and tried out configuring right at the booth,” says Bark.

Planteneers made a big impact, and not just with the digital tool - five products made it to the finals. In the Meat Alternatives category, the Chicken Breast was “Recommended.” In Plant Protein,



Planteneers was shortlisted with its Steak Filet. Its other finalists were plant-based alternatives to parmesan, salmon filet, and salami sticks. “We’re very proud of this outcome, and we’re looking forward to the coming Plant Based World Expo in London in mid-November,” notes Florian Bark.

[www.planteneers.com](http://www.planteneers.com)

## LORYMA PRESENTS PROTOTYPES FOR VEGAN FISH CREATED FROM WHEAT-BASED INGREDIENTS

Ingredients specialist Loryma has developed several application recipes for vegan tuna that deliver authentic, fibrous sensory qualities and a delicate texture. The fish alternative can be prepared in the same way as the original, and promises an identical mouthfeel. Loryma offers application possibilities for the creation of deli and frozen food products, as well as a classic canned version. Manufacturers can adapt and flavour all concepts individually.

In order to achieve a realistic texture, fine Lory Tex® Snips and long, fibrous Lory Tex® Fibres are mixed together and then rehydrated with water. This blend can be further processed with colourings

and flavourings to prepare various foodstuffs, such as meatballs, deli salads and toppings for frozen foods.

### Vegan Tuna in a Can

For an authentic eating experience, Loryma has also developed a recipe for fish-free tuna in a can. The concept combines Lory® Tex Snips and Lory® Tex Fibres with the wheat protein-based binder Lory® Bind and the modified wheat starch Lory® Starch Pearl. The result is a bound mass with loose texture that is then soaked in oil and packed in cans. The product is heated in an autoclave under high pressure, the same as for conventional tuna. This process allows for a long shelf life while the



heat- and process-stable ingredients maintain optimal sensory properties.

The canned tuna alternative can be used in the same way as the original, for example, as a pizza or salad topping. The plant-based version contains around 19g of protein per 100g thanks to the extruded wheat protein, making it a valuable source of protein.

[www.loryma.de/en](http://www.loryma.de/en)

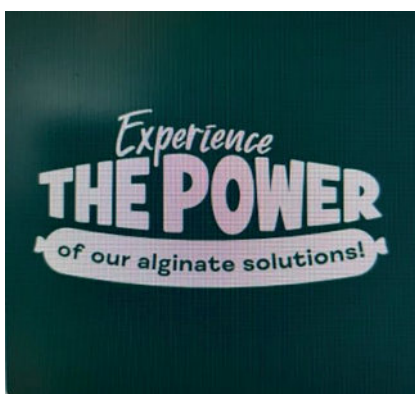
## “UK RETAIL MARKETS UNDER PRESSURE AS FOOD PRICES SOAR”

Several media have recently published about it. There is a huge pressure on costs in the whole food value chain. And from retail, it trickles down through the whole value chain. From food producers it will go down to food ingredients. We all know this will put the system under pressure. The result is a race to the bottom. We as Vaess think this is the moment, not to look at just costs per kilogram, but to look at the integral system costs. Let's work smarter, and help beat inflation the smart way. This applies not only to sausage production with coextrusion and alginate, but also, for example, to good puff pastry fillings and brines. Let's reduce waste and increase yield, without losing quality.

We at Vaess have a message and the solution: "act and think smart. Don't look at the costs per kilo. Focus on the system costs. We want to help you with that to succeed!"

This is why Vaess is currently campaigning to bring its alginate casing technology to the attention of producers and retailers.

### The Campaign is Titled:



Coen van Oorschot, director at Vaess: "We're leading when it comes to alginate. At Vaess we really understand everything about alginate gel and sausage. Already for 76 years we work on sausage. We know everything about alginate and binding. Alginate as raw material is a profession that we master. We know how to make an alginate casing snap and to replace collagen casings with alginate casings. We know how to replace or reduce (saturated) fat with the use of alginate. Moreover, we know how to scale up to high speed coextrusion lines and how to save costs. We look at the whole process and our technical specialists at the line are committed and will remain until everything is up and running".

"Our R&D team will help you immediately if you need something technically related to meat, sausage or vegan. Our goal is to share knowledge and to create added value for our customers. By working and completing the process together. We believe that making gel is a profession in itself that we master down to the finest detail. Because the consequences of a mistake can be enormous. Making a gel is not something you do on the side. Because we make gel we can innovate. Running Coex, for example, is based on high throughput. Our engineers develop your bespoke product and gel and help your people work flawlessly, resulting in quality and process improvement and lower costs".

"Take our AgerGel alginate based casing technology for instance. We



developed VascoPrime, a patented primer for plant based sausages that prevents separation of the casing from the sausage. What makes VascoPrime so unique is that it is stable during cooking without loss of structure and taste. Even a two step cooking process is possible. VascoPrime is soy and palm oil free, lower in fat and 100% vegan".

"Let me give a good example of our expertise and working method. One of our customers concluded that the casing of their sausage didn't provide a nice bite and customer research showed that the product was not performing as well as some competitor's products on the market. They needed a solution within just 5 days. We eagerly seized this opportunity and by working together with our client, on the binding system and creating the right alginate gel, a suitable solution was devised within the agreed upon amount of time. The improvement of the end product that met the expectations and requirements of the consumers resulted in an increase in turnover for our customer".

[www.vaess.com/alginate](http://www.vaess.com/alginate)

## BUSCH VACUUM SOLUTIONS INTRODUCES NEW R5 RA

The new rotary vane vacuum pump R5 RA 0520 A from Busch increases energy savings by up to 25%. It features a compact and hygienic design, reduced heat emissions, and enables faster and easier maintenance. The optional ECOTORQUE variable speed drive provides up to 50% additional energy savings and a 20% increase in pumping speed.



The proven R5 RA from Busch now comes in an improved version with a completely redesigned interior. The new vacuum pump is 25% more energy efficient than its predecessor, thanks to the optimized compression ratio, pump stage dimensions, and oil discharge path.

It is also available with ECOTORQUE, the Busch variable speed drive (VSD), that enables the pumping speed to be adapted to the exact requirements of any process. As a result, additional energy savings of up to 50% and a 20% increase in pumping speed can be achieved. The accessory extends the supply voltage range supported by the vacuum pump, making it suitable for use in almost all countries around the world. This compact and cost-effective solution is also available as a retrofit.

Compared to the previous generation, the R5 RA 0520 A has a 20% smaller footprint, is 25% lower in height, and the absence of external piping improves leak tightness. The compact and hygienic design features surfaces that repel water and dirt. The total number of spare parts has been reduced by 40%, making maintenance fast and efficient, with

all service-related parts located on one side. Heat emissions have also been decreased through an improved cooling system that combines optimal pump operating temperature with compact construction.

The new vacuum pump is made for continuous operation in the rough vacuum range with vacuum levels down to 0.1 hPa (mbar). Field tests were successfully carried out to validate performance and reliability.

The R5 RA 0520 A and the R5 RA 0520 A ECOTORQUE set a new standard in vacuum technology. The pumps are suitable for various applications in vacuum packaging, food and plastics processing, and many other industries. They are an excellent choice for companies looking to improve their processes while minimizing energy costs and reducing their environmental impact.

[www.buschvacuum.com](http://www.buschvacuum.com)

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## SEYDELMANN PRESENTS NUMEROUS NOVELTIES AT SÜFFA 2023



*Automatic Mixer-Grinder AE 130 M*

The days are getting shorter and the start of the trade fair for the artisanal butchers in Southern Germany - SÜFFA 2023 in Stuttgart - is approaching. As in previous years, Maschinenfabrik Seydelmann KG will be present again this year with a large booth and numerous novelties.

Seydelmann has always been a driving force in the development of the industry and has consistently transferred innovations from the industry to the butchery and vice versa. This principle is also the basis of the completely newly developed Automatic Mixing Grinder AE 130 M.

The Automatic Mixing Grinder AE 130 M combines three functions

with a low overall height and small space requirement, thus increasing flexibility in production. It allows mixing and homogenizing and subsequent grinding via the grinder outlet. Thanks to the removable mixing unit and large feeding worm, it can be used as pure Automatic Grinder and can also reliably and easily feed whole muscle pieces into the cutting set. The use as pure Mixer with discharge via the separate discharge flap completes the possible applications.

Optionally, the new Automatic Mixing Grinder AE 130 M can be equipped and operated with a manual or pneumatic separating set, the new Seydelmann cutting drum and a lifting device for E2 boxes.

Another novelty is the Seydelmann cutting drum, which has already been used successfully for years in industrial grinders up to outlet sizes of 200 mm. This can also be used with the Automatic Grinder AE 130 now. It ensures the efficient separation of hard particles such as pieces of bone, cartilage or tendons. A unique feature is that foreign bodies such as plastic particles or foil residues are also reliably separated out without further grinding. The system, which consists of a perforated drum and an extended working worm, enables a significantly higher throughput and thus hourly output with lower temperature input compared to conventional cutting sets. The system operates contact-free and therefore without any metal abrasion.

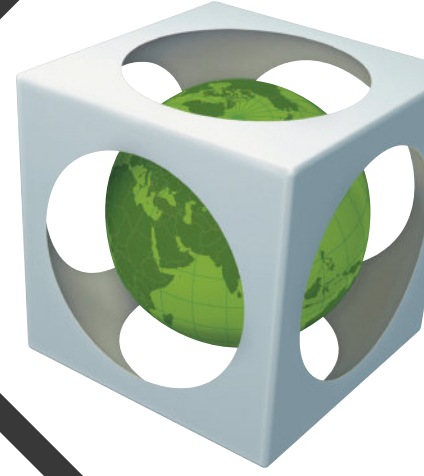
Also new is the Auto-Command 500 control system, which is now part of the standard equipment of all butchery cutters. In addition to manual operation, it also enables automatic program control of different recipes. The user-friendly design and logic structure of the display ensures process-safe and intuitive operation and is also a response to the shortage of skilled workers in the industry. All relevant data can be clearly read/viewed even from a distance, and the robust design in protection class IP 69K allows easy and thorough cleaning. Recipes are created via the control system's touchscreen, while program selection and program start continue to be performed via the knee switches on the machine.

[www.seydelmann.com/en](http://www.seydelmann.com/en)

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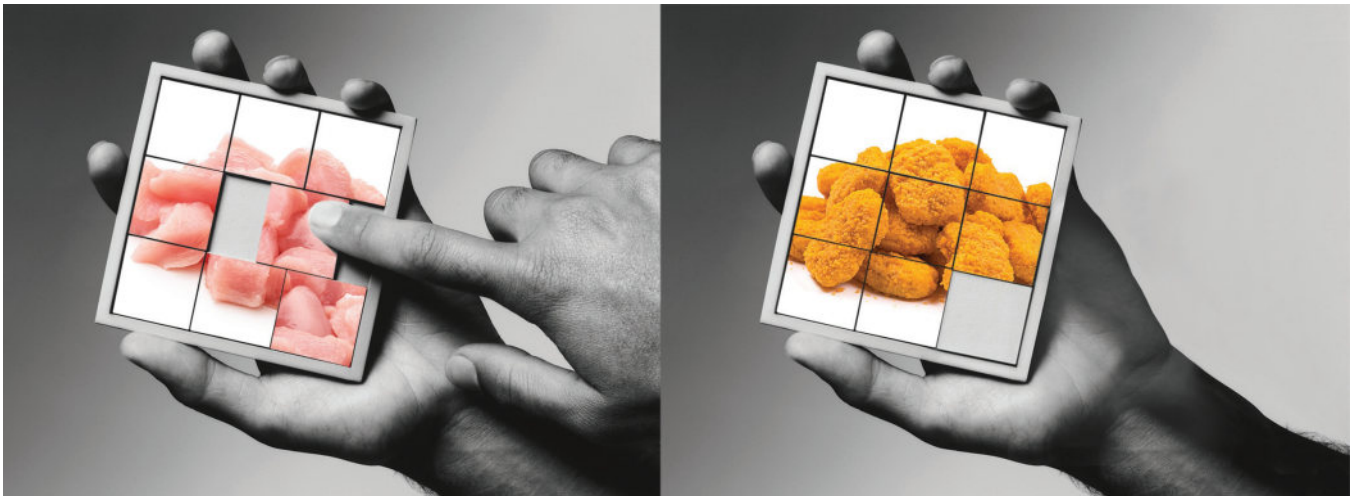
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## SOLVING THE QSR PRODUCTION PUZZLE

### How to Streamline the Process of Making Consistent QSR Products?



*Morten Dalqvist,  
Product Specialist Portioning*

Quite some poultry processors are producing chicken products for Quick Service Restaurant chains (QSR, aka fast-food restaurants) and prepared foods. The market is there and fast growing. Marel stands out when it comes to solving the puzzle of raw material preparation for QSR end products such as fillet strips, tenders, burger fillets, nuggets and cubes. The keyword in this matter is consistency: consistent size, consistent weight, consistent quality. Morten Dalqvist, product specialist for Marel Portioning,

explains why processing QSR products can be challenging.

#### What are QSR chains looking for specifically?

“Poultry processors are asked to supply high-quality bone-free uniform products only, with a fixed length, fixed width, fixed weight and sometimes even more constraints. The QSRs demand perfect consistency, so that the end products stay uniform, even after being finished off (marinated, coated, fried) in the individual restaurants. Processors producing for QSRs, on the other hand, are aiming for higher yields, labor reduction and increased throughput.”

#### Which puzzle have you solved?

“For poultry processors, it can be quite a complex puzzle how to turn their non-uniform muscle meat raw material into uniform products that comply with the quality demands set by the QSR

chains. It doesn’t matter if the end product is a cube, a strip, a fillet burger or a combination of these; the puzzle remains complex.

We at Marel have figured out how poultry processors can cope with raw material variations. By combining all production factors in the right way, we can always create consistent end products, regardless of the input material. In cooperation with our customers, we developed methods and processes to produce the right product at the right quality, with the highest possible yield, using a limited number of operators.”

#### How does this work in practice?

“A certain QSR brand asked some of our customers to produce specific fillet burgers, which are breaded whole muscle meat products. This has become a very popular burger now, that needs to be produced in high volumes in Europe. And now other QSR brands are following this fillet



***“It can be quite a puzzle how to turn non-uniform raw material into uniform QSR products.”***

burger trend. So more and more processors around the world will be asked to produce to these specifications. If they are Marel customers, they'll benefit from our expertise and experience in supplying such QSR solutions worldwide. We designed scalable and modular systems by combining various Marel systems, such as I-Cut 122 and SmartSplitter, to transform the chicken meat raw material into the required QSR product, in this case, breaded whole muscle burgers.

We can also precisely outline the financial benefits of installing such a Marel QSR processing line - whether it is a new line, an automated manual line or a replaced existing line. We have, therefore, really solved the complex puzzle of creating QSR end products.”

**Why does Marel stand out in this area?**

“We have succeeded in automating many processes that are relevant

for QSR production, from pre-selecting raw material to fixed-weight portioning. Gradually, we need fewer and fewer operators at the line, which is good, given the poor availability of manual labor worldwide. For processors worldwide, labor reduction is an important argument to opt for automated production of QSR products.

In addition, the return on investment is mostly a very short time, as yields will increase; machines are more capable of maintaining a consistent quality level than people, who get tired at the end of the day. Also, the speed of handling products will go up. Applying Marel's solutions for this market will result in a considerable throughput increase, which is really needed, because QSR customers usually ask for high volumes.”

**What about food safety?**

“When producing for QSR chains, our process can also inspect the

deboned meat, which is part of our scope. Adding a SensorX to the QSR line will ensure food safety by detecting all bone remnants and other foreign hard materials.

When producing for QSR chains, Marel can integrate many more processes, such as fillet value optimization or Innova software process control. In this way, we offer complete control of getting the right volumes at the right place and the right time, always with food safety in mind,” concludes Morten Dalqvist.

**Coating**

After having been cut to the proper size, the products need a coating. Some QSR chains prefer to do their own coating, but it can also be done automatically by Marel solutions with extremely consistent and high-quality results. Marel coating lines are available in 700 and 1000 mm width, for high volumes.

[www.marel.com/poultry](http://www.marel.com/poultry)



## PET FOOD PACKAGED IN AN EFFICIENT, RESOURCE-SAVING AND EYE-CATCHING WAY: HEART-SHAPED EASYLID® TRAYS AND MONO-PP THERMOFORMER PACKAGING FOR SNACKS

The worldwide growth in the number of pets during the pandemic years has brought higher demands to the international pet food market. Buying criteria, which we know from our own food items, now also often apply there: pet owners pay increased attention to the quality of ingredients, a high-class product presentation, and optimal shelf life. A well-known partner of the pet food industry is SEALPAC. With efficient, high-tech traysealers and thermoformers, as well as the development of innovative packaging concepts, the company has firmly established itself in this segment.

A significant category in pet food is snacks, such as dog or cat treats to reward the four-legged friends. In this competitive section, pet food manufacturers must be able to adapt quickly to the latest trends, so that they can always meet the current needs of their customers. Here, packaging plays a key role. This is where the high-performance machines from

SEALPAC, which have been used successfully in the food industry for decades, are able to provide support. "Suppliers of pet food are increasingly relying on our machines and packaging expertise, both for tray-sealing and thermoforming. Our skills are particularly in demand in the snack portfolio, as two recent examples show," says Marcel Veenstra, Marketing & Communications Manager at SEALPAC.

### Flexible Thermoformer: Dog Snacks in Three Packaging Formats

The manufacturer Natural Greatness from Valencia in Spain, which offers dog food without artificial additives, is particularly dependent on flexibility in production. It takes advantage of the use

of SEALPAC's RE20 thermoformer, which is suitable for various rigid and flexible film applications. Just like the other models within the RE-series, this all-in-one thermoformer can handle multiple packaging solutions without significant effort: from flexible film vacuum, skin, shrink and MAP applications,

up to modern solutions based on recyclable mono-materials or films with a high fibre content.

In close cooperation with SEALPAC's representative EMO S.A., new packaging for dog snacks was created at Natural Greatness in three different formats. Two products are being sold in an attractively designed, triangular sleeve, the third is provided with a large label. All three pack formats guarantee optimal shelf life without sensory changes to the product, even after longer storage. Due to the required water vapor barrier, the flexible packs are made from mono-PP. "Thanks to the mono-PP, these single-material packs are completely recyclable after use, hence contributing to more resource conservation," explains Marcel Veenstra.

With the SEALPAC RE20 thermoformer, the Spanish manufacturer has opted for a compact yet high-performance solution.



Innovative thermoforming concepts for pet food. All-in-one solution with SEALPAC's RE-series thermoformers.



Thermoformer packs for delicious dog treats. Produced from mono-PP film, hence fully recyclable.



It is equipped with the unique Rapid Air Forming system, which achieves an improved forming consistency, especially in the corners of the pack, whilst using shorter vacuum and ventilation times. This results in higher outputs, as well as the possibility to use thinner materials, but still creates stable and perfectly shaped packs. The required level of flexibility in the production of Natural Greatness is supported by the innovative quick tooling exchange system on the RE20, which enables frequent product changes with minimum downtime.



Heart-shaped EasyLid® tray for cat snacks. Reduce plastics by sealing and lidding in one step.

### Cat Treats in Reclosable, Heart-Shaped Tray

The company Futternapf in Germany was looking for a particularly eye-catching solution for its cat snacks to meet modern packaging requirements. It turned to SEALPAC as its partner. A reclosable, heart-shaped tray was developed for its so-called 'Knabberkissen' ('nibble pillows'), which immediately

catches the eye on the crowded retail shelves due to its striking design. "Our innovative EasyLid® packaging system is used here, which we developed in cooperation with our Dutch partner Naber Plastics. It was already in use at various of our customers, but not yet in this unusual shape," as Marcel Veenstra explains.

The EasyLid® solution combines a patented, injection-moulded tray, produced by Naber Plastics, with a unique tray-sealing technology by SEALPAC. The tray has a common sealing edge, as well as an additional ring. A peelable seal is applied to the regular sealing edge, whereas the additional ring is hermetically sealed in the same process. As such, upon opening the tray, the lid functionality is automatically activated. It means that the additional snap-on lid, common for this type of snack

packaging, is no longer required. Also, there is no need to invest in a lidding system that requires extra space and more personnel in the factory.

To increase awareness, Futternapf's EasyLid® tray was given an attractive heart shape. It is available in two different heights and volumes (47mm high for 70g and 87mm high for 140g). The trays

are made of mono-PP, making them fully recyclable after use.

### Extraordinary Geometry, Full Line Control

For any reliable packaging process, the trays must be able to run smoothly on the conveyor belt. In this case, we are dealing with an unusual shape that is difficult to guide, but it is not a problem on the SEALPAC traysealer. "We have developed our Walking Beam in-feed system for such cases," says Marcel Veenstra. "Instead of a continuous conveyor belt, the well-enclosed trays are transported in fully controlled waves at a consistently high speed. It also guarantees the most accurate positioning of the trays underneath the automatic filling system," he adds. Futternapf is using a SEALPAC A5 traysealer. This model is ideal for getting started with fully automatic packaging, as it combines many of the properties of the larger SEALPAC traysealers in a particularly space-saving design.

"These two examples show how eye-catching packaging solutions can be created for the pet food market, which combine efficient production with highest product quality and more resource conservation. SEALPAC and its local representatives are always happy to provide comprehensive advice on this," emphasizes Marcel Veenstra.

[www.sealpacinternational.com](http://www.sealpacinternational.com)

# REIMAGINING PLANT MEAT

By Henk Hoogenkamp, Protein Applications Expert

People, plants, animals, soil, water, sunshine, and ecosystems are all connected to food. New thinking will be necessary to allow the global food industry to transform and revolutionize the way food is produced by creating an environment-friendly supply chain that takes no more than what planet Earth can give.

It is estimated that the food industry loses or wastes one-third of global agricultural production. Drastic changes will be necessary to change the current linear economy chain models to a circular economic model across all levels of the value chain. It is further estimated that mining and processing of raw materials is responsible for 50 percent of global greenhouse gas emissions and 90 percent of biodiversity loss.

The natural environment together with the global ecosystem could have devastating consequences if these variables are not timely addressed, including the need avoiding waste, and pro-actively use side-stream upcycled products such as highly valuable protein ingredients like spent barley protein. Hence, a major part of the emerging circular economy needs resource efficiency that is predominantly based on sustainable source in such a manner that they can be re-used, disposed, or returned to natural cycles without harming the fragile environment.

The circular economy for the collective food industry is based on four principles:

- Circulation of non-renewable resources
- Sustainable extraction of renewable raw materials while regenerating nature.
- Maximization of waste elimination and minimalization of environmental pollution.
- Maximization on biodegradable support additives such as packaging.

Within this framework, the circular economy preferably also targets a shift in the energy model from fossil fuel to renewable sources.

## Absorption is Key

Around 33 percent of all the CO<sub>2</sub> released is absorbed by forests. By removing valuable forests,

one of the world’s most effective “carbon sinks” are lost. Despite all good intentions of the major agri-companies, their commitment of pledging to net-zero has little or no chance of meeting the objectives by 2025.

Around 60 percent of the global deforestation is caused by agricultural commodities production, especially animal nutrition. So far, most agri-companies that have committed to net-zero carbon emissions are at risk of missing their climate targets. The primary drivers of deforestation are beef, soy, and palm oil with coffee, rubber, cacao, and sugar not far behind.

Transformative pathways of behavioral and structural changes will be needed to embark on a diversified agroecological production system which aims to increase access to healthy and sustainable diets. Increasingly, younger affluent consumers prefer food products that care about sustainable agricultural practices and are minimally processed while maintaining a natural status. Decoding these preferences translate in health, convenience, and TASTE. In other words, if the taste does not meet the expectations, consumers tend to think less about the health of the planet.

Whatever transformative pathway is chosen; it is important to remember that the most crucial factor influencing the enjoyment of consumers is still their sensory appeal, despite all the green messaging. In affluent societies, 1 in 3 consumers will not consider





buying 100 percent plant-based foods because of poor taste and inferior texture. The technological reasons are clear: besides the lack of flavor and color of most plant ingredients, the proteins neither perform in the same way nor provide the same favorable organoleptic like taste and texture.

### Explaining Why

The plant-forward movement has clearly captured mainstream and continues expanding in new territories and applications in multiple product offerings. Driven by a combination of more health, environmental, and ethical awareness, consumer demand for plant protein formulated foods starting in 2018 initially showed explosive sales growth. Unfortunately, inflation and tighter household budgets changed all that.

It has been said before that consumers decide what to eat with their wallet. This rule seems to be relevant again now that consumers love affair with pricey meat substitutes seems to be waning. In the US, sales of vegan burgers have slumped by almost 30 percent in the first six months of 2023, as consumers shifted away from expensive plant-meat products amid the cost-of-living crisis, as well as the doubt about the nutritional wholesomeness.

Not just the US, also sales of plant-meat foods in the UK and Germany unexpected slid 6 percent in 2022, with further declines recorded in 2023. Not to mention plant-meat startup companies going into administration and pulling products from the supermarket shelves.

Self-interest climate change and vegan groups don't want to hear it,

but pressure on household budgets force many shoppers cutting down on "fake met foods", and instead move back to cheaper proteins, including hybrid or traditional meat choices. In addition, there is growing concern about the highly processed nature of most plant-meat products, including the use of chemically-sounding names such as methylcellulose, and enzymatically isolated flavoring and debittering systems. The verdict is still out but it seems that the ambiguity around the perceived health benefits of plant-meat foods is also a significant part of the decline in sales. The question to answer is if the backlash in meat-free popularity is here to stay, or considered a temporarily decline which will revive after some time.

### Many Angles to Consider

Even though industrial livestock continues to generate increase in the environmental footprint, alternative meat and dairy will not be the complete answer. Instead of just focusing on a protein transition, there must be a democracy to hear what small-scale farmers and food-insecure populations have to say. Reason being that the multinational companies -including their acquisition activities of successful startups- tend to reinforce the reliance of plant protein and over-processed food choices that dominate and polarize public debate about traditional consumption of meat and dairy. The key element in making a global sustainable food transition will be support for farmers in developing regions to (partly) move away from industrialized animal-harvest farming toward sustainable and ecologically sound livestock farming and plant-based alternatives.

### Harvest Variables, Globalization & Climate Change

Globalization is partly responsible for the increase in the volume of grain and pulse crops traded. There is often a correlation between export demand and countries reducing their stockpiles to the point of possibly reducing food security. Weather conditions such as dry spells or heavy rainfall can cause a string of poor production years, as well as occasionally provide above-average high-volume harvest numbers.



Although plant protein can play a key role in reducing the ecological and environmental footprints of global food production, there is still a risk that the over-reliance on a few crops can lead to further reduction of biodiversity. Therefore, care should be taken so that the drive for more plant protein consumption does not cause harm or issues like deforestation and loss of wildlife and biodiversity.

The global ecosystems need a reimagining of food systems to operate within nature's boundaries. Conventional agriculture is strained to a point that it is unsustainable, especially that the world might possibly run out of farmable land to feed the fast-rising population by 2050. To be compliant, food companies need to develop a vision of an economic system that prioritizes the biodiversity of nature's assets. Preferably, these objectives

need to be accomplished in such a manner that capital, health, and affordability are harmonized on a platform of corporate sustainable environmentalism.

The overall amount of protein available for human consumption may decline with rising atmospheric carbon dioxide (CO<sub>2</sub>) levels. Elevated levels of carbon dioxide can block plants' absorption (=assimilation) of nitrates, resulting to foods and crops with reduced nutritional quality. Studies have indicated that protein and nitrogen concentrations in plants decline under elevated levels of carbon dioxide -indicating that the nutritional quality of food crops is at risk as climate change intensifies.

### Clean Disruption?

There is real change when a levy or tax will be enforced on foods such as beef and dairy or shutting down active farms to forcefully achieve deep cuts in emissions by adopting circular economy strategies that reduce demand or limit export. Much to the chagrin of farmers, these government strategies are already being implemented in the Netherlands and even creating social and political unrest, as well as major parliament voting upsets.

The most recent reports from June 2023, show that food systems are responsible for up to 31 percent of global greenhouse gas emissions. This is an alarming number because if nothing else changes, they will push the planet beyond 1.5 degrees Celsius by mid-21st century. The world cannot achieve agreed upon climate targets without incorporating and implementing a more holistic resilient transformation of its food harvest and processing to healthy, nutritious,

and sustainable diets, all embedded in a nature-positive ecosystem.

To be fair, it should be noted that the shift to higher levels of ultra-processed foods in the last decennia also significantly contributed to greenhouse gas emissions as well as destruction of wildlife habitat and monoculture, causing a debilitating ecological footprint. These ultra-processed foods are, for example, heavy additive-loaded ready-to-eat meals, margarine, and sodas.

When all these variables are implemented, only time will tell if the doom-say assumptions of the climate experts are correct in their assumptions that increased plant-based "cleaner food" consumption will indeed meet the target of limiting global warming to 1.5C.

### Zero Deforestation Global Economy

It is estimated that the demand for crops like soybean is expected to increase by 80 percent in 2050. Most of the soybean is used as animal feed. For instance, some 60 percent of soy grown across the world is shipped to China and mainly used for animal feed that ultimately ends up as slaughtered meat.

Soy agriculture requires large amounts of water and is increasingly associated with driving deforestation leading to catastrophic environmental damage, including eradication of habitat and loss of biodiversity. With demand for soy protein and soy oil increasing as well as land and water issues of the crop becoming unsustainable, the global population needs finding alternative protein sources. These alternatives are now being developed using sources like

upcycled protein sources, micro algae and cellular agriculture, including molecular farming.

Due to agricultural expansion, deforestation and forest degradation continue to take place at alarming rates. Hence, it is imperative that new agricultural production methods are implemented without destroying valuable forest and wildlife areas. Ideally, whenever possible, reforestation should be made within the framework of the transformative solutions for climate change, biodiversity, and the much-needed food security.

Legacy and startup companies alike should both accomplish their mission to end deforestation within the forest reserve and restore degraded forest and wildlife. Companies like these and the premier global plant protein companies should work together to accomplish these lofty goals by promoting regenerative agriculture and strive to become resource-positive companies by sourcing only sustainable crops like soybeans to accelerate the transition to a net-zero global economy.

Furthermore, it is expected that effective diligence across supply chains will ultimately be introduced, and that all food sold will be mandated as guaranteed deforestation-free. Supermarkets that are in the first line of consumer-defense will likely drive these transitional changes needed to ensure that food systems deliver affordable, healthy, and ecologically sustainable foods.

### Challenging Times Prompt New Solutions

A fundamental shift in how food is produced is needed. This

includes the practices of over 500 million smallholder farms and the consumption patterns of the global population, with special emphasis on the developed countries and the huge waste of valuable food. To minimize environmental degradation while still feeding some 10 billion people by 2050, a drastic cut in consumption of meat, dairy, and eggs will be needed. However, will these goals be attainable knowing that the world production of both dairy and meat is still upward trending?

The meat eaten today in record consumed quantities overwhelmingly comes from genetically uniform, immunocompromised, and pharmaceutically treated animals, often stacked in confined spaces. Unfortunately for most consumers, the present and future of animal farming is low on the list of priorities, mainly due to the lack of public understanding. However, the continuation of factory-farmed animals should be top priority on the agenda to determine the limits of this huge industrially powered supply chain.

### Consumer Demands

An increasing number of consumers living in affluent societies believe that vegetarian or vegan food choices are more sustainable than slaughtered food options such as beef, pork, and chicken. To keep up with the plant-based phenomenon and the shifting consumer attitudes from trend to food (r)evolution status, the legacy brands are now forced to closely monitor market changes. This is especially the case now that about 20 percent of the population in affluent societies - known as "flexitarians" - are inclined to adapt to increased plant-based

eating, though for diverse reasons, with more plant protein or fiber in their diets and eating more healthfully while feeling good about their proactive attitude for helping the environment.

Clearly, this consumer segment in affluent countries is giving more support to the plant-based

dietary choices that not only help manage weight, but also address underlying conditions like wellbeing and reduce the risk of degenerative diseases such as cancer, diabetes type 2, and cardiovascular disease.

It is evident that the younger consumers under the age of 30 are

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the early adopters of a vegetarian dietary preference. In contrast, the consumers under the age of 50 are most likely to adopt a flexitarian-style diet as a meaningful compromise. These trends do seem to transcend both demographic and generational groups. For these groups of consumers, clean label and transparency is not a passing trend but movement that is here to stay.

There are also subtle protein-consumption differences between men and women: women are mostly interested in protein for lifestyle, satiety, and body-weight control, whereas men see protein nutrition in relation to their increased muscle strength, physical (sport) performance, and energy level.

### Plant Equivalency

There is a clear relationship between the willingness of consumers to purchase plant-milk and plant-meat alternatives or the animal-based equivalents. Most consumers believe that plant milk and plant meat are too expensive, and they would prefer to see similar pricing, suggesting that price is a key barrier to plant protein food consumption.

The latter is especially true to capture or win over the flexitarian consumer, particularly during times when the cost of living goes up. Perhaps the answer lies in the fact that margins on animal meat and dairy milk are historically low at around 10 percent, whereas margins on plant-based protein foods are typically at 30 percent to as much as 50 percent. Besides these differences, there is growing evidence that the increase in budgeted living costs does indeed challenge the

ethical and ecologically-driven buying decisions.

### Environmental & Human Health Degradation

The overriding question is if plant-based meat and plant-milk beverages lead to sustained change in purchasing behaviors. It is appropriate to ask if a vegetarian-based diet loaded with wheat, corn, soy, and rice is sustainable for long-lasting human preferences. After all, how wrong were the nutritional (pseudo) scientists and self-appointed gurus some 30 years ago when they were pushing the ultimate healthy diet high in carbohydrates and low in fat! A skyrocketing global obesity and diabetes type 2 epidemic resulted and is presently affecting both affluent and developing countries alike. It only shows how incredibly hard it is to make nutritionally-sound predictions and making dietary changes last.

A more balanced approach on the ideal human nutrition guidelines will be needed. Perhaps it is now safe to conclude that optimal human health, in fact, clashes with the "health" of the planet Earth.

It is a fact that it takes more than just calories to nourish humans. Over the last 50 years, legacy food companies have continuously removed essential natural components from crops -especially roughage and fiber- to make food taste more delicious. Most of these companies spend lots of energy in finding the bliss point -the stage of continually eating food. Quite a bit of compulsive eating resulted, and many people are on autopilot when eating these "great-tasting, empty-calorie" foods.

This is good for marketing and sales, but bad for the nutritive status of a human body.

In the developing world, diets high in dairy and meat are expected to rise exponentially due to the growing number of people who have the means to afford these much-beloved foods as their primary source of nutrition, even though the increase in animal protein consumption will mean a real setback in reducing greenhouse gas emissions.

As a side note: consumption of fluid milk in North America declined by 25 percent between 2006 to 2022, along with a triple-digit increase in dairy alternatives within the same time frame. However, to put it into perspective, this decline in cow's milk consumption is more than compensated by the sharp increase of dairy sales in developing countries. Subsequently, the net greenhouse gas savings do not always reflect what special interest groups make the consumer believe.

### Transformative Changes

The growing number of transformative changes with increasing meat and dairy consumption, as well as the rising demand for food and nutritional quality, will put additional pressure on the agricultural ecosystems. To meet world needs by 2050, an estimated 70 percent more food must be produced from less land and fewer inputs like chemical pest control, less water and fertilizer, as well as less or no antibiotics for raising slaughter animals. In addition, the inequities between developing and affluent societies must be solved to improve the economic and societal imbalances. ●

## NEW SKIN FILM QUALITY FOR MEAT, FISH & CO. - WITH THE SKINFRESH TOP EXPERT RANGE BY ADAPA

Skin films are a popular choice for packing premium meat and fish products due to their premium appearance on the shelf and their potential for resource savings. In order to better meet the demands of its customers, adapa Group has comprehensively revised its SkinFresh Top range and now offers "SkinFresh Top Expert", a solution that is at the forefront in terms of both processing and presence at the POS. This once again exemplifies the Group's development expertise, putting even established products to the test during R&D in order to meet contemporary user needs at all times.



*Having already proven its reliable performance on thermoformers and tray sealers, adapa's newly revised SkinFresh Top Expert range works perfectly on all common substrates and impresses with its premium optics.*

### Skin Packaging - Premium Look for Premium Products

Skin packaging is the first choice for presenting high-quality meat and fish products. After all, anyone who offers first-class quality is entitled to show it. The transparent, perfectly fitting films enclose the packaged product like a second skin, allowing it to be inspected from all sides. The premium look also characterizes the presentation at the POS: meat, fish and more are gently secured in the packaging and protected from drip loss by the tight-fitting, high-gloss film. This enables them to be presented in an eye-catching upright or hanging presentation. Another advantage of Skin is its improved shelf life: compared to other common packaging methods, this can be significantly extended with Skin packaging. Finally, skin also goes hand in

hand with convenience, e.g. for packing ready meals that can be microwaved in their packaging with suitable film.

### "SkinFresh Top Expert" by adapa - Diverse Applications, Excellent Performance

The accumulated know-how from more than three decades of experience in the development and production of skin films has resulted in adapa's high-quality SkinFresh Top Expert range, which covers all common applications. The modern films for packing fresh foods such as meat, poultry, fish and cheese, as well as plant-based products and convenience dishes, now feature a new formulation for even better processing on all state of the art packaging lines. The SkinFresh Top Expert range includes highly transparent, glossy and even printable PE-based

films with a high barrier that tightly yet tension-free enclose the product. Elastic and at the same time robust, they can be used for food products of various heights and are also suitable for packaging products with bones. The high-performance skin films are available in film thicknesses between 80 and 150 µm and seal reliably to PE sealing layers or APET and PP mono films and trays. For material-saving and thus resource-saving applications, it has thereby been possible to reduce the film thickness further and further while maintaining the same high performance.

### Concentrated Know-how, Continuous Development

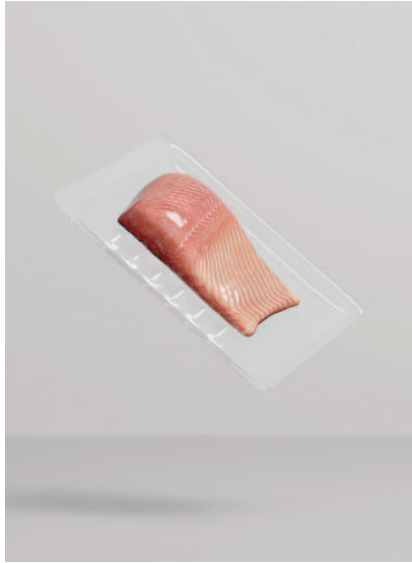
adapa Group combines the expert knowledge of highly specialized European companies in the flexible packaging sector that have been successful on the market for

decades. The great strength of the Group is the accumulation of competencies in the specialized companies of the group and the

and technical know-how not only to regularly serve the market for flexible packaging solutions with innovations, but also to

formulation, the SkinFresh Top Expert portfolio now plays a leading role in performance comparisons in the skin film segment. Users who want to see the optimized films for themselves using their own product as an example can take advantage of the services offered by adapa's PackScience Center in Kempten and see the films in action live on traysealers or thermoformers in advance. Here, modern machinery is available for extensive testing under the supervision of adapa's team of experts. adapa's technical application service also provides valuable support on the customer's premises, enabling the optimum parameters for the selected film to be determined on the existing machines. In this way, premium products in premium skin packs can be shown off to their best advantage at all times.

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sharing of expertise. adapa uses its access to various technologies

continuously develop established products. Thanks to its optimized

## BEMA BV AND RESINO INKS AND IST INTECH: PIONEERING SUSTAINABLE PACKAGING SOLUTIONS

With over 15 years of experience in flexo printing, BEMA BV has built a reputation for delivering exceptional packaging solutions. Early on, the company recognized the superior quality and brightness of Resino's printing ink, which met their stringent standards. Together with IST INTECH, which supplied BEMA BV with a superior UV LED curing system, it became a three-way partnership that lays down a foundation for a more efficient and effective production process. As the volume of orders grew over the years, BEMA BV found that Resino's

fast delivery and high-quality inks in combination with good UV curing system (manufactured, delivered by IST INTECH and Installed by IST Benelux BV) did not only allow them to meet their customers' needs but also led them to an environmentally friendly, cost-efficient printing process.

### The Journey Towards UV LED Curing Systems

BEMA BV was not content with their achievements and sought continuous improvements in their

production efficiency and product quality. The printing department, operating 24/7, played a critical role in the production of printed casings. Through careful monitoring, they identified a bottleneck in their UV-curing systems (Mercury lamp systems), which limited their production capacity. To address this issue, BEMA BV made the decision to invest in a new upgraded curing system.

At the time of this decision, the company faced additional challenges, including the impact of the COVID-19 pandemic and





the ongoing Ukrainian war. These factors led to increased energy prices, making it essential for BEMA BV to explore alternative options for reducing their energy consumption and overall production costs. In their pursuit of a more sustainable solution, they became aware of Resino's ongoing development of an LED curing system paired with LED inks for printing on sausage casings and food packaging.

Recognizing the potential benefits of this innovative system, BEMA BV, Resino and IST INTECH collaborated on a series of tests in BEMA BV's production facility. The results were promising, and the UV LED system from IST INTECH with LED inks proved to be the right solution for their needs. This breakthrough not only significantly reduced their energy consumption but also increased production speeds and significantly reduced make-ready time. The modularity and efficiency of the IST INTECH UV LED curing system in combination with Resino's UV Led inks aligned perfectly with BEMA BV's commitment to environmental sustainability.

Tom De Booij, Change Manager at BEMA BV describes the successful outcomes: *"Due to the curing of the LED inks with UV LED lamps supplied by IST INTECH our energy consumption has decreased by over 40% on this machine, our production speeds have doubled, and the quality and colors of our prints have significantly improved due to better ink curing"*.

BEMA BV is currently running with 1 LED system in their printing facility and has been working with LED inks for over 3 months. For that reason, BEMA BV recently made the decision to implement the LED system on their other printing machines as well, enabling them to work exclusively with LED inks and further enhance their production efficiency and with the satisfactory result on the first installation returned to its tried and tested partners Resino and IST INTECH.

*"One of our long-term goals is that our production facility is production for 100% on self-generated energy. By reducing the energy consumption of our printing machine with 40%, this contributes a lot!"* Tom de Booij, Change Manager at BEMA BV

### Ensuring Food Safety and Consistent Quality for Customers

For Bema BV's customers, consistent product quality and food safety were the most important things, assuring that their products were food-safe and had no negative side effects in their production processes. The UV LED system underwent rigorous internal testing with LED inks before production runs for customers and clients.

New migration tests were conducted to ensure that the LED inks, in combination with casings were food safe. Once BEMA BV was completely satisfied with the

results of the LED inks, they informed their main customers about the implementation of UV LED systems in their printing facility. Customers responded positively to the fact that Bema could now deliver the same high-quality product in a more environmentally friendly manner which frames Resino's objective.

*"Our aim is to help more printers to switch to UV LED - thereby heading towards a more sustainable environment and a healthier work environment"* Kristian Karlsen, R&D Director at Resino Inks.

### Why IST INTECH?

Bema BV selected IST INTECH to meet their high-quality standards. Because of the modularity, high efficiency, and user friendliness of the UV LED curing system, it allows Bema BV to gain an extra energy saving within their production process above the normal savings you will have when you adapt from Mercury systems to UV LED.

*"Sustainability and proven technology are definitely most important for BEMA BV. Together with Resino inks we have accomplished this task. It is nice to see how easy and quick the printer's set-up the system for a production"* Koen Santegoeds, Global Sales Director

[www.resino.dk](http://www.resino.dk)  
[www.bemabv.com](http://www.bemabv.com)  
[www.istintech.com](http://www.istintech.com)

## FILM SPECIALIST WENTUS DRIVES SUSTAINABLE PACKAGING SOLUTIONS FORWARD WITH POWERFUL DEVELOPMENT TEAM

“Think. Create. Protect.” - under this guiding principle, Wentus Kunststoff GmbH from Höxter develops films for the food and consumer goods industry. With the help of its highly qualified and excellently equipped R&D, the specialist for flexible packaging solutions is able to react immediately to current market trends and individual customer requirements. This results in modern products such as the contemporary PURE range, which comprises high-performance packaging films made of mono-materials that stand for good recyclability. Wentus’ exciting cooperation with the recycling company Saperatec, which makes plastics from used beverage packaging usable again, is causing a stir in the industry.

Greater sustainability is the order of the day when it comes to developing modern packaging solutions. Sustainable packaging must optimally protect its contents, because regardless of whether it is food or consumer goods - the largest part of the climate footprint is accounted for by the manufacture of the product itself. Packaging materials can be made



Christof Renz, Managing Director and Melanie Zurmöhle, Head of Marketing in conversation.



„Think. Create. Protect.“ - this is the guiding principle under which Wentus GmbH, with 280 employees in Höxter, creates and produces flexible packaging solutions to protect products in the food and consumer goods industry.

more resource-efficient through economical use of materials and energy, as well as good recyclability. Wentus reconciles the various properties that characterize more sustainable packaging solutions with contemporary products: With its range of modern fresh food and non-food films that combine maximum product protection with good recyclability and rely on mono-materials, the company is consistently on a sustainability course.

### Recycling-Friendly Single-Material Packaging

The following applies to mono-materials: their so-called “foreign body content,” which is required, for example, to achieve a reliable barrier effect, must be below five percent. Wentus, the proven skin specialist, succeeded in

achieving this last year with the formulations of almost all skin films - with unchanged or even further improved barrier properties. With the new PURE film family, whose highlights include the products WENTOPLEX® PURE PE and PP, Wentus has also developed innovative single-material films for packaging food products that have a high oxygen barrier and a first-class appearance. Together with the matching PURE bottom webs, which can be excellently formed, users receive complete systems from a single source that are highly machineable, printable to a high standard, and completely recyclable. They are used by Wentus customers, for example, as thermoformed packaging with lidding film or as flowpacks for products such as wraps, party rolls and more.



*As a supplier of flexible packaging solutions, Wentus plays a central role in supplying the international food industry.*

Films from the PURE range are also suitable for the production of WENTOPLEX® Klappack solutions. These are envelope packs for sliced products such as cheese or sausage that achieve material savings of up to 60 percent compared to conventional solutions consisting of tray and top film. In the WENTOPLEX® Light & Safe variant, the envelope packs are equipped with a reclosure in the form of a special adhesive - this saves the extra label for the closure.

**High-Performance R&D:  
Best Equipment, Special  
Practical Relevance**

Wentus owes its steadily growing range of more sustainable packaging solutions to its excellently positioned R&D: The research and development division of

the film specialist works with high-end laboratory equipment and has extensive experience. Its special competencies include, for example, measuring permeabilities and thicknesses of barrier layers in the production process and performing gas chromatographies. The specialists from the laboratory are also deeply involved in practical work: together with the application engineers, they are on site with the customers and share responsibility for ensuring smooth processes. In the event of problems or special requests, they can go straight back into development with first-hand knowledge in order to quickly arrive at feasible solutions.

**On the Pulse with Exciting  
Recycling Cooperation**

The packaging specialist's concept for success also includes cooperation with external partners. Wentus' project with Saperatec GmbH from Dessau-Roßlau shows how this joint work on future-oriented topics works. The company from Saxony-Anhalt has developed a completely new method for separating composite packaging again and thus recovering clean and valuable secondary raw materials. In the process, the bonded and coated structures of beverage cartons are cleanly separated into their individual components of aluminum, plastic and paper. The groundbreaking process produces single-variety post-consumer PE that is free of adhesives. Wentus supports the development phase and carries



*WENTOPLEX® PURE PP - The PURE range includes various single-material solutions that simplify recycling and help close loops.*

out the extrusion of the material recovered in this way in Höxter. The post-consumer recyclate (PCR) processed at Wentus produces a high-quality recycled plastic that can be processed and printed excellently and is suitable for the production of non-food packaging, e.g. for detergents. Saperatec is currently in the engineering phase for the construction and operation of the first large-scale commercial plant for composite material recycling. Those responsible at Wentus see great potential for the future in this application, especially because the source of the material recovered in this way can be clearly identified - an important prerequisite for possibly certifying recycled plastics for foodstuffs in the future.

[www.wentus.de](http://www.wentus.de)



## ISHIDA BRINGS THE X-RAY FACTOR TO PÁPAI HÚS

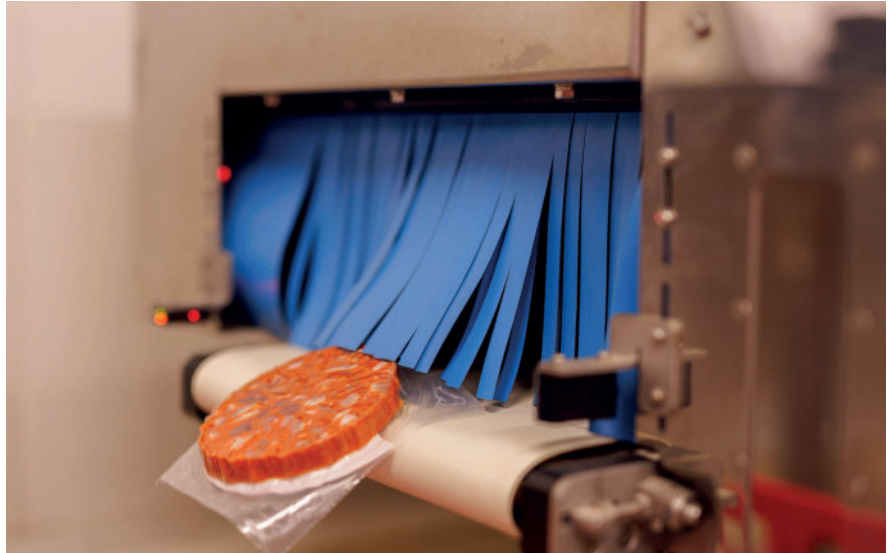
An Ishida X-ray inspection system is providing renowned Hungarian meat brand Pápai Hús with improved food quality and -security across its diverse product range.

Established in 1913, the name Pápai Hús is synonymous with smoked ham to consumers in Hungary. Nonetheless, the company provides many more types of meat, including butchering, chopping, pre-chilled and frozen meat, smoked and heat-treated meat products, ham, bacon and sausages, cold meats, grilled and vegan products.

Pápai Hús has long exported across the world and continues to innovate, with the latest addition being a vegan range, launched in 2020. These factors - export and innovation - combined in 2017, when a new deal to supply into Japan required that Pápai Hús invest in an X-ray inspection system at its factory in Pápa, West Hungary.

“It wasn’t even, ‘choose an X-ray machine,” explains Benedek Szabolcs, Technical Director at Pápai Hús. “They specifically directed us to order an Ishida X-ray machine!”

Supplied and installed by Ishida’s agent in Hungary, MasterQuality, the IX-GN-2443 soon recommended



itself to Pápai Hús for reasons beyond its initial selection.

“The nature of delicacies such as disznósajt (a traditional ‘head cheese’ that is made by combining various pork meats) means there can sometimes be small traces of bone or cartilage in the meat, which is unwanted by consumers,” confirms Benedek Szabolcs. “We realised that Ishida’s X-ray can easily be programmed to identify any packs containing these traces, allowing us to reject them before they leave the factory and therefore improving food quality.”

X-ray technology works on the principle of producing X-ray wavelengths from a generator tube which traverse through the product to be inspected onto a line sensor. The line sensor system converts the incident X-rays into a greyscale image that is further processed and ultimately displayed on the screen. The darker the area of the image, the higher the density and in this way foreign bodies which are denser than the product can be detected.

The excellent sensitivity of the Ishida X-ray means it is able to detect impurities down to 0.3mm in size, while the place of contamination can also be accurately pinpointed. In particular, the machine’s unique self-learning Genetic Algorithm



(GA) technology delivers maximum detection sensitivity and reliability. The technology focuses the machine to identify difficult to detect contaminants with a high degree of accuracy, even at high throughput rates, using image data analysis over a number of trial runs. This enables operators to optimise the X-ray system for greater sensitivity to specific and in particular to low-density foreign bodies.

Today, the Ishida IX-GN-2443 is used to check every pack of disznósajt, black pudding and cubed bacon at the Pápai factory. Intuitive pre-set options allow for easy changeovers between product and pack types which is necessary, given that the likelihood of bone or cartilage present varies according to the product.

Designed for high-performance X-ray inspection, the IX-GN-2443 features versatile detection settings that cater exactly to Pápai Hús' inspection requirements. With seven levels of image analysis and user-friendly operation, the Ishida X-ray machine makes the most complex inspection process simple.

Due to the limited space in the factory, the IX-GN-2443 is set

up as a standalone machine; products are fed manually, with accepted packs being conveyed into pallets and rejects dropping into a locked reject bin.

Used daily, the machine is now a critical part of Pápai Hús' operation. "We are very satisfied with how the Ishida IX-GN-2443 X-ray machine performs, and our partnership with MasterQuality helps us to get the best out of it," says Benedek Szabolcs.



As well as the initial installation and training, MasterQuality service engineers deliver an annual check-up. "In addition to completing essential preventative maintenance, our visits are also the perfect opportunity to discuss the performance of the Ishida X-ray system with Pápai Hús, so we can assess any refinements that may benefit the factory's operation," says Balázs Korsós, Sales Representative at MasterQuality.

"The service, support and advice from MasterQuality is exceptional," adds Benedek Szabolcs. "But what is most helpful to Pápai Hús is the reliability, ease of use and outstanding performance of the Ishida IX-GN-2443 X-ray inspection system."

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## WHY LOCATION IS KEY WHEN IT COMES TO DETECTING POULTRY CONTAMINANTS

By Dr Richard Parmee, founder and CEO of X-ray inspection technology Specialist Sapphire Inspection Systems



Food recalls are on the increase - costing companies millions of pounds each year. As well as the direct costs of managing recalls and the associated disruption to operations, the indirect costs caused by knock-on effects, such as reputational damage, can be considerable.

Foreign object contamination is a common cause of recalls - and presents a particular challenge for the poultry industry. In addition to contaminants such as metal or glass, there is also the risk of bone fragments being present. It's why X-ray inspection technology is a key element of poultry processing plants.

However, since poultry products take many forms - from whole turkeys to chicken nuggets and everything in between - there are a variety of inspection options during the production process. So how do you decide where to install contaminant detection equipment to provide the greatest security with minimum wastage?

For bone-in products, the approach is straightforward. Inspection should be done as late in the process as possible - ideally once the product is sealed, to prevent any further contaminants being introduced. By designating a high-risk, unpackaged

area and a low-risk, packaged area, X-ray can act as a 'gatekeeper' to only allow compliant products through. Even in whole birds, metal contaminants on the scale of a single millimetre can be detected by X-ray and removed from the product flow.

For products expected to be bone-free, however, inspection decisions become more complicated. Inspection at the end of the production line, in a sealed container, is beneficial as it ensures no new contaminants can be introduced. However, if value has been added, then it might not be possible to rework rejected products.

It is better to detect bone much earlier in the process - ideally while it is still whole muscle. But this also presents challenges. The natural variation between birds, and the automated preparation of chicken breasts, means the resulting muscle is not uniform. The varying thickness and uneven presentation can make it difficult to detect bones which are low density and hollow.

The development of dual-energy X-ray inspection technology has addressed some of these issues. Dual-energy systems generate two images - one produced by high-energy X-rays and the other from low-energy X-rays. Since bone and muscle are made from different atomic constituents, they respond differently to the two energies. This allows the system to differentiate between variation in thickness and the presence of bone - leading to more sensitive detection. The technology can detect wishbones

of a few millimetres in length or rib and fan bones of around 5mm.

If any unwanted bones are identified in a product, the item can be reworked at an early stage to minimise wastage. If the product is to be sold as whole chicken breasts, items given the all-clear can then be packaged and move from a high-risk to a low-risk area, via a second X-ray system to confirm the absence of metal, glass or other contaminants in the sealed product.

For processed products, the muscle is often passed through a pipeline - which offers a good opportunity for X-ray inspection. Rather than using dual energy to compensate for the variation in product thickness, the predictable cross-section of the pipeline can be used to give a uniform inspection. This uniform presentation allows for excellent sensitivity against bone - even wishbones a few millimetres in length - and sub-millimetre sensitivity to metal contaminants. Additionally, the rejected product can be diverted into a mechanical separator, removing the bone fragment but preserving the protein - ensuring there is minimal waste.

If the product has passed through a grinder, the X-ray system can be configured to ignore bones below a certain size while still rejecting larger bones. This can provide useful feedback for whether the grinder is operating as expected.

Further in the process, this material may be formed into nuggets or



other shapes. Wide-format X-ray inspection lends itself to positioning directly after the former - or after the freezer - where the product is singulated and separated. Belt widths of one metre are common, requiring specialist X-ray equipment.

However, inspection at this stage can verify individual item shape and mass - ensuring every nugget is exactly 12g, for example - and check there has been clean removal from the mould; all while allowing for the detection of sub-millimetre metal contaminants, as well as glass and bone fragments. A multilane reject or air curtain allows for the removal of a single item. Contrast this with inspection once bagged, where a single reject results in the removal of dozens of items.

As with unprocessed products, a final inspection after packaging is also valuable. Inspecting a sealed product should always be the last step in any manufacturing process. This final step also provides the opportunity to gain a final count of the number of items leaving the production line. Unlike other foreign object detection systems, X-ray technology provides a product count. By comparing the product count at each step along the process, it is possible to determine where in the process losses are occurring. Batch reporting and other KPI data can be made available to ensure uptime, detection performance and production rates are meeting targets.

Balancing performance and quality assurance with capital costs and maximising the ability to rework rejected material is key to ensuring efficient operations. Choosing where to inspect in the process is just as important as choosing what equipment to use.

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# BRINGING CLARITY TO INDUSTRY BUZZWORDS - AI AND OTHER TERMINOLOGY

By Peter Spring,  
Product Manager ProdX™, Mettler-Toledo Product Inspection



Peter Spring

Artificial Intelligence (AI) has become a buzzword, however it is often misunderstood and misrepresented in its true capabilities. In this Questions and Answers session with Software Developer expert Peter Spring at Mettler-Toledo Product Inspection, we will unravel the industry buzzwords, clarify AI's distinction from Machine Learning, and explore how these technologies are transforming the food industry.

**What is AI?  
Is it here already in the food industry?  
Where can we see it?**

Simply put AI is intended to think on its own in a manner which matches or surpasses human intelligence. It is designed to learn and adapt,

to make a decision tomorrow that is better than today<sup>1</sup>.

To do this, AI needs a lot of data - it involves the utilisation of advanced algorithms and models to analyse the vast amounts of data, identify patterns and derive meaningful insights. Unlike traditional computing, AI systems can handle complex tasks, solve problems and exhibit a level of intelligence that enables them to respond effectively to diverse scenarios.

While AI is present in high-end systems and applications, it is not yet significantly impacting production lines. However, it is extensively used for analysis, modelling and prediction. For instance, in food safety, AI can enhance the security of supply chains, increase productivity and detect machine issues before they occur.

## What is machine learning?

Machine Learning is a subset of AI that focuses on the development of algorithms and statistical models that enable computers to learn from data and improve their performance. Often it focuses on a specific task such as a voice recognition system. The system may sound intelligent, and you may think it is AI, however it will not have an advanced understanding of the language it simply listens

for key sounds and on detecting these will perform certain tasks<sup>2</sup>.

Machine Learning algorithms are designed to simply learn and adapt from the data, refining their performance over time. An example of Machine Learning in the food industry is the Predictive Maintenance feature on some production machines. Within these systems, data from machines is analysed to predict potential breakdowns and optimise part replacements, ultimately reducing downtime.

## How do they differ?

While Machine Learning is a component of AI, AI encompasses more than just learning from data. AI possesses the ability to think, reason and adapt to new situations, enabling it to come up with novel solutions that have not been pre-set. Machine Learning, on the other hand, focuses on training models on data to make predictions or perform tasks.

## Why is there confusion?

The confusion surrounding AI stems from its wide application and the misuse of the term. Often, AI is used interchangeably with Machine Learning or other technologies, leading to misconceptions about its true capabilities. It is crucial to understand that AI represents

<sup>1</sup> [https://www.splunk.com/en\\_us/form/5-big-myths-of-ai-and-machine-learning-debunked/thanks.html](https://www.splunk.com/en_us/form/5-big-myths-of-ai-and-machine-learning-debunked/thanks.html)

<sup>2</sup> [https://www.splunk.com/en\\_us/form/5-big-myths-of-ai-and-machine-learning-debunked/thanks.html](https://www.splunk.com/en_us/form/5-big-myths-of-ai-and-machine-learning-debunked/thanks.html)

intelligent decision-making and problem-solving abilities beyond mere data processing.

### What benefits do they bring?

Both AI and Machine Learning offer numerous benefits to the food industry. AI can enhance food safety and security, streamline logistical processes and improve productivity. By automating manual tasks, companies can leverage AI to make their workforce more valuable by training employees to work alongside intelligent systems. Machine Learning, in particular, enables Predictive Maintenance, optimising machine performance and reducing costly breakdowns.

### Are there disadvantages?

While the potential of AI is immense, there are certain risks and challenges. The quality of data fed into AI systems is paramount, as "rubbish in, rubbish out" applies here. Incorrect or biased data can lead to flawed decisions. Additionally, if AI systems operate autonomously without proper safeguards, a small error or malfunction in one part of the system can have cascading effects. Ensuring human oversight and implementing safeguards are essential to mitigate these risks.

### How far are we from having AI in this industry?

AI is already making its presence felt in high-end systems and applications within the food industry. However, its widespread integration into production lines is yet to be realised fully. As technology advances and connectivity improves, AI's potential for transforming operational processes will continue to increase.

### How can product inspection work with AI?

Product Inspection technology solutions can play a crucial role in enhancing AI capabilities. By integrating Product Inspection with



AI systems, comprehensive data from multiple applications, devices and processes can be accessed, enabling more informed decision-making. Our Product Inspection technology provides a vast array of data related to food production processes, such as quality control, contamination detection and package integrity. This wealth of data can be analysed by AI algorithms to identify patterns, predict outcomes and optimise various aspects of food production. For example, AI can utilise our data to optimise energy consumption, identify environmental influences and create predictive maintenance schedules, thereby streamlining operations and enhancing overall efficiency in the food industry.

### What is the next big thing in IT within the food industry?

The digitization of the food industry, driven by initiatives

like Track and Trace systems, holds immense potential for AI integration. By leveraging AI, the industry can enhance food safety, improve productivity and optimise logistical processes. Furthermore, the seamless integration of AI with

existing systems and applications can enable comprehensive data analysis and informed decision-making, leading to greater efficiency and automation.

### Conclusion

AI and Machine Learning are powerful technologies with the potential to revolutionise the food industry. While AI represents the pinnacle of intelligent systems capable of adaptive decision-making, Machine Learning focuses on data-driven predictions and tasks. By harnessing the benefits of AI and Machine Learning, manufacturers can enhance food safety, streamline operations and make better-informed decisions. As technology continues to advance, the future holds exciting possibilities for AI integration, leading to a more efficient, productive and safe food industry.

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## METAL DETECTION, X-RAY - OR BOTH?

By Ian Robertshaw, Global Key Account Manager, Mettler-Toledo

**B**oth metal detection and x-ray inspection systems play key roles in product inspection. Choosing the right technology requires consideration of many factors.

The choice of technology is not simply about the potential type of contaminant, it is also where in the production process the product should be inspected. For example, if your raw product needs to be inspected before other valuable ingredients are added then maybe a metal detection system is best. However, for end-of-line inspection when packaging integrity checks are required, as well as contaminant detection, then x-ray technology will be more suitable.

There are fundamental differences in the ways that metal detection and x-ray inspection technologies work. It is important for manufacturers to understand what these differences are and how they can impact the ability to perform optimally on certain product inspection applications.

Application really is the key word here: the nature of the product, the fill process, the potential contaminant types and factors such as the physical packaging must all be considered when selecting the right detection technology. Other deciding factors include constraints on finance, physical space, and what additional quality control checks are needed.

### Metal Detection

Metal detection systems can identify all metals, including



ferrous (e.g. chrome and steel) and non-ferrous (e.g. brass and aluminium), as well as stainless steels. They work through a system of coils, charged with an electrical current, to create a balanced electro-magnetic field. If a product passing through this field contains a metal contaminant, the magnetic field is disturbed, and this disturbance is interpreted by sophisticated electronic circuitry and software algorithms.

#### The product effect

When it comes to inspection capabilities, metal detection is suited to dry products, where the lack of moisture means the product is non-conductive, and therefore does not generate a significant 'product effect'. Products with high moisture, or those that are salty or acidic, are conductive, as when they pass through the metal detector it will emit a signal (i.e. the 'product effect') that disturbs the detection field.

Product effect is a major consideration, which can lead to high false reject rates. As well as the moisture or salt content of the product, other factors that contribute to product effect are product temperature, format, consistency, size and shape and orientation on the production line. However, manufacturers can eliminate the impact of product effect by installing a high-quality metal detection system that uses a combination of multi-simultaneous frequency operation and software algorithms to optimise performance and reduce the possibility of false rejects. This technology will also result in the system having the right level of sensitivity to pick up signals from small metal contaminants irrespective of the application.

In addition to packaged products, other applications where metal detection can be used include loose, unpackaged products, pumped products such as liquids, pastes



The technology works by generating an x-ray beam that passes through a product for inspection and onto a detector. Some of the x-ray beam is absorbed by the product and any contaminant present, and because most contaminants are denser than the products that are being inspected, the contaminants usually absorb more of the x-ray energy. This difference in absorption becomes apparent in an image generated by the system, which is then compared to a pre-determined acceptance standard. The product is accepted or rejected based on this comparison.

and slurries or free-flowing solids under gravity-fall conditions.

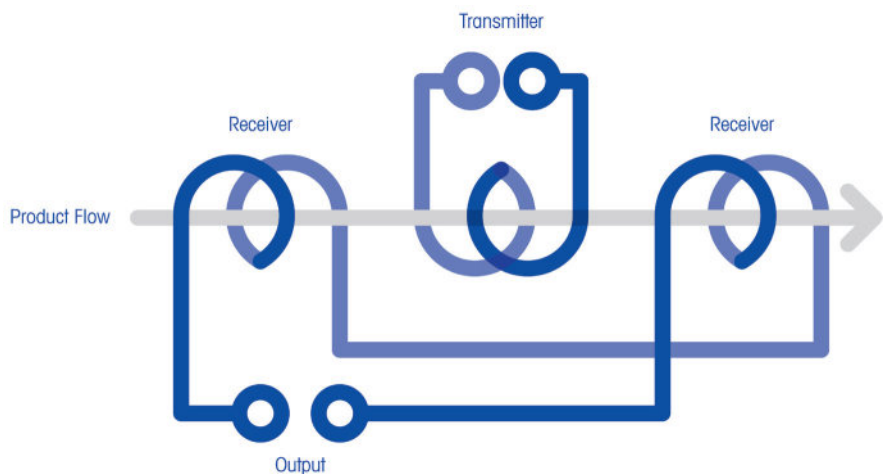
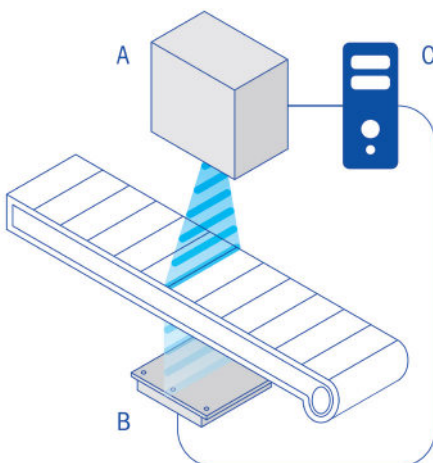
Type of packaging

Metal detectors using multiple frequencies simultaneously or operating at a single low frequency can usually be used with products packed in metallised film packaging, depending on the film thickness. If aluminium foil packaging, such as foil wraps or products trays are used, then the standard balanced coil metal detectors will not be suitable.

**X-Ray Inspection**

X-ray inspection systems have the capability to detect a wide range of contaminants including metal, glass, stone, calcified bone, high-density plastics and rubber. They can also perform additional in-line quality checks on products, including measuring mass, counting components, identifying missing or broken products, monitoring fill levels and checking for damaged product and packaging.

Meat products such as chicken breasts and sausages often produce 'cluttered' or 'noisy' x-ray images generated by overlapping and multi-textured goods. As a result, contaminants are traditionally hard-to-detect in these packaged food products. Advanced dual energy detector technology, notably DXD and DXD+, working with Material Discrimination software tools help to separate and remove the prominent material of the food product within the x-ray image to reveal the presence of lower density contaminants.

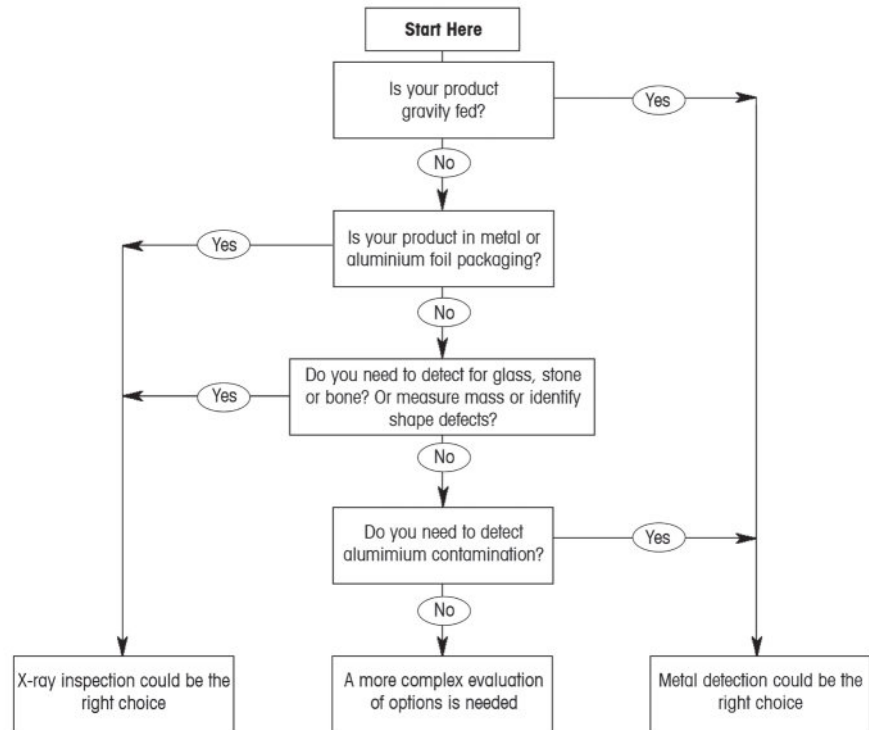


X-ray systems are able to inspect a wide range of different product types, including pumped products such as slurries, fluids and semi-solids, bulk, jars, bottles and cans, and packaged products including those packaged in foil or metallised film.

### Which Technology?

Both metal detection systems and x-ray inspection technologies have strengths and weaknesses in the field of product inspection. The process of choosing the right one for this purpose means going back to the application and carrying out a Hazard Analysis and Critical Control Points (HACCP) audit. This will identify what risks of contamination there are, and what types of contamination are likely, as well as providing a greater understanding of the requirements of any customer or compliance related issues.

Critical Control Points (CCPs) should be established to mitigate the risks, and product inspection equipment needs to be installed at these points. If the HACCP audit determines that metal is the only likely contaminant, then a metal detection system is probably going to be the best solution. If metal and/or other contaminants, such as glass, stone or dense plastics, are likely to be encountered, then x-ray will be the best solution. It is not a 50/50 decision though as there are many applications where the choice is less clear however this flow chart is a good starting point for identifying the right answer. However, there is



an area of indecision where the application is not packaged in foil and metals other than aluminium are potential contaminants. As the chart shows, in these scenarios a more complex evaluation of options is needed.

There may also be situations in which more than one type of product inspection system is desirable at different CCPs on the production line. For example, it may be wise to install a metal detector early in the processing line to remove large metal contaminants that could, if left present, cause damage to machinery downstream, or fragment into smaller and less easily detectable pieces. Further down the production line, an x-ray machine could then check for non-metal contaminants, as well as carrying out further quality control checks, while a second, and more

sensitive, metal detection systems at the end-of-the-line could be used to make a final inspection for smaller metal contaminants.

In closing, it is worth reiterating that the first step in choosing a metal detector or an x-ray system for product inspection is to consider the application - the type of product, the type of likely contaminant, and the location of CCPs. Metal detection offers many advantages for raw product inspection whereas x-ray inspection provides multiple product and packaging integrity checks, in addition to contaminant detection. Finally, other factors will influence the decision, including space limitations, total cost of ownership and productivity targets, but the application is where the assessment begins.



# SESOTEC RAYCON X-RAY SYSTEM IN HYGIENIC DESIGN OFFERS ADDED VALUE

## More Food Safety, more Added Value

Safety, quality and hygiene are top priorities in the food industry. Consumers expect and demand high-quality and hygienically flawless products. For manufacturers and processors of food, hygienic design therefore plays an important role in machines and plant components. Hygienic design generates added value for both production and economic reasons: set-up and cleaning times are minimized, plant productivity is increased, and image damage caused by the recall of contaminated products is avoided.

In order to offer users in the food industry a suitable X-ray system for product inspection of unpackaged products, such as fresh, chilled or frozen meat products, Sesotec has applied

hygienic design principles in the development of the RAYCON D+ HX LW Hygienic.

### Hygienic Design Down to the Last Detail

The RAYCON D+ HX LW Hygienic does not require radiation protection curtains. On the one hand, this eliminates the risk of cross-contamination during or after cleaning. On the other hand, operating costs are reduced because time-consuming and cost-intensive cleaning and maintenance work is simplified.

The RAYCON D+ HX LW Hygienic has extremely stable rollers and ground surfaces (< Ra 0.8 µm). The complete structure is made of stainless steel and plastics suitable



for the food sector (according to EC1935/2004). The materials of all components (monitor, key switch, signal lamp, drum motor, etc.) of the RAYCON D+ HX LW Hygienic are designed for the high protection class IP69, so that they can be cleaned repeatedly and intensively without abrasion. Beveled surfaces allow water to drain off automatically. The safety symbols, as well as the nameplate, are stained onto the unit as pictograms, replacing stickers that do not comply with the high degree of protection. Last but not least, passive cooling has been developed for the RAYCON D+ device, which in cool environments without the need for a filter fan or air conditioning unit, thus guaranteeing the high IP69 degree of protection.

### Sesotec RAYCON Product Family - X-ray Inspection on a New Level

Sesotec X-ray systems have been specially developed for use in the food industry and reliably detect foreign bodies such as metals, as well as glass, ceramics, stones, raw bones, PVC and many other product defects. This precise inspection ensures compliance with all major food industry guidelines such as IFS, BRC or FSSC 22000 and reliable protection against complaints and recalls.

[www.sesotec.com](http://www.sesotec.com)



*Developed according to the Sesotec "6-priority concept", the RAYCON D+ HX LW Hygienic X-ray system meets all the requirements of a hygienic design*

## HEARTY CLASSICS REINTERPRETED IN VEGAN FORM BY TRESSBRÜDER

### Vegetarian Dishes are Created in the Hygienic Secure Vacuum Bowl Cutter from K+G Wetter

Currywurst, meatballs and burgers, doner kebabs, chicken curry and goulash - are we discussing the lunch menu at the butcher's shop or fast-food restaurant around the corner? It's actually an excerpt from the product range offered by Tress Lebensmittel GmbH & Co. KG. Since autumn 2022, the traditional company in Zwiefalten in the Swabian Alb has produced organic ready meals using predominantly regional ingredients - and they are completely vegan. The VCM 120 Hygienic Secure vacuum cutter from K+G Wetter is used in the production of these meals and is responsible for processing the vegetable proteins.

estate above the pretty village located on the Upper Swabian Baroque Route. From the former premises of a forwarding agency there is an all-round view over farm fields and meadows. The aroma of spices fills the air inside: plenty of curry, various herbs, a hint of chilli.

Benjamin Bross is responsible for production here. The 33-year-old is a trained butcher and he moved to Tressbrüder in 2022 after 16 years at a local butcher's shop. "I had an urge to learn something completely new again," he explains. "So new, in fact, that I don't actually have a job title yet! Production manager, product developer,

production line from delivery of the very first machine - storage, peeling and cutting machines, boiling pans, refrigeration - and a bowl cutter.

The vacuum bowl cutter from K+G Wetter was his express wish for the production line. "We previously enjoyed excellent cooperation with K+G Wetter in the butchery before, and I am well aware of the machine's capabilities. It's highly versatile, for example because of the removable baffle plate. The advantage this offers is that it downsizes the cutting chamber, which is beneficial for achieving a high knife shear force and emulsification. Without a baffle plate, on the other hand, the entire cutting chamber beneath the knife cover is used without any limitations. The material being processed then passes through the cutter head with very little friction. As a result, the cutting pattern is clearer and the temperature does not rise as much.

The bowl cutter is equipped with the CutControl recipe management software. So far, over 40 Tressbrüder recipes have already been stored, but many more product developments are still to come. In due course, these will also be transferred from Benjamin Bross' office to the cutter via the company's network.



*In the Swabian Alb town of Zwiefalten, Tress Lebensmittel GmbH & Co. KG produces organic ready meals with purely vegetable ingredients under the Tressbrüder label.*

Tress has set up production of its ready meal product line under the "Tressbrüder" brand in an industrial

process developer; my tasks here are many and varied," says Bross. In fact, he helped set up the

One very important aspect is that CutControl does not limit

the number of programme steps that can be stored. "I can save my recipes in great detail, even though some of them have over 20 steps. This makes life easier for the production staff," says Benjamin Bross. It even transcends language barriers: Benjamin Bross speaks English with Aurelian-Denis Cocan, who is currently working on the production of the vegan mini-meatballs for the snack range. But English isn't the mother tongue of either man. "It presents a minor hurdle," says the production manager. "But with CutControl, anyone can operate the machine - following a brief introduction to the technology and raw materials."

A positive side effect is that the clear textual instructions on the large, intuitive display prompt staff to learn the technical terms in the chosen language in no time.

Thanks to the program control, the machine automatically takes care of processing times, bowl revolutions, vacuum level, the required amount of water to be dosed, and the knife speeds for every stage of the recipe. Moreover, it also monitors the product for preset shut-off parameters. Aside from the temperature, these may also include the number of bowl revolutions or the processing time. For example, once a pre-programmed temperature is reached, the bowl cutter may either switch off or continue to the next programme step. "The temperature is measured inside the cutting chamber, i.e. where it heats up the fastest," reports Benjamin Bross. That makes the measurement particularly accurate.

The Tressbrüder fast food dishes that end up on a plate as mini

meatballs, curry sausage, minced meat or juicy pieces of goulash are created in the bowl cutter using regional raw materials. These are mainly soy from the Lake Constance region, together with proteins from lupins, sunflower seeds or linseed. In the "vegan



*Here, Tressbrüder employee Aurelian-Denis Cocan prepares the mixture for the vegan mini meatballs. The vacuum function of the cutter ensures that the ingredients are perfectly combined.*

butchery", the working title for the new Tress production line, Aurelian-Denis Cocan is just starting to prepare a batch of vegan meatballs. The basic ingredient is textured soy protein (TSP): dry flakes of vegetable protein a few millimetres in size.

To prepare something that feels and tastes like meat on the palate, the first processing step is to add water. Thanks to fully automatic water dosing, another special feature of K+G Wetter's VCM 120, the right amount of water flows directly in front of the knives into the cutting chamber when the program starts. "We had a cold and a hot water line installed which also allows us to adjust the temperature to suit the product being processed," says Benjamin Bross. Vegetable oil is added next, followed by various spices and beetroot juice to give the meaty red colour. After all, it must also be pleasing to the eye. Once the textured soy protein has

been added, the machine also performs the next processing steps automatically, including briefly applying a vacuum twice. When Cocun opens the noise protection lid, the soy, liquids and spices have completely combined. According to Benjamin Bross, "The vacuum



ensures that the pieces soak up liquids perfectly and uniformly". The vegan mass bears a strong resemblance to sausage meat. To achieve the desired graininess to give meatballs their bite, additional proteins are now chopped in to achieve perfect binding and consistency.

Each work step is started by opening or closing the noise protection lid. "It's practical and saves a lot of time - we don't even need to access the touch panel anymore," says Benjamin Bross. During the product development phase, Benjamin Bross and his team performed detailed tests to find out the number of revolutions the bowl has to make to achieve the perfect vegan burger mixture and how fast the knives need to rotate. This information is then saved in CutControl. The baffle for reducing the cutting chamber size is not fitted this time, so the cutting pattern of the rather coarse-grained mixture is clearer.



Production manager Benjamin Bross prepares vegan mayonnaise using the VCM 120 from K+G Wetter. The ingredients and quantities can be read on the touch display thanks to the CutControl recipe management software. The next processing step is started automatically with a click or by closing the noise protection lid.



cleaning, the VCM 120 type 506 was the first machine in K+G Wetter's Hygienic Secure range. Its hygiene features received the FoodTec Award 2021, among others. Accordingly, the vacuum bowl cutter is easily and quickly cleaned and ready to process the next product. Aurelian-Denis Cocan opens the lid of the machine completely and rinses everything with hot water. The hand-polished and fully bevelled surfaces mean that the cleaning liquid runs off without ponding, taking product residues with it. The water runs out of the cutter bowl through the water drain into the vacuum vessel, from where it exits via large cleaning flaps. These two flaps, which can be opened without tools, enable Tressbrüder staff to easily clean the underside of the bowl as well as the vacuum chamber - with hygienically reliable access right into the last corner. The large size of the cleaning flaps also allows the result of cleaning to be easily checked.

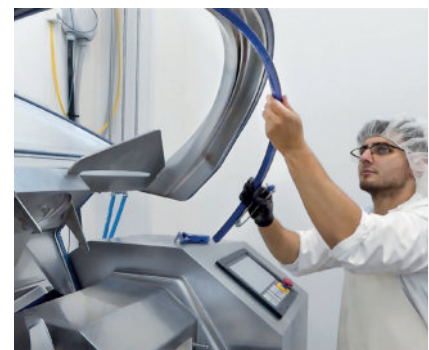
A unique selling point that offers an incomparable hygienic benefit in terms of cleaning is that a seal is no longer fitted between the cutter bowl and the vacuum vessel. This area - where a seal is traditionally found and which

What type of vegan protein forms the desired gels at what temperature? What other ingredients are needed to achieve the perfect taste and in which quantities? How long do the purely vegetarian meatballs or sausages need to mature until they are ready for final processing? Benjamin Bross has worked out all this in detail himself. What emerges is very close to grandma's traditional fare - it's cooked with experience, knowledge of correct food preparation... and patience. The knowledge the trained and experienced butcher has gained regarding vegan proteins is so detailed that Tressbrüder production has already been in contact with research and development institutes.

far more difficult to process into an emulsion." This is where the vacuum function of the VCM 120 comes into play: Interval vacuum generation and corresponding evacuation are used to knead the ingredients intensively. This is the only way to achieve a bond. At the same time, the vacuum draws trapped air out of the product, thereby preventing an undesired sponge-like structure.

The bowl cutter in the Tressbrüder production hall is empty and the mixture is on its way to the next machine, which will turn it into small burgers. When it comes to

The objective is for Tressbrüder products not to contain any additives such as emulsifiers or phosphates. "Armed with the right knowledge and sufficient time for processing, we can easily dispense with chemical additives," explains the butcher. "Meat already contains protein, fat and water, so a bond is created during processing. However, vegan proteins are



*Hygienic Secure is optimised for exceptionally fast and hygienic cleaning – thanks to its large cleaning flaps and a patented knife cover strip, for example. And the best seal? It's the one you don't need: The VCM 120 does not need a seal between the vacuum vessel and the cutter bowl.*

is otherwise impossible to clean reliably - can now be rinsed out quite simply using a cleaning lance, spray head or water hose. "Cleaning is performed by our staff, each worker cleaning his own machine. He therefore knows which corners require particular attention," adds Benjamin Bross.

It is also possible to clean other sensitive areas perfectly. For example, the bowl support pad, the bowl scraper and even the patented knife cover strip can all be removed from the cutter in one simple action. Hygienic solutions that guarantee safe products.

The VCM 120 is rapidly ready for use again: This time, vegan mayonnaise is on the menu, made from vegetable oil, water, vinegar, spices and other ingredients. Animal products are banished here too. "For the mayo we reinsert the baffle plate; shear forces and friction on the blades are important in this application to allow the ingredients to combine well."

What do you use to combine oil and water to form the emulsion, when you can't use an egg yolk as normal? "That's a trade secret," exclaims Benjamin Bross with a smile. The finished mayonnaise, which is used in Tressbrüder products - to make their vegan salads for example - is discharged via the unloader into waiting batch trolleys after completion. Immediately after preparation, the mass is still quite liquid, but the shape and orientation of the unloader ensure that the cutter bowl is emptied quickly and completely.

Incidentally, another reason the company invested in the K+G Wetter vacuum bowl cutter was



*The fresh, vegan snacks, soups, stews and ready meals from Tressbrüder can be quickly prepared during lunch break. Sustainably packaged in portions, the organic ready meals are available from the online shop or retail outlets.*

Benjamin Bross' experience with the service provided by the company from Biedenkopf-Breidenstein in the German State of Hesse. "In the past, we already gained a good impression of the service provided by K+G Wetter in the butchery," recalls the Tressbrüder production manager. "Whenever a service call became necessary, the response was super fast."

The **Tressbrüder brand's organic vegan ready meals** are shipped from the company's premises in Zwiefalten to large food retailers and specialist organic stores. Customers are also able to select tasting packages and favourite dishes for a quick lunch break or snack via an online shop and have them sent to their homes. But Tress employee's aren't bound to live a vegan life themselves. "I still like eating meat," confesses butcher Benjamin Bross, "I don't consider our vegan dishes as a substitute for meat, but as products in their own right. They are really very similar to meat dishes in terms of taste and consistency - and also have traditional names - this naturally makes it easier for customers to just give them a try."

The way the Tress brothers' business has grown shows that the company's products cater to their



customers' taste. Currently they are still operating a single-shift, but the company is aiming for two shifts by 2024. And there is still room to expand the production line on the current premises. Vegan spreads are currently new in the range, and other products are under development. So there are many possible ways to apply Benjamin Bross' team's creativity - and the vacuum bowl cutter from K+G Wetter. This is how sophisticated technology is used to turn fresh, regional organic products into vegan foods that delight customers.

### The Tressbrüder Brand

The Tress family business dates back to 1950. Grandfather Johannes Tress was the first farmer in the area to convert his farm to biodynamic agriculture in accordance with Demeter standards. Son Johannes and wife Inge shaped the business in the 1980s by, among others, serving up sustainable vegetarian whole food cuisine in the "Rose" inn. Since 2008, the four Tress brothers Daniel, Christian, top organic chef Simon and Dominik have been running the family business with around 80 employees in various roles.

[www.tressbrueder.de](http://www.tressbrueder.de)  
[www.kgwetter.de](http://www.kgwetter.de)

## CONTINUOUS PROCESSING MORE EFFICIENT THAN DEALING WITH BATCHES

By Matt Hale,  
International Sales & Marketing Director, HRS Heat Exchangers

Products such as mechanically separated meat (MSM) and meat emulsions are commonly used in a wide range of products including sausages, chicken nuggets, patties and some minced meats. While different meat sources and products will have different processing and cooking requirements, it is important that the methods chosen to minimise the energy use involved, saving money and reducing greenhouse gas emissions.

Meat emulsions, slurries and reformed meat products have been used around the world since the early 1970s. Around the world there are strict rules, both about the raw materials used for the production of MSM, but also how it is processed and

labelled. Similar cooking, handling and cooling methods are also used for other food products, such as ground (minced) meat and soups, and these products can also benefit from the same approach to choosing cooking systems.

The European Food Safety Authority (EFSA) advises that, 'Microbiological and chemical hazards associated with mechanically separated meat derived from poultry and swine are similar to those related to non-mechanically separated meat (fresh meat, minced meat or meat preparations). However, the risk of microbial growth increases with the use of high-pressure production processes.' In addition, 'High pressure mechanically separated meat must be immediately frozen and can only be used in cooked products.'

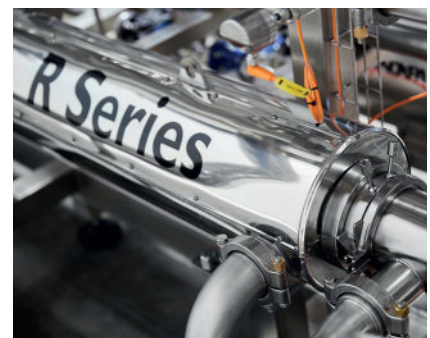
These products are often cooked in batches prior to final product formation, often using large steam-powered kettles or pressure vessels. Some companies processing large volumes of product may have ten or more vessels in various states of operation at one time. This is because, while these vessels are an effective method of cooking and pasteurising a range of products including MSM, they are limited in their capacity because it is important that the product is cooked through

thoroughly. Because each vessel must be heated from scratch for every new batch of product, and the heat used is then lost when the vessel is emptied, this is an incredibly inefficient method of cooking such products.

A much more energy efficient method is to cook a continuous stream of product using a scraped surface heat exchanger such as the HRS R Series or Unicus Series. The HRS R Series uses a rotating action to scrape the tube surface and a helix to 'push' material through the heat exchanger, ensuring thorough mixing and heat distribution. It provides an economic solution for situations where product mixing is a benefit in processing, or where physical integrity is less important than heat transfer. For example, it is ideal for MSM, meat emulsions and co-products (such as materials which are destined for the pet food market).



*Continuous cooking of products such as mechanically separated meat, ground (minced) meat and soups can provide big energy savings*



*The HRS R Series of rotating scraped surface heat exchangers provides thorough mixing and heat transfer for products such as mechanically separated meat and emulsions*





*Part of the cooling system of a continuous system installed at a soup and sauce manufacturer*

In some situations, the robust mixing action of the R Series can damage the product. For example, some minced and ground meat products, or products containing definite pieces or product. In this case the HRS Unicus Series is



*The HRS Unicus Series of reciprocal scraped surface heat exchangers are ideal for cooking and cooling delicate meat products, soups and sauces*

preferred. This patented design uses a reciprocal action to prevent fouling of the heat exchanger by the product and to ensure thorough heating of the product to the required temperature. Importantly, once the unit has reached the required temperature, the heating medium is only required to maintain the temperature as the heat is not lost between processing batches. This continuous processing saves large amounts of energy compared to a batch approach.

The same is also true of the equally important cooling process, which must be conducted in a timely manner. In fact, this cooling allows for the use of heat generation, where the heat removed by the cooling process is not lost but can be returned to the start to pre-heat the product, so that less energy (for example steam) is required for heating. Further economic savings are also achieved by reducing the need to fill and empty separate cooking vessels, and the fact that cleaning-in-place (CIP) can be performed when required, rather than simply between each (smaller) batch.

HRS have provided clients with continuous processing solutions to replace batch-cooking and cooling systems. One Colorado-based manufacturer of sauces and soups replaced their batch-based system with a continuous

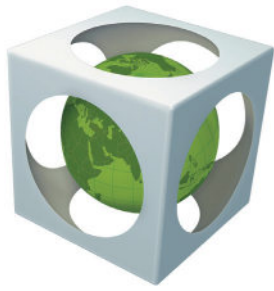


*Matt Hale*

process based on a number of HRS products in order to increase their manufacturing capacity to meet increasing demand.

HRS complete systems not only include the HRS R Series and Unicus Series scraped surface heat exchangers for cooking and then cooling the product, but also transfer pumps, balance tanks, other heat exchangers for pre-heating and pre-cooling, and auxiliary equipment such as CIP systems and steam-powered hot water sets. Such systems are designed to have simple intuitive controls and to occupy the smallest possible footprint in order to fit within existing production facilities.

[www.hrs-heatexchangers.com](http://www.hrs-heatexchangers.com)



# EURASIA PACKAGING® 2023 ISTANBUL

28<sup>th</sup> International Packaging Industry Fair

## PACKAGING INDUSTRY IS SET TO GATHER FOR NEW BUSINESS CONNECTIONS IN ISTANBUL

**The Eurasia Packaging Istanbul Fair -the largest annual fair and business platform of the packaging industry in the Eurasia region- will be held for the 28th time at Tüyap Fair and Congress Center located in Büyükçekmece, Istanbul between October 11-14, 2023.**

Innovative companies with future-ready solutions will gather together for the 28th time at Tüyap Fair and Congress Center between 11-14 October, 2023 to showcase their creative packaging solution and latest technologies. The trade show, which attracted a total of 72 thousand 652 visitors from 122 countries including Türkiye in 2022, is getting ready for the 2023 event. The region's biggest trade event in packaging industry will allow local Turkish and international packaging companies to meet with buyers from more over 120 countries around the world, in addition to Turkish buyers. As an effective commerce platform that demonstrates the strength, innovative capabilities and sustainability approach of the industry to local and international visitors, the fair makes a significant contribution to the Turkish packaging industry

in its attempt to reach USD 50 billion in size by 2030 and its export target of USD 20 billion.

### **The Fair Continues its Growth Every Year**

The 28th Eurasia Packaging Istanbul Fair is organized by RX Tüyap and cooperated with the Packaging Manufacturers Association (ASD) with the support of the Packaging Machinery Association (AMD), Label Manufacturers Association (ESD), Flexible Packaging Manufacturers Association (FASD), Carton Board Packaging Manufacturers Association (KASAD), Metal Packaging Manufacturers Association (MASD), Corrugated Board Packaging Manufacturers Association (OMÜD), and Rigid Plastic Packaging Manufacturers Association (SEPA). The Eurasia Packaging Fair -the largest annual fair and commerce platform of the packaging industry in the Eurasia region- continues its steady growth since its inauguration. The fair to be held in October is getting ready to welcome more than 1200 companies and company representatives in an indoor area of 120,000 square meter across a total of 14 halls.

### **Fair Promotion Activities Have been Carried out on an International Level**

The international promotions of the fair started with the Prodexpo Fair held in Moscow on February 6-10. Companies were informed about the Eurasia Packaging Fair at the show, where the largest food and beverage manufacturers of Russia and Eastern Europe participated. Promotional activities continued during the Gulfood Fair held in Dubai on February 20-24. During the Gulfood Fair, where many large-scale food and beverage manufacturers, especially the countries in the gulf region, participated, advertisements and promotions of the Eurasia Packaging Istanbul Fair were made and the exhibiting food and beverage manufacturer companies were invited to the Eurasia Packaging Istanbul Fair. Eurasia Packaging Istanbul Fair was promoted to Interpack Fair visitors, exhibitors and worldwide companies related to the packaging industry with the participation of the Packaging Manufacturers Association (ASD) with a booth at the Interpack Fair held in

Düsseldorf, Germany on May 4-10, 2023. The advertisements on the trains going to the fairground where the Interpack Fair took place attracted the attention of fair visitors and exhibitors. Eurasia Packaging Istanbul Fair, which was also promoted during the RosUpack Fair held in the Russian capital Moscow on June 6-9, 2023, was promoted to companies from a wide geography including the Russian market, Kazakhstan and Uzbekistan, as well as Eastern European countries.

and converting technologies, packaging machinery, packaging production machinery, auxiliary devices, equipment and systems for machines, beverage and food technologies, packaging recycling technologies, and logistics will participate in the Eurasia Packaging Istanbul Fair. It is expected that approximately 15 thousand people from more than 120 countries will visit the fair in 2023, while the total number of visitors is expected to exceed 80 thousand.

Russia, the Caucasus, Central Asia, the Middle East and Africa, to increase their trade volumes and brand values, and to meet customers in person.

### You can Buy Your Fair Tickets Online

The 28th Eurasia Packaging Fair aims to bring together visitors with many companies that want to demonstrate their innovative and creative packaging solutions and products for the food and



### A Unique Opportunity for New Business Contacts!

More than 1,200 local and international companies operating in the fields of packaging products, complementary packaging products, raw materials and intermediate products for packaging production, services for the packaging industry, packaging printing, corrugated cardboard-carton packaging production

Visitors of the fair will have the chance to meet new suppliers and solution partners and to make equipment investments for their businesses during the Eurasia Packaging Istanbul Fair and the co-located Food-Tech Eurasia- the 17th International Food and Drink Technologies Fair. Exhibitors, on the other hand, will have the opportunity to meet with decision makers from all food and non-food industries from Türkiye, Central and Western Europe, the Balkans,

beverage industry, printing, paper and stationery, personal care and cosmetics, cleaning and hygiene, chemistry, paint and petroleum, automotive, pharmaceutical and medical, construction, glassware, white goods and electrical household appliances, textile, apparel, and shoes. Visitors will have the opportunity to closely examine new and creative packaging solutions, machinery, and equipment during the fair.

[www.packagingfair.com](http://www.packagingfair.com)





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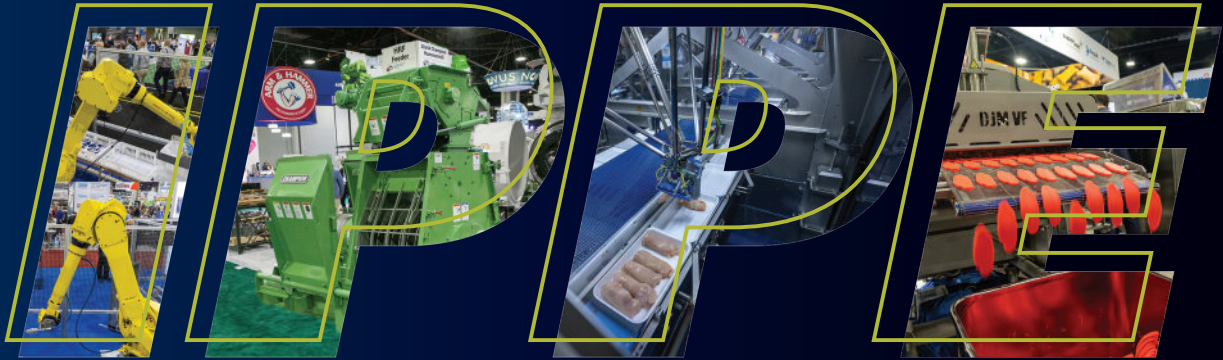
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