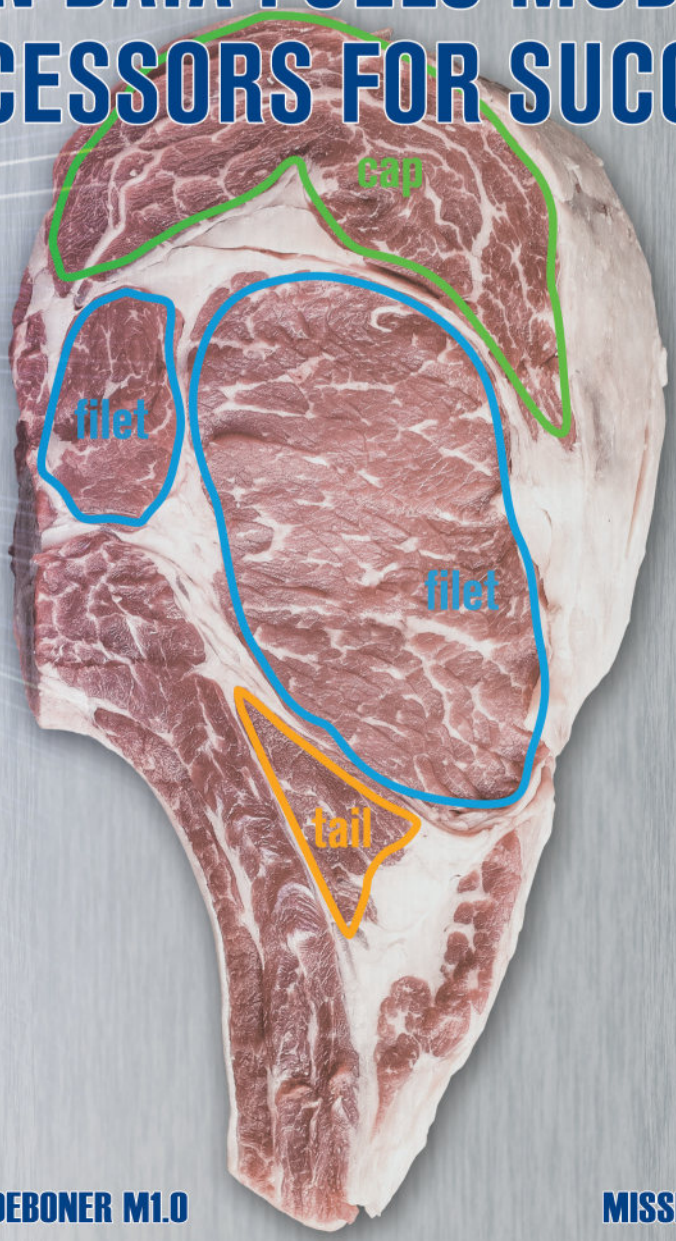
INTERNATIONAL 57/2024

MEATINGPOINT magazine

SUSTAINABLE TECHNOLOGY, PROCESSING & PACKAGING

AI-DRIVEN

INSPECTION DATA FUELS MODERN MEAT PROCESSORS FOR SUCCESS



MEYN LAUNCHES NEW PHYSIC IN-LINE THIGH DEBONER M1.0

CULTURED MEAT: MISSION IMPOSSIBLE?

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BELGIAN MEAT OFFICE

Dear reader,

Jenny Smart

As the summer heat gives way to the cool breeze of autumn, the business world is gearing up for one of the most hectic and exciting times of the year: the autumn trade fair season. It represents a bustling period of commerce, innovation, and networking for industries worldwide. The autumn trade fair season is an essential period on the corporate calendar, offering opportunities for observing competitors' offerings, understanding emerging trends, and gauging consumer reactions to different products or services. It serves as a vital platform for businesses to showcase their latest offerings, foster relationships, and stay at the forefront of their respective markets.

To start with, one of the unmissable international events, you can mark your calendar is Fachpack, to be held from 24 to 26 September, in the Exhibition Centre of Nuremberg, the packaging sector is set to offer an outstanding spectrum for packaging, packaging machines, and packaging processes, as well as an impressive complexity in packaging and labeling technology. PPMA Show is the largest processing and packaging machinery exhibition in the UK, to be held on the same dates. Showcasing the very latest in processing and packaging machinery, robotics and industrial vision systems, coupled with the latest innovations in materials, containers and packaging design. Then, follows SÜFFA, to be held from 28 to 30 September. This annual fair is one of the most important meeting points for the meat industry. It covers the complete range of products and services for craft butchers, and features everything needed to make well-founded decisions – qualified and competent. During the trade fair the most important market leaders in the meat industry present exciting innovations, sophisticated technology and tailor-made solutions for production, sales and the take-away market. Don't miss the chance to visit the 10th edition of Gulfood Manufacturing, the most significant gathering for the food and beverage industry in the MEASA region, which is taking place again from November 5 to 7, at Dubai World Trade Centre.

Our cover story, "AI- driven inspection data fuels modern meat processors for success," by Jon Gilchrist, provides significant reasons why many processing companies invest in artificial - intelligence(AI) based vision - inspection technologies to meet food safety demands and amplify their food safety efforts. Read on pages 18 - 21.

As usual, we feature the latest business and industry news, case studies, and customer stories, research and analysis.

Enjoy the read!

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Contents

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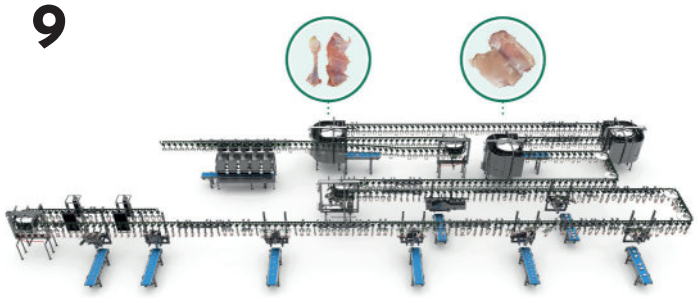

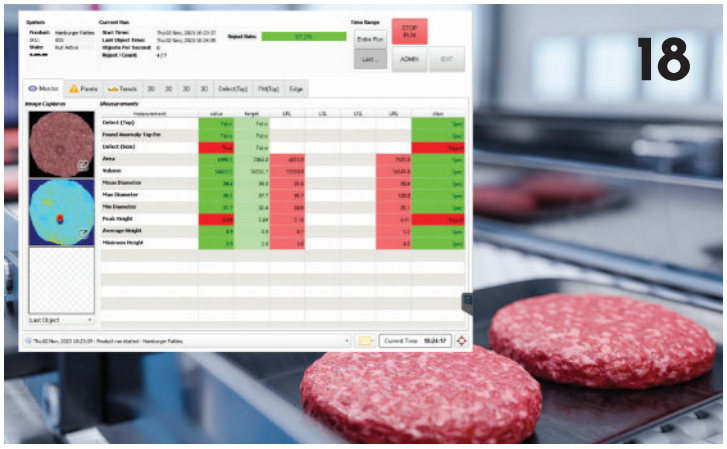

IN THE NEXT ISSUE:

- High - Speed Cut-up Lines, Chicken Wing Processing, Halal Production
- Thermal Processing HPP
- Chilling, Freezing, IQF Products, Ice Machines
- International Flavour Trends
- Microwavable Packaging

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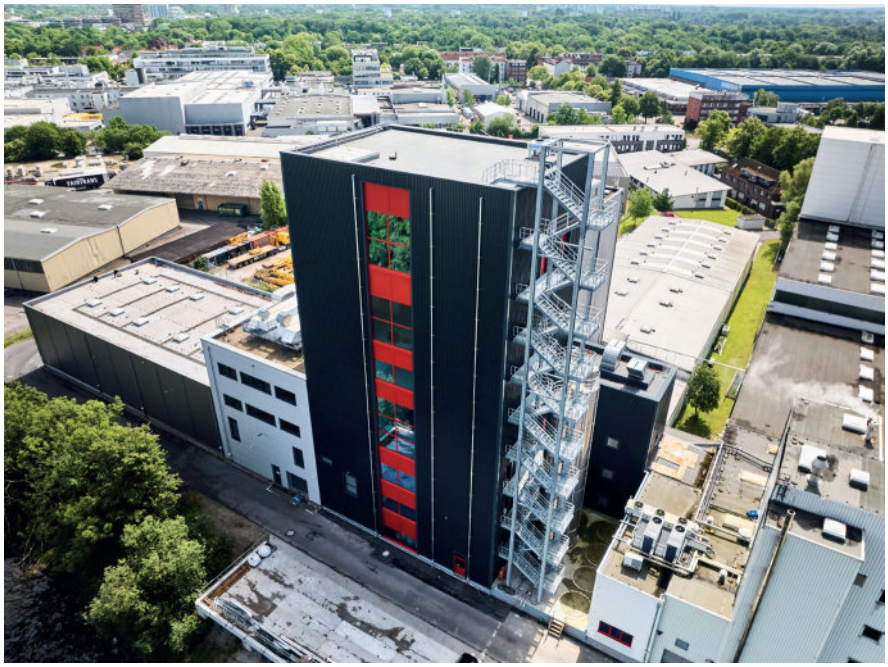
INDEX OF ADVERTISERS:

AIMING HIGH: GOODMILLS INNOVATION EXPANDS FACILITIES AT HAMBURG SITE



Hamburg-based company invests millions in the construction of "Tower III" - thus expanding its capacity for plant-based ingredients.

GoodMills Innovation's latest plant project is now operational following completion of a new production tower. With an multi-million investment, the company is reinforcing its commitment to plant-based ingredients: with "Tower III", GoodMills Innovation aims to establish itself internationally as a center of excellence for the texturization of plant-based proteins for use in vegetarian and vegan products. In doing so, it is once again underlining its mission to play a visionary role in shaping the market for plant-based products and champion the change towards such diets.

In the new tower, a fully automated production process will be in operation, combining extrusion, texturization, wet defibering and hydrothermal product refinement, thus making a significant contribution to the expansion of the plant-based product portfolio of GoodMills Innovation. For several years now, the company has been investing in the expansion of capacities and its expertise in plant-based ingredients. Katharina Haack, Head of Marketing Communications at GoodMills Innovation, says: "Plant-based nutrition is a building block towards a more sustainable future. And this is where we want to make a major contribution. Our raw materials enable manufacturers to produce high-quality meat and fish alternatives on an industrial scale, all of which are convincing in terms of taste, sensory properties and nutritional physiology. Only in this way can plant-based products gain an even greater market share."

After three years of construction, the new facilities on 2,500m2 of production space spread over seven levels have been given the green light. Thanks to the central location of "Tower III" on a navigable branch of the Elbe River, GoodMills Innovation has direct access to grinding and specialty mill products from the Group's sister company, Aurora Mühle Hamburg, as well as seaport access. Standing 42 meters tall, the tower is clearly visible from afar and offers a view of the "Reihersteig" harbor arm and Elbphilharmonie concert hall from the upper levels.

Striking and Sustainable

The construction project was realized in line with comprehensive sustainability requirements, both in terms of energy concepts, building materials and project partners. Fossil fuels were completely dispensed with, and particularly energy-efficient machinery, equipment and processes implemented. With these measures, savings of up to 40 per cent can be achieved compared to conventional technology.

"We are proud and pleased that we are expanding our production capacities with the commissioning of Tower III," says Katharina Haack. "It is a striking, visual representation of our expertise. With this investment, we can meet the growing demand for sustainable and healthy plant-based texturates, and play a key role in shaping the development of plant-based nutrition on a global scale."

www.goodmillsinnovation.com

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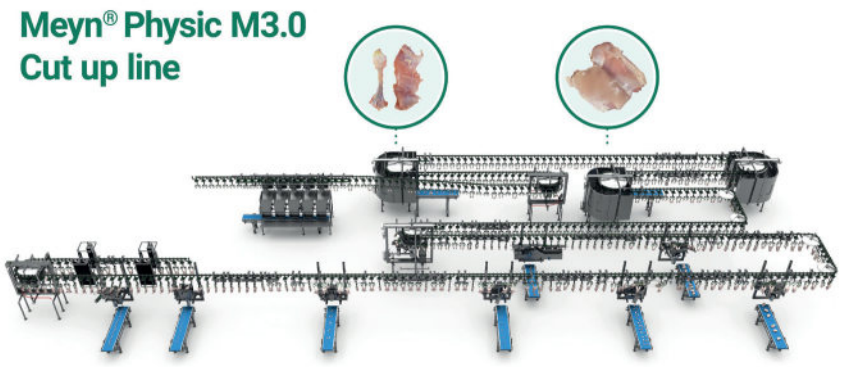
MEYN LAUNCHES NEW PHYSIC IN-LINE THIGH DEBONER M1.0



At 7,500 bph with in-line dark meat deboning.

In many markets around the world, deboned thigh meat is realizing higher retail values than single thighs. As a result, Meyn developed an innovative in-line thigh deboning solution for the Physic cut-up line. The thigh

The Physic In-Line Thigh Deboner M1.0 is the most compact and productive thigh deboner on the market, with a two-carousel footprint of only 35 square meters (377 sq. ft.) and a production capability of converting 15,000 whole legs per hour into high quality boneless thigh fillets, with or without skin. In addition, the system yields excellent quality drumsticks.

Jeroen Bohm, Product Director Meyn says, "Our unique, patent pending deboning technology delivers the highest number of bone and cartilage-free products, requiring the least number of people for inspection and trimming and no manual loading or additional re-hangers are required."

Compared to manual deboning the Meyn® Physic In-Line Thigh Deboner M1.0 saves 33 workers (FTE) per shift.

www.meyn.com

deboning carousels are integrated within the line, enabling the bypass of legs based on weight and quality. Combined with Meyn® Distribution Manager software, processors have all the capacity & flexibility they need. Based on recipes in the software, the Physic produces whole wings, first joints, midwings, legs, thighs, drumsticks and deboned dark meat in the exact quantities and quality as ordered by retail & food service customers.

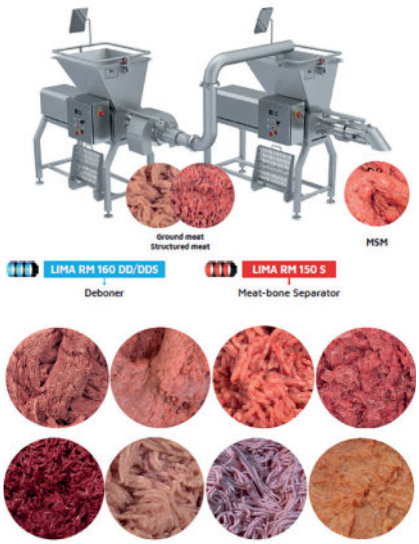
MECHANICAL SEPARATION, DEBONING AND GRINDING-DESINEWING AT ITS BEST WITH LIMA!

LIMA has been developing, manufacturing and selling mechanical separation, deboning and grinding-desinewing solutions worldwide to the full satisfaction of its customers since 1981!

LIMA's only dedication since its very beginning has always been developing and supplying the best solutions to separate the hard from the soft by a mechanical means for the food processing industry. The applications are numerous, such as producing the highest quality of mechanically separated meat (MSM) at very high optimal yield out of poultry, pork, lamb, beef bones, as well as recovering the best fish pulp out of fish central bones.

Also, over the years, LIMA has been at the forefront of the poultry industry, developing and delivering two-step LIMA separation lines.

In the first step, poultry carcasses, necks or other bones are mechanically deboned at low pressure enabling to produce very HIGH quality separated meat, in terms of Structure, Colour and a low Calcium content, less than 1 000 ppm. Such mechanically separated meat at low pressure is commonly referred to as "3 mm MSM" or "Structured meat" MSM with a texture closer to a ground meat than conventional MSM. For the second step of this separation line, a transfer pipe conveys the separated mix of bones with residual meat to a LIMA S meat-bone separator which recovers the last possible quantity of meat from the bones, producing a conventional but high quality mechanically separated meat (MSM) at very high optimal yield.



LIMA offers LIMA S meat-bone separators and LIMA DDS deboners-desinewers from 100 to 20 000 kg / h input capacity (220 to 44 000 lb / h).

LIMA has developed a new range of Grinders-Desinewers especially designed for poultry bone-out raw materials such as trimmings with or without wishbones, thigh, and drumstick deboned meat, as well as for chicken or turkey fillets.

The Grinder-Desinewer GD enables to add value to such meat cuts by processing them into a very high-quality ground and desinewed meat, ensuring the separation of hard parts such as sinews, tendons, cartilage, bone chips as well as plastic foreign bodies, at very high yield, from 80% to 98% while ensuring low Collagen/Protein ratios. The recovered meat is not MSM (Mechanically Separated Meat) but a true ground and desinewed meat obtained from bone-out raw materials.

This new range of Grinders-Desinewers GD enables to grind and desinew from 100 to 13 000 kg/h of raw material input.

LIMA also offers Grinders-Desinewers for red meat (beef and pork) providing the same technical advantages for the valorization of deboned shank meat, deboned shoulder meat, aponeurosis, and various trimmings.

SIAL 2024
Paris, France
October 19th - 23rd, 2024
Booth 6, Hall 064

www.lima-france.com

REX TECHNOLOGIE – VACUUM FILLER & PORTIONING SYSTEMS

REX Vacuum Fillers - Extremely Easy to Use

The REX RVF vacuum fillers are the ideal solution for small-scale producers who frequently change their sausage varieties and process normal quantities of sausage meat.

Versatile Combinations and Accurate Portioning

Our REX vacuum fillers can be easily combined with all common clipping machines, giving you maximum production flexibility. This combination allows for precise portioning and ensures that each sausage is filled evenly and accurately. Gentle transport of all products ensures consistent product quality.

Minimal Residual Air and Easy Product Change

Another outstanding feature of our REX vacuum fillers is the minimal residual air in the end product. This not only contributes to a longer shelf life and better texture of the sausage, but also improves the taste experience for the end consumer. In addition, product changeovers are quick and easy, increasing production flexibility and minimizing downtime.

Reliability and Efficient Cleaning

Reliability is another important aspect of our REX vacuum fillers. The machines are designed to deliver consistent performance, even when production demands are high. Quick and easy cleaning of the machines also contributes to efficiency by reducing maintenance time and operating costs.

Hygienic Design and Energy Efficiency

Our hygienic design is a central element of our innovative machine design. Smooth surfaces and well-designed construction prevent the accumulation of dirt and make thorough cleaning easier. This not only increases food safety, but also complies with hygiene regulations. In addition, all our REX vacuum fillers feature low energy consumption, which helps to reduce operating costs and make the production process more sustainable.

Our REX vacuum fillers offer a complete solution for sausage production that leaves nothing to be desired. With precise portioning, minimal residual air in the end product, easy product changeover, high reliability and hygienic design, our machines set new standards in the industry.

www.rex-technologie.com/en

HIGH-QUALITY MEAT AND SAUSAGE PRODUCTS AT AFFORDABLE PRICES

Cost and value for money continue to be important criteria for consumers when buying food and beverages. This is shown by a survey conducted by Innova Market Insights. However, rising production costs and the fluctuating availability of raw materials are driving up prices. One example is the meat industry. To ensure a sufficient supply of food at affordable prices, Hydrosol has developed special functional systems for the economical production of high-quality meat and sausage products.

"We have identified the cost drivers in the various formulations and replaced them with economical

alternatives," explains Mery Mehrabanpour, Business Development Manager Hydrosol. "By intelligently combining different solutions, including well-balanced hydrocolloids, proteins, and other ingredients, cost-intensive raw materials such as meat can be significantly reduced or even replaced with more cost-effective meat. This approach allows us to improve product formulations and processes without compromising product quality."

The company's portfolio of systems for particularly economical products includes the HydroTOP High Gel series for producing minced meat products such as burger patties, nuggets, and meats. These functional systems improve the binding and therefore make it possible to reduce the meat content without compromising on quality. The final product is juicier and the natural fiber structure is retained, as are the taste and mouthfeel.

With emulsified products such as sausages and cold cuts, it is often difficult to maintain consistent quality – especially if the meat quality fluctuates. The meat content is of course a key factor. Flexible stabilization systems simplify production here. Mehrabanpour explains: "The systems from the HydroTOP CS range have

proven their worth, especially for sausages and cold cuts. The advantage is that the recipes can be customized depending on the proportion and type of meat. This means that the familiar quality is maintained. Texture and bite are therefore impressive even with low meat content."

Higher yield, lower cooking losses, improved texture and juiciness – the PLUSstabil range combines economical production with high production reliability and consistent quality. This applies to fresh as well as cooked and cured meat products. For example, the quality of cooked cured products can be specifically adjusted with the

help of special brine additives, enabling a range of cured meat specialties at affordable prices.

In addition to meat and sausage products, Hydrosol is also researching alternative solutions for dairy and delicatessen products in order to compensate for sometimes drastic rises in costs. This involves not only the replacement of ingredients, but also technical and technological adaptations.

www.hydrosol.de

NEW LORY® CRUMB VARIETIES DELIVER PERFECT CRUNCH FOR BREADED PRODUCTS WITHOUT FRYING

Food ingredients expert Loryma introduces an innovative solution for crispy coatings that meet growing demand for healthier, low-fat convenience products. The new wheat-based Lory® Crumb extrudates give breaded products a deliciously crunchy texture without the need for added fat or deep-frying. These reduced-fat products can be easily prepared in an oven or air fryer, delivering an appealing golden-brown finish. Be they sweet, salty or spicy, the new Lory® Crumb varieties allow for the creation of a wide range of on-trend snacks such as bitterballen, chicken nuggets, vegetable patties and plant-based meat replacers. The Lory® Crumb range is available in two granulations – medium and coarse – allowing the coating to be tailored to different substrates.

High-quality, Low-fat

The innovative wheat-based crumbs by Loryma eliminate the frying step entirely, both for producers and consumers. This advanced solution ensures a satisfying crunch and strong coating adhesion, even during extended warming periods, making it ideal for foodservice environments. Furthermore, manufacturers benefit from a more resource-efficient, sustainable and cost-effective production process, with reduced oil usage, energy savings and fewer cleaning requirements. Thus, they can streamline production while offering added value to consumers, allowing them to use just an oven or air fryer to enjoy crisp, golden-brown snacks with an improved Nutri-Score.

To enhance performance of the non-fry crumbs, Lory® Starch Opal is the perfect inclusion. This cold-swelling starch works as a wet batter, securing crumbs to the substrate without the need for heat. It forms a thin film that enhances the product's crunchiness and, with an additional dusting, further boosts crispness.

Rising Demand for Convenience Foods

A recent study by the German Frozen Food Institute1, involving 1,006 participants, revealed that one-third of respondents consume ready-made products at least once a week, with men, younger people and frozen food fans more likely to do so. Convenience remains a key factor for those who appreciate the ability to prepare quick meals when lacking time or motivation, while taste remains the top priority for 81% of consumers when purchasing convenience foods. The future of snacks will increasingly focus on delivering enjoyment with added benefits, including products that are low in sugar and fat, natural and full of flavour.2 With increasing demand for easy-to-prepare products that are lower in fat and calories, Non-Fry options from the Lory® Crumb range enable manufacturers to effectively meet this challenge in breaded applications.

www.crespeldeitersgroup.com/loryma

METTLER-TOLEDO INTRODUCES NEXT-LEVEL FLEXIBILITY WITH NEW COMBINATION INSPECTION SYSTEMS

Combining Superior Sensitivity and Precise Weighing for Enhanced Quality Control and Product Safety

Mettler-Toledo Product Inspection, a global leader in precision instruments and product inspection technology, has extended its Combination inspection portfolio with the launch of new CM (checkweighing and metal detection) and CX (checkweighing and x-ray) Combination Systems. This significant advancement integrates the new M30 R-Series metal detectors and X2 Series of high performing x-ray inspection systems into high-precision C-Series checkweighers, providing customers with maximum flexibility to choose the right system to suit their individual application, packaging and budget requirements.

Powerful 2-in-1 Solutions

With the introduction of the next generation of the CM and CX Combination Systems, Mettler-Toledo delivers powerful 2-in-1 inspection solutions that manage Critical Control Points (CCPs) by combining precision weighing with contamination detection in an integrated solution. These new systems offer simplified operation, a space-saving design and reduced total cost of ownership. The integration of the new M30 R-Series and X2 Series also offers higher detection sensitivity, providing an added layer of security and quality control.

The CM Combination System (Checkweighing and Metal Detection)

The CM Combination System integrates the precision weighing C-Series checkweighers with the advanced M30 R-Series metal detectors, creating a completely flexible solution that enhances the portfolio of combination systems with an optimised price-to-performance ratio. The C-Series checkweighers deliver unparalleled accuracy and precision in weight measurement, facilitating compliance with regulatory standards and minimising product giveaway. They feature intuitive user interfaces and advanced data management capabilities, allowing for seamless integration into existing production lines, plus a smaller machinery footprint accommodates limited factory floor space. For high-end applications, these innovative systems can be configured with the new FlashCell™ load cell technology, this means that the checkweighers can complete precision weighing checks at higher product throughputs.

The M30 R-Series and Profile metal detectors are equipped to detect a range of ferrous, non-ferrous, including aluminium and stainless-steel contaminants optimising for both wet and dry applications. They offer the highest level of product safety and quality. Utilising advanced signal processing and intelligent detection algorithms, the metal detectors provide superior sensitivity and reliability, improving the capability to detect smaller contaminants and significantly reducing false reject rates.

The combination of these advanced technologies allows manufacturers to tailor inspection solutions to their specific application, packaging and budget needs. By merging precise weighing capabilities with state-of-the-art metal detection, customers achieve maximum flexibility to meet diverse packaging requirements. The system also boasts a space-saving design with full integration on a single frame, facilitating easy cleaning and maintenance while optimising production floor space.

The CX Combination System Checkweighing and X-ray Inspection)

The CX Combination System integrates the high-precision C-Series checkweighers with state-of-the-art X2 Series x-ray inspection systems, creating a

powerful solution for comprehensive quality control. The X2 Series x-ray inspection systems feature innovative ContamPlus™ Software, which runs over 30 inspection algorithms continuously and in parallel, detecting hard-to-find foreign bodies while reducing waste. Also featuring the HiGain detector technology, which generates sharper images to deliver outstanding contaminant detection, these systems are capable of identifying a wide range of contaminants, including metal, glass, stone, calcified bone and high-density plastics, while also performing quality assurance checks such as detecting missing or broken products.

Combined with the precision weighing capabilities of the C-Series checkweighers, equipped with FlashCell™ technology, this integration offers unparalleled accuracy and consistency for various packaging needs. By bringing these two technologies together, manufacturers can benefit from increased productivity and decreased total cost of ownership. The smart industrial design features easy operation with quick, toolless access to components, enabling belt and curtain removal in less than five minutes. Intuitive user interfaces further simplify operation. An additional option is a Smart Catch Bin, the intelligent separation of contaminated or incorrectly weighed products can also help to enhance both safety and efficiency. This integrated solution not only improves detection sensitivity but also optimises overall production line performance.

Key Benefits of Both Combination Systems:

Maximum Configuration Flexibility: Multiple inspection combination options provide manufacturers with maximum flexibility to find the right solution for their packaging, application and budget needs. This flexibility is achieved by combining the latest advanced contamination detection technologies i.e. M30 R-Series metal detectors and X2 Series x-ray inspection systems, meaning that every need is met.

Enhanced Operator Efficiency: One-touch operation via the checkweigher supports easy and automated product changeovers. Statistical and status information for the contamination detection solution and checkweigher are available via one Human Machine Interface (HMI), reducing operator training requirements and minimising the risk of user errors. The advanced HMI design improves usability, making the Combination System user-friendly.

Space Saving Design: Shared components, such as conveyors, provide space savings, and having less feet on the floor facilitates easy cleaning.

Reduced Total Cost of Ownership: A single vendor solution provides documentation, installation, configuration support, training and service for two technologies in one, reducing costs over the long term.

Additional Quality Assurance Checks: Vision inspection technology is available as an additional option, making a powerful 3-in1 system which can provide comprehensive quality control by detecting packaging defects, verifying label information and maintaining product integrity.

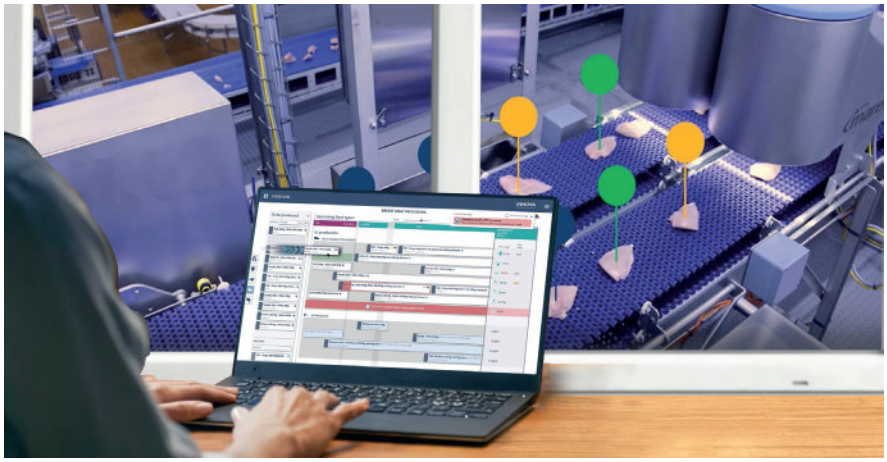
Industry 4.0 Ready: Both Combination systems can be connected to ProdX™, a state-of-the-art product inspection management software. This complete quality inspection data management system delivers full digital management of product inspection equipment for real-time monitoring and food safety compliance. Visibility of the data can help improve productivity, food safety traceability and facilitate regulatory compliance.

Joern Migge, Head of Product and Market Management, Mettler-Toledo, says, "We are excited to introduce the new CM and CX Combination Systems to our customers. These innovative solutions provide unparalleled flexibility, enhanced efficiency and significant cost savings. By integrating the latest M30 R-Series metal detectors and X2 Series x-ray inspection systems, we are able to deliver maximum protection and quality assurance for our customers' products."

www.mt.com

EXTENSIVE DATA COLLECTION MAKES DEMAND DRIVEN PROCESSING SIMPLE

The challenges faced by today's poultry processors when scheduling and executing orders can be summed up as the need to fulfill orders real-time in a timely fashion. This often involves a large number to be assembled simultaneously. Some orders can be scheduled reasonably in advance but customers can also place orders that must be ready the next day. Marel Process Technologist Wouter Lommerse explains how ProFlow Breast Meat software can help with the management of orders for breast meat.



Processors have to deal with an increasing diversity of incoming chicken types from standard broilers to local breeds and organic chicken. End products are also becoming more diverse and include not just breast fillets but also calibrated fillets, schnitzels, strips and cubes. The fact that certain orders can only be produced from specific flocks makes it even harder to match incoming chicken to the end products required. Wouter Lommerse says, "ProFlow Breast Meat software makes the most of raw material, bringing the right product to the best destination with the highest value."

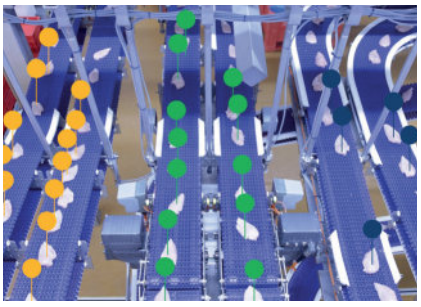
Short Notice

While the processor knows well in advance what type of chicken he will be getting, customer orders are typically known shortly before production. Wouter Lommerse says, "What orders to produce in what quantities often becomes clear relatively late. Sometimes this happens on the day the order is due. When processors are asked to deliver on time, even at the last minute, it becomes difficult to prioritize production processes. This is where Marel's ProFlow Breast Meat software comes in, making demand-driven order fulfillment simple.

What does ProFlow do?

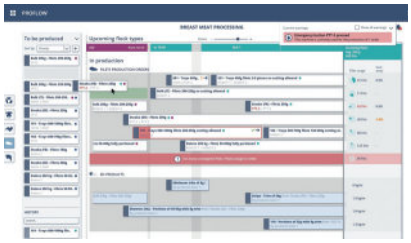
ProFlow Breast Meat software has been designed to optimize the distribution of products available real-time, ensuring a welladjusted match with current order intake. Combined with IRIS FI and SystemFlex Distributors, it enables breast meat to be processed fully in-line and virtually eliminates the need for any manual intervention in the production process. With ProFlow, products are in principle not touched by human hands all the way from filleting to packing.

Wouter Lommerse continues, "ProFlow Breast Meat gives central control over the entire breast meat processing line. It is operated entirely from the control room, where production managers enter orders on a computer screen. ProFlow controls the Distributors, automatically adjusting distribution of products available to the order intake. ProFlow also takes care of the adjustment of machines in the breast meat processing line, such as the I-Cut 122 portion cutter. This saves labor, as no longer does anyone need to go down on the factory floor to set machines manually.



From Start to End

A line controlled by ProFlow starts at the first data collection point directly after the filleting



machine. Usually, this data point is a SensorX or M-weigher that generates a unique identifier for the product and stores its weight as the product passes. This information is sent to ProFlow to track the product from start to finish. Product sensors on the belt, together with sensors in IRIS FI, keep constant track of the product's position on the conveyor belt, while at the same time adding information to the product's dataset, such as product quality.

Controlled Logistics

Once it has gathered all product data, ProFlow converts this data into actions. It controls the Distributors, where ProFlow makes decisions on where each product should go to ensure the best possible match of products available to outstanding orders. The Distributors then feed various end-of-line systems like graders, RoboBatchers or bulk stations. This way of working optimizes product value. It is also possible to add an I-Cut to the line before the Distributors. ProFlow can then control this portion cutter to create the optimal input product for each end-of-line system.

Destinations

ProFlow Breast Meat software can handle multiple orders simultaneously. Fillets from different filleting lines can feed one order. A single fillet can also be used to make up two orders. If heavy fillets are cut into a calibrated fillet and strips, the resulting products can be divided over two orders. Fillets proceed to the RoboBatcher where they are packed on trays for sale in supermarkets, while the strips go for a bulk order.

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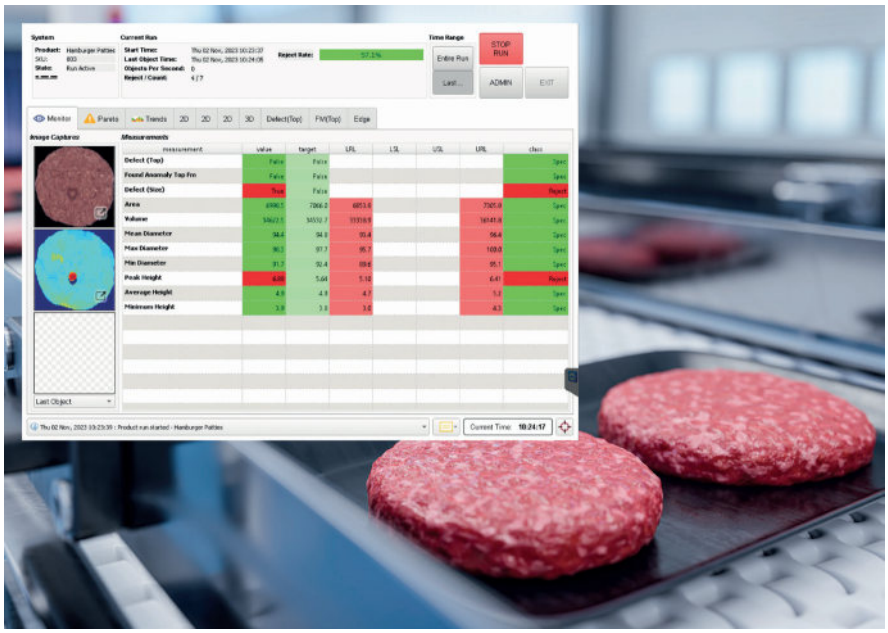
AI-DRIVEN INSPECTION DATA FUELS MODERN MEAT PROCESSORS FOR SUCCESS

By Jon Gilchrist, Technical Solutions Director of Vision Systems, KPM Analytics

Quality control and food safety have never been more critical or challenging for meat and poultry processors and packers. Companies are being pushed to their operational limits to respond to increasing throughput demands, even though labor retention remains an issue throughout the industry.



Naturally, when a quality assurance team struggles to meet these demands, operations must slow down. There is also a higher chance of inspection mistakes, excessive or possibly unnecessary waste, or harmful foreign materials finding their way into the production stream.

These are only some reasons why many processing companies invest in artificial-intelligence (AI) based vision-inspection technologies to meet these increasing demands and amplify their food safety efforts. New applications to streamline product grading and foreign material detection are emerging daily, making this an exciting time for companies to modernize their operations and gain a competitive edge.

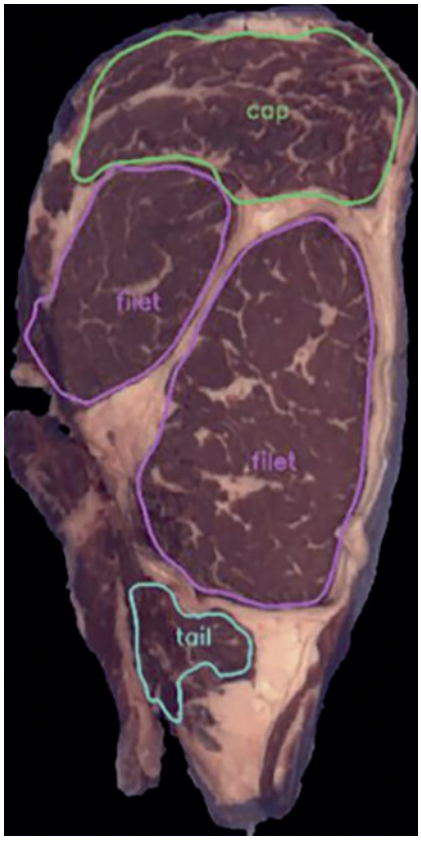
An Evolution in Inspection Technologies

The landscape of available technologies to improve inspection and foreign material detection efforts has changed dramatically over recent years. Meat and poultry processing companies have used over-line X-ray and metal detector systems as vital quality control instruments for decades.

However, their primary use is detecting dense objects like metal, stones, and similar materials. They are less suited for soft foreign materials like paper, plastic, and films, which can damage processing equipment or lead to costly recalls.

Traditional technologies have limitations and lack accurate process insights, so automated, rule-based vision inspection systems have become popular choices to meet the quality assurance needs of meat and poultry plants. Vision inspection technologies are sanitarily designed, incorporating high-resolution cameras, advanced lighting, and robust analysis software to measure various product features, whether used at-line, installed over-line, or integrated directly into a conveyor system. System measurements include anything related to the 2D size and shape of the product, 3D thickness, color, and marbling, but also more advanced measurements like blood spot or striation detection on raw products, bun coverage for processed products, trimming accuracy, predictive product weight, and more.

Vision inspection systems offer real-time analysis during production. When the system detects a defect or contaminant, it can alert the operator or automatically stop the production line. For some products, companies can integrate an automated rejection method to remove the out-of-spec products to keep the process moving. The immediate alert or action enables a safe and consistent

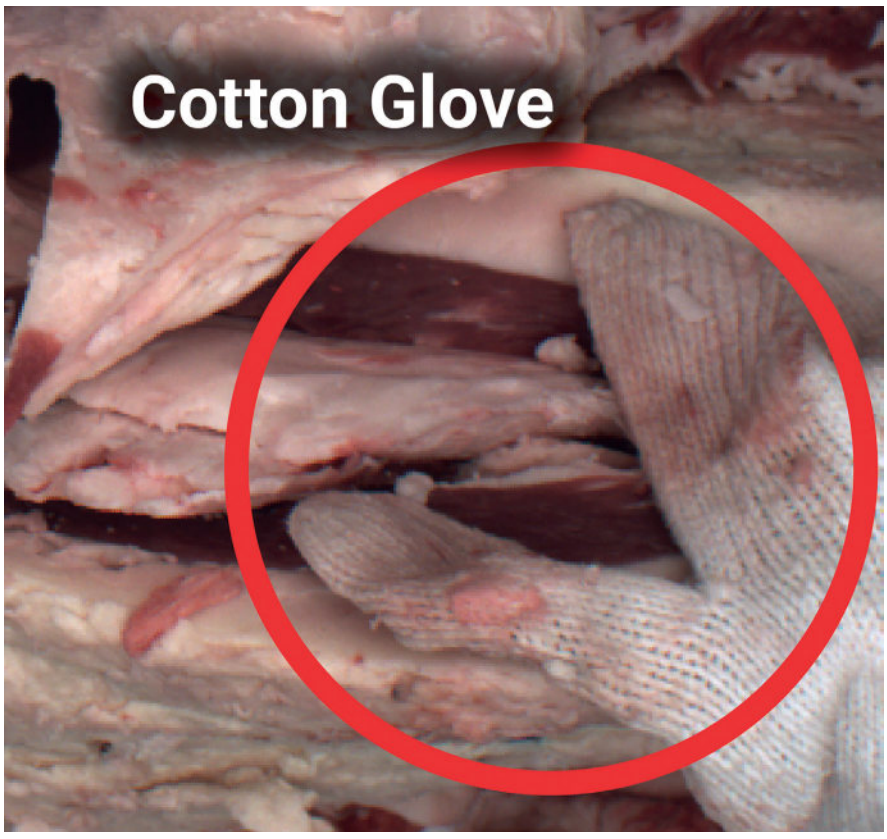


Individual steak segmented by artificial intelligence helps automate product quality assessment and grading.

quality control process, ensuring defective products or unwanted foreign materials never make it too far down the processing line. Vision inspection systems today can be equipped with hyperspectral imaging technology for advanced foreign material detection and classification. Hyperspectral imaging uses a combination of spectroscopy and imaging technologies to acquire images of products at non-visible wavelengths, amplifying the system's capability to find potentially harmful foreign materials on the product's surface.

Even more recently, vision inspection systems have been deployed with advanced AI-driven machine learning capabilities to increase ease of use, achieve higher detailed measurements, and detect foreign materials with remarkable accuracy. The automated learning of product features and specifications dramatically reduces system complexity and promotes continuous operations to keep systems running longer with less human intervention. An AI vision inspection system never takes a vacation or a sick day. It can deliver the same precision and accuracy if it remains in operation or until trained for a different production line or SKU. Facilities can integrate their collected data into factory control software to create a feedback loop if desired.

Nevertheless, despite access to more inspection and process control data than ever before, many operations using advanced vision inspection systems may not realize the full capabilities of their vision technology investment.



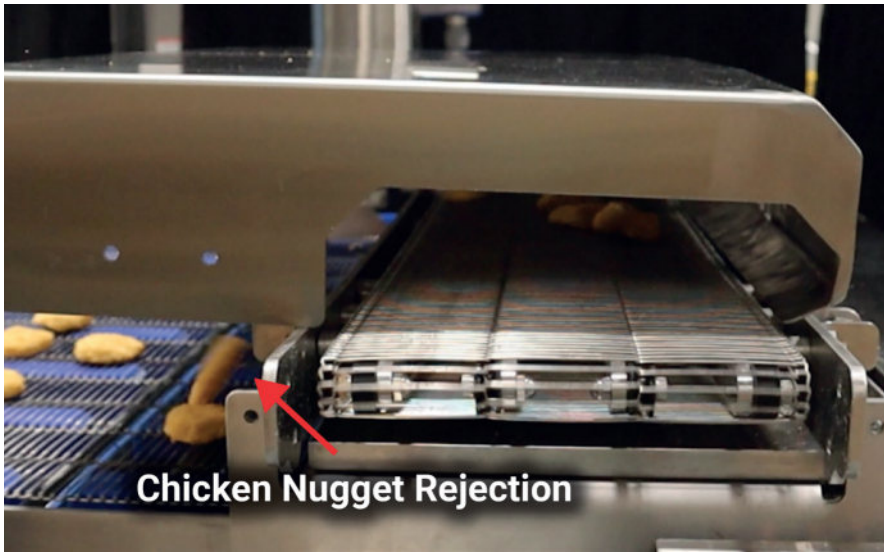
Glove identified in a beef trim line by artificial intelligence.

Optimizing Production Processes by Leveraging Inspection Data

Automated AI-driven vision inspection technologies allow companies to analyze 100% of products when integrated into their processes. This valuable data helps support the efforts of various groups within an organization.

Production Line Level Impacts

As its original use, an integrated AI vision system enables operators on the processing floor to make better-informed food quality and safety decisions. For example, a chicken nugget company producing 3 million chicken nuggets per day will see some percentage of waste. Relying solely on manual inspection of products for their overall size, shape, breading color and coverage, or other product features is a challenging task at full production speeds. Additionally, at the time a quality issue is



An in-line vision system with air jets automatically rejects an out-of-spec chicken nugget from the central processing line onto a rejection conveyor.

discovered (e.g., the breading color becoming too dark because the fryer oil needs changing), several products have already been wasted.

Because in-line inspection systems can interface with existing MES and SCADA systems, they can help detect when products may start drifting towards becoming too dark after exiting the fryer and take immediate corrective action or alert the operator.

For that 3-million-a-day chicken nugget producer, lowering their waste by as little as 0.5% (~150,000 nuggets at 1 cent per nugget) equates to significant savings over time because the operator can make better-informed decisions on process control thanks to their vision data. Many companies have paid for their vision inspection systems quickly through waste savings alone.

Plant Level Impacts

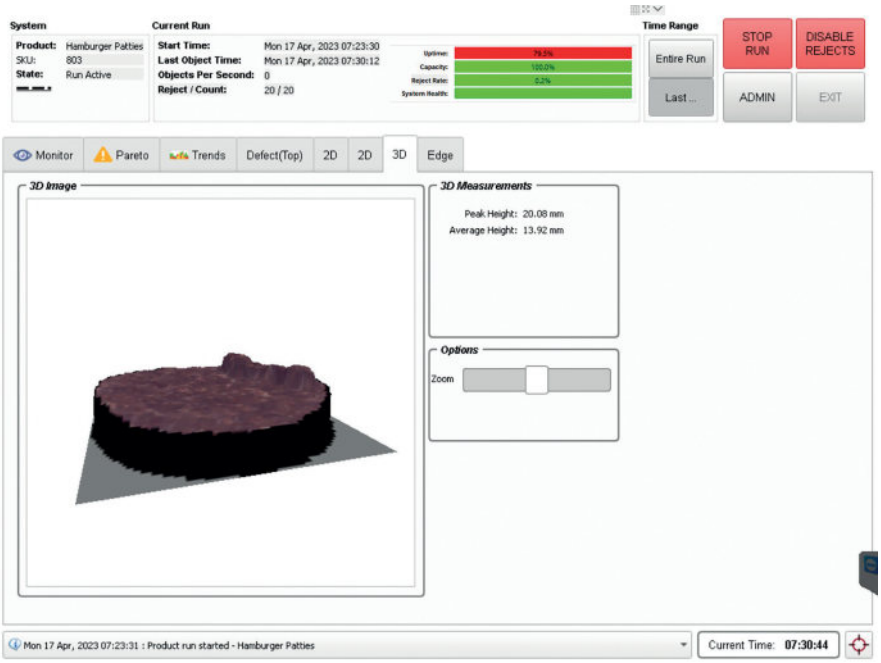
There are multiple ways AI vision inspection can influence the accuracy and decision-making of plant-level processes. First, the technology helps determine the root causes of common process issues.

Take a hamburger patty manufacturing company, for example; all patties must be formed to a specific size or shape to ensure they are cooked thoroughly and fit correctly within the product packaging. If a plant has multiple forming machines feeding products to later production stages, having an integrated vision inspection system that continually measures the products exiting the formers helps detect any issues like double-stacked patties, edge defects, excessive patty cupping, worn forming equipment, and much more.

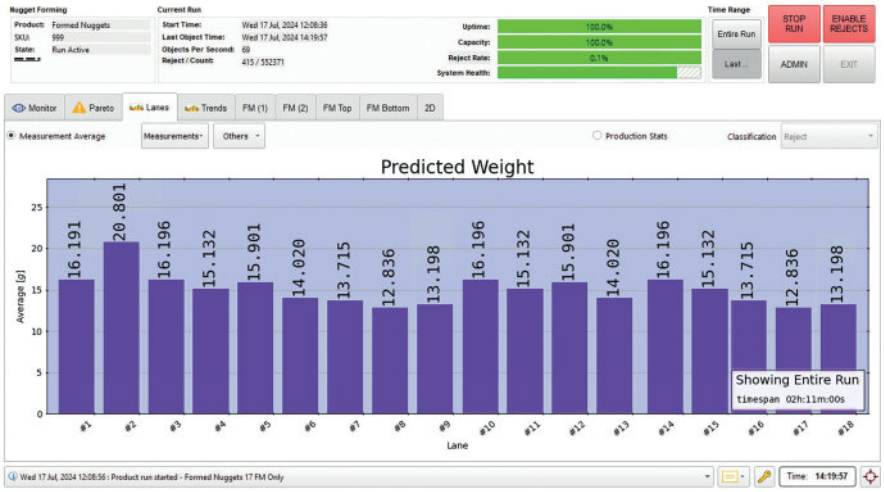
Using this data, the company can clearly identify the forming machines that routinely have product consistency issues. If all process adjustments continue to fail, the plant manager can make a data-driven decision to have the equipment serviced or replaced to prevent further waste.

Ingredient supplier evaluation is another helpful application. Companies change ingredient suppliers for various reasons, so an objective method to test new ingredients in the production process is a cost-effective way to safeguard supplier selection.

Going back to the chicken nugget producer, let's say the company



3D height analysis of a burger patty with a defect detected caused by the forming machine.



Average predicted weight report of chicken nuggets collected from 18 lanes on the same processing line.

is switching breading suppliers and has received samples from multiple suppliers to test their production process. Whether testing individual products on an at-line system or using an over-line system positioned above a product stream, the plant managers can quickly assess whether the breading cooks correctly, adheres to the product throughout the process, maintains texture, and other visual attributes. Being able to compare product appearance against programmed values, rather than relying on color charts or operator interpretation, is an effective way to help ensure a seamless transition to a new ingredient supplier.

Corporate Level Impacts

For large meat and poultry processing companies, AI vision inspection technologies go a long way in helping analyze performance trends across multiple locations. Some vision inspection systems offer software modules that allow users to generate plant-wide performance reports on anything from product rejection rate to the color or presence of visual attributes on a product.

Having access to this data not only helps companies deploy higher standards for product consistency company-wide but also aids in the decision to invest capital resources to correct global processing challenges. This benefit is especially useful for companies with multiple production sites; if vision systems are on all production lines, benchmarking performance company-wide and addressing potential production issues becomes much easier.

Regulatory compliance and traceability are essential for meat and poultry processing companies. Vision inspection technologies provide data that prove quality and safety measures are maintained throughout the organization. These technologies can help companies deliver on their promise of top-quality and safe food products. Every avoided recall due to an inattentive inspector will help companies protect their bottom line and avoid the public relations troubles that follow.

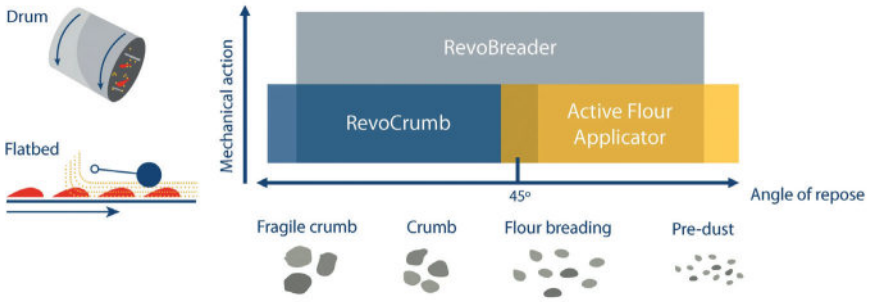
Improved Decision Making Throughout the Organization Made Possible with Robust Inspection Data

Product consistency is a significant factor in a customer's brand loyalty. The more companies can do to align quality assurance efforts across their many locations, the better positioned they will be to meet the needs of increasingly demanding global scale customers.

Data from AI vision inspection technologies help quantify product quality, process performance, adherence to regulatory requirements, and the success of their food safety efforts. The more ways companies can utilize this valuable inspection data in their operations, the better prepared they will be to address growing demands and stand out from the competition.

DISCOVER THE SCIENCE BEHIND SUPERIOR CRUMB MANAGEMENT

By Marloes ten Haaf, Marketing Manager, Marel Further Processing



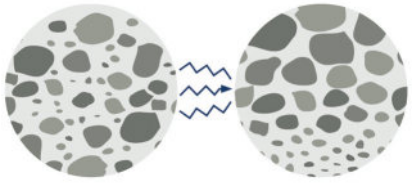
Consumers increasingly seek varied and high-quality convenience foods, and dry coating allows food processors to diversify their product range with minimal effort. But have you ever considered the science behind the perfect crumb coating? Though seemingly straightforward, truly effective dry coating depends on carefully developed technology to produce the delicious, crispy products your customers desire. In this article, we explore the science behind expert crumb management and how we've implemented it to create our RevoCrumb coating solution.

Your Perfect end Product is our Starting Point

Our product development process begins with a detailed understanding of our customers' needs. Marel's process technologists are actively involved in daily factory operations, gaining firsthand insights into challenges such as crumb management, and receiving feedback on what processors truly need from their coating equipment. We then transform this feedback into unique and innovative technologies that address the genuine demands of the market, enabling you to produce the exact products you envision.

What is Crumb Management and why does it Matter?

Crumb management is the process of controlling the distribution of breadcrumbs onto food products. Effective crumb management is important to ensure:



Product quality and appearance: Proper crumb management ensures even coverage of fine and coarse crumbs on the top and bottom of the product. This improves the appearance and texture of your products and reduces the amount of debris in your fryer.

Reducing waste and costs: By reducing crumb breakdown, optimizing the usage of coating materials and creating top quality end products with fewer downgrades, crumb management helps minimize food waste and contribute to lower production costs.

Understanding the Science Behind Crumb Management

The RevoCrumb is an advanced crumb coating solution for products like schnitzels, tenders and nuggets. To create its unique crumb management technology, our experts focused on four key areas: crumb separation, the angle of repose, crumb transportation and a unique blow-off system. Let's take a closer look.

Crumb Separation

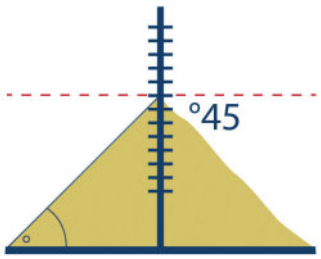
Managing crumb size is crucial in dry coating as it determines the appearance and crispiness of your products. RevoCrumb utilizes and manipulates the natural percolation process to separate larger and smaller crumbs. In this natural sorting method, smaller crumbs fall between the larger ones, much like how smaller cereal pieces settle at the bottom of the box while larger flakes remain on top. This is known as the Brazilian nut effect.

While many crumb coating machines on the market separate

crumb sizes, only RevoCrumb offers the ability to manage the individual flows of fine and coarse crumbs for both the top and bottom layers and direct their flow onto the product.

By ensuring that the larger particles make contact with the product first, followed by the smaller particles, RevoCrumb achieves optimal particle size distribution on all surfaces of the product. This results in exceptional product appearance and quality.

Angle of Repose



The angle of repose is the steepest angle at which a pile of loose material remains stable, without particles sliding off. Materials with a larger particle size, such as crumbs and flakes, typically have a lower angle of repose, indicating that they flow more freely. On the other hand, finer materials like flour breading typically have a higher angle of repose, meaning they do not flow as easily and therefore maintain a steeper pile without collapsing.

We use this principle to help us determine the mechanisms for transporting different types of crumb coatings in our coating machines. An angle of repose of around 45° is used as the tipping point for determining which machine is suitable for the coating type.

For example, the RevoCrumb is suitable for coatings with an angle of repose below 45 degrees (called 'free-flowing' coatings), the Active Flour Applicator is suitable for coatings with an angle of repose above 45 degrees (called 'non-free-flowing' coatings) and the RevoBreader is suitable for both free-flowing and non-free-flowing coatings.

Crumb Transport

The RevoCrumb is designed to handle coarse coatings such as dry panko and cornflakes, which are more fragile and prone to breaking down than finer coatings like flour breading. While traditional crumb coating machines use auger screws, we found these unsuitable for the RevoCrumb as they tend to grind and damage the crumbs. To avoid this, we designed a unique wheel mechanism that gently scoops and transports the crumbs without mechanical strain, thereby maintaining their size and texture.

Moreover, because crumbs flow freely, the RevoCrumb features a bunker that allows them to descend gently using gravity, without the need for mechanical force. This method not only minimizes breakdown of particle size but also improves coating quality by ensuring uniform adhesion to the product.

Unique Blow-off System

One of the major challenges in crumb coating is that loose particles fall off the product and accumulate in the fryer, which can leave unsightly dark spots on your product. They also soak up valuable frying oil and introduce impurities that can create an unpleasant flavor and shorten your oil's lifespan.

To address these issues, our dry-coating machines feature a unique blow-off system that reduces loose particles in the frying oil by up to 80%. This innovation improves product quality and saves costs by decreasing the amount of oil exiting the fryer with the crumbs, extending your oils' lifespan by reducing oxidation, and minimizing black spots on your end products.

Part of a Full-line Solution

As part of a comprehensive full-line coating solution, the RevoCrumb works seamlessly with other equipment. It follows the Active Batter Applicator, which expertly coats the product in batter before delivering it to the RevoCrumb. Together, these two machines effectively eliminate belt marks on the underside of the product, ensuring a flawless presentation every time. The RevoCrumb's adjustable pressure rollers and vibrating plates also enhance crumb adhesion and pickup, significantly increasing yield. This integrated approach ensures a smooth, efficient and high-quality coating operation.

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PROVISUR TECHNOLOGIES: INDUSTRY EXPERTS IN PREMIUM MEAT PROCESSING EQUIPMENT FOR HIGH-QUALITY BEEF BURGERS

Provisur Technologies is a renowned industrial food processing equipment manufacturer headquartered in Chicago, Illinois. The company has a global network of sales and innovation centres. For over seventy years Provisur has perfected its beef processing systems for the global QSR (Quick Service Restaurants) industry and for pressing superior meat such as entrecôte. The company holds an impressive number of patents for industry-leading beef processing legacy brands such as Formax®, Hoegger® and Weiler®.

Advanced technology of NovaMax® ensures fast processing when forming burger patties from beef or other raw materials

Premium Burgers, an Ongoing Trend

Premium hamburgers are more popular than ever before. In fact, the definition of "premium" has changed dramatically over the last five years. In the past, a "premium" burger was simply a standard burger with premium toppings or a patty on a premium bun. Today's premium burgers are more focused on the quality of the meat itself. This can be Angus, Sirloin, Chuck, or Japanese Wagyu beef. Smashed burgers, which offer a home-style, handmade burger experience, are popular, and today's consumers prefer fresh over frozen burgers. Nearly every restaurant, from QSR to white tablecloth, has a premium burger offering. Some offer mega-burgers, others mini burgers, but in all cases the emphasis is on high-quality beef.

Weiler® is durable and reliable

Advanced Systems, Perfect Burgers

At Provisur, the word "premium" means maximizing the quality of the meat to add value to the final burger. That's why premium burgers start with a premium process. The family of advanced systems that make up the Provisur portfolio is designed to produce just this:

Provisur's Weiler® line incorporates a range of high-performing grinders, mixers, and material handling systems. Weiler® systems are durable and reliable, while providing a homogenous patty mix that improves the quality of the burger. Weiler® also includes an Inline Reclaim System that delivers re-grind reclaim. It maximises yield and is ideal for use with beef and other types of meat.

The advanced technology of Formax NovaMax® ensures fast processing when forming burger patties from beef or other raw materials. The NovaMax® product delivery system has recently been redesigned to better maintain raw material integrity.

VerTex® Formers provide unprecedented levels of burger consistency and texture, while offering the lowest cost of ownership available. Formax® Formers, with their solid construction, deliver the highest yields while forming products with a natural texture and excellent appearance.

Formax® Filling and Product Handling

Provisur's advanced technology includes a range of fill systems. The Standard Fill is the most common for forming ground beef burger patties, however there are many variations of this system according to processor requirements. The Tender-Form® system produces beef burgers with the most tender bite and enhances the juiciness of the patty. This system ensures even cooking, consistent internal temperatures, better overall shapes, and reduced freezing times. The fill opening of the Verti-Form® system is larger than other fill methods, which minimises fill restrictions. And that makes the Verti-Form® Fill especially helpful when a patty includes, for example, peppers, onions or cheese.

To give consumers the feeling they are eating a delicious homemade burger, the Formax® HomeStyle® Patty System is ideal. This system produces formed portions with irregular, broken edges for that "handmade" appearance. The patty style can be chosen according to manufacturer requirements, and the system ensures speed, exact portion control and high productivity. The Formax®'s Cuber-Perforator performs perforations that enhance speed freezing, reduce energy consumption, and deliver faster cooking beef patties while maintaining more of their original size.

Hoegger® Form Presses: First-class pressing results are achieved even with irregularly shaped products

Hoegger® X-Presses – the Form Pressing Experts

Retailers, QSR businesses and their customers expect impeccably formed products of a consistent size and weight. Provisur's long-standing experience in form pressing is reflected in the latest Hoegger machine, the X3/X4 Form Press. First-class pressing results are achieved even with irregularly shaped products. At the heart of the new X3/X4 press is the servo press technology. Intelligent algorithms and servo drives enable fast and precise profiles and the controlled application of force. They offer gentle forming, higher yields, reduced waste, and a fast return on investment. The versatile loading and unloading modules allow for perfect integration into existing or new production lines.

Slicing – Cutting-Edge Technology

The SX330 covers a wide range of applications - from simple slicing systems without scales to more complex slicing lines with up to two scales. Offering smooth, easy changes of components to process different products: the product feed, shear bar and gripper are already prepared for different types of cheese, deli meats, sausage and fresh meat.

The Sales and Service Department at Provisur's Telford, UK office holds a comprehensive stock of spare parts for both the Formax Slicer and the Hoegger presses, which enables flexibility and speedy delivery times.

Precise Control Separators

For separation, desinewing and deboning, Provisur STS, Beehive® and Bone Canon brand are widely recognized for their performance in the industry. Its precise controls allow the operator to generate textures that elevate the quality of the beef and result in a premium product.

www.provisur.com

GOLDSCHMAUS GROUP RELIES ON INNOVATIVE TRIMMERS AND SKINNERS FROM BETTCHER FOR MAXIMUM MEAT YIELD AND EFFICIENCY

The Goldschmaus Group is a unique regional network system for the production of beef and pork products. The Group's recipe for success is quality, regionality and continuous process optimization. The tools used in the company, which are optimally adapted to the processes, include the Quantum Flex® Trimmer, the Quantum Flex® TrimVac and the Cyclone Skinner® from the Bettcher Industries portfolio. With the help of these state-of-the-art tools, the meat processor was able to further improve its product quality and meat yield and achieve more ergonomic production processes. This success enabled the group to expand further.

At its two sites in Garrel and Oldenburg, the Goldschmaus Group combines all stages of beef and pork production under strict quality standards. With around 2,000 employees, the majority of the company is owned by farmers from the Oldenburger Münsterland eG farming association. As a result, the meat processed by the Goldschmaus Group is sourced solely from farms within regional farming associations. This approach has established a distinctive regional network for producing beef and pork products and ensures that the Goldschmaus Group provides its customers with the highest quality meat and sausages, with controlled proof of origin through an uninterrupted chain.

Successful "Quality" Concept Enables Investment

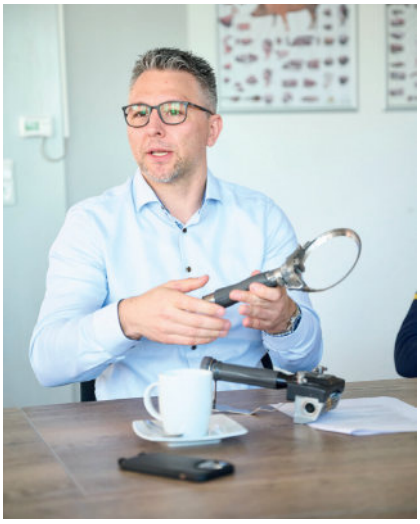
The Group's success allows for continuous expansion. In 2008, a new processing plant was opened, and in 2015 the new state-of-the-art freezer warehouse was inaugurated. A new cutting plant is also being planned at the Garrel site. This new production facility, which is scheduled for completion in 2026, will offer more space which will mean that some areas of production will become automated and more ergonomic work processes will be introduced. However, fine cutting will continue to take place manually at the company in order to fully meet the high-quality requirements of customers.

Many of the Goldschmaus Group's products are produced at its plants in Garrel and Oldenburg. The company is constantly refining its output per hour in order to become more cost-effective. At the same time, there is a focus on the health and wellbeing of employees to minimise sick leave and fluctuations in staff. "The tools from our long-standing partner Bettcher Industries are a key component of our success. They are fast, energy-saving, low-maintenance and ergonomically designed. This increases our meat yield and reduces operating

Quantum Flex® Trimmer from Bettcher for clean, trimming of meat without damaging the precious parts

At the production line of the Goldschmaus Group with hand tools from Bettcher's Quantum Flex® series

Dennis Burke:
Managing Director of Goldschmaus Gruppe



Markus Jentner:
Director of Sales Bettcher GmbH

costs," says Dennis Burke from the management of the Goldschmaus Group. Bettcher, the world's leading supplier of cutting and trimming tools for industrial applications, supports the Goldschmaus Group from its European location, Bettcher GmbH, based in Dierikon/Switzerland. The close partnership began with the use of Bettcher circular knives in the pork production line around two decades ago. The tools, which are optimally tailored to the needs of the meat industry, allowed work processes and ergonomics in the meat processing plant to be continuously improved. Having been convinced by the introduction of circular knives from Bettcher, the Goldschmaus Group has gone on to add to and update its stock of Bettcher tools over the years.

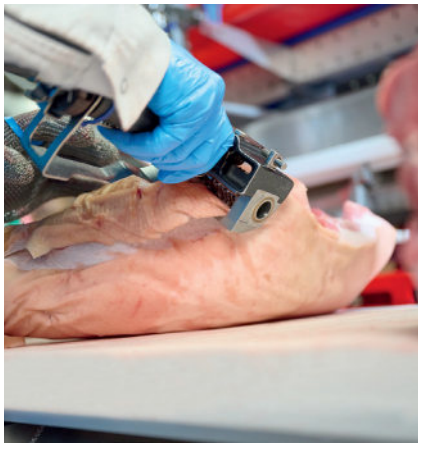
Trimming Pork with the Quantum Flex® Trimmer

"Goldschmaus is currently using our fourth-generation Quantum Flex® Trimmer for the clean trimming of pork, where we have further optimized the design. The devices are particularly light, less top-heavy and have a fast-rotating blade. The mounting of the blades has been modified which has increased their cutting power and cutting speed while reducing vibrations. This increases the yield and makes the tools more comfortable to use," explains Markus Jentner, Director of Sales at Bettcher GmbH. A unique feature of the tools is the variable adjustment of the cutting depth, which enables a great deal of flexibility in product processing. The universal handpiece of the trimmer is compatible with all Bettcher motors. The electrically operated device is significantly quieter than its pneumatic predecessors. Another innovation is the maintenance-free DriveLine, which saves the Goldschmaus Group a lot of time and money.

Skinning and Degreasing with the Cyclone Skinner®

With the Cyclone Skinner®, the Goldschmaus Group achieves a higher yield and significantly reduces the workload when skinning and degreasing pork hams and shoulders. The electrically operated, one-handed manual skinner is particularly light and is the quietest device in its class. Its advantages include a particularly wide cutting path and an easily controllable cutting thickness. Its sophisticated design reduces waste of raw materials and increases efficiency. Annual energy savings of up to 90 percent can also be achieved thanks to its electric drive. This effective tool is made up of a few, easily replaceable components which enables the Goldschmaus Group to carry out maintenance and repairs quickly. The ergonomic design reduces fatigue in the work process and ultimately leads to greater productivity and yield.

The hand tools in the Quantum Flex® series are durable and efficient. They enable higher yields when trimming meat and poultry



The quiet, lightweight and low-vibration Cyclone Skinner from Bettcher can be operated safely and effortlessly with one hand

Quantum Flex® TrimVac for the professional and safe removal of potentially hazardous spinal cord tissue

The maintenance-free DriveLine from Bettcher

Safe Handling of High-risk Material with the Quantum Flex® TrimVac

The meat processor uses the Quantum Flex® TrimVac for safe slaughtering processes. The circular blade is used in combination with a vacuum system to remove potentially risky spinal cord tissue or internal fat from areas that are difficult to access. The closed system directly extracts the risk material and transports it for disposal. The tool with its particularly fast rotating blade enables very precise work. The modern, ergonomic design and easier handling of this device also support faster, more efficient and more profitable processes.

Eugen Baal: Technical Manager Goldschmaus Gruppe

Fit for the Future with the Right Tools

With its partner Bettcher and the right tools, the Goldschmaus Group believes it is well equipped to continue its successful course. "With our inline production, every minute saved pays off. Thanks to the partially maintenance-free design of the tools and the reduced number of worn parts, we save time in the operating processes and achieve less downtime on the production lines. This means that the investment in the tools pays for itself in a very short time," says Eugen Baal, Head of Technology at Böseler Goldschmaus.

The cooperation with Bettcher regarding the further development of tools remains an important part of the success concept. It pays off that Bettcher focuses on trimming and skinning tools and has the necessary capacity to continuously work on improvements with its engineers. The cutting tool developer has just announced another upgrade to an existing device, the release of which is eagerly awaited by Goldschmaus. The meat processor also benefits from the extensive experience of its tool supplier. Thanks to the worldwide use of their equipment, the Bettcher experts are familiar with a wide variety of meat processing techniques and can provide their customers with tips from international markets. The doors in Garrel and Oldenburg are open for new developments at any time if Bettcher needs to test new tools in real production settings. "Above all, however, Bettcher has proven that it has no standard applications, but tests each application together with us until the device, blade and detailed settings fit perfectly. We are convinced that anyone who structures their processes efficiently, relies on automation in selected areas, and demonstrates a high degree of flexibility is well equipped for the challenges of tomorrow. Together with Bettcher, we share the view that the future of the meat industry lies in first-class quality combined with the best possible yield," emphasizes Dennis Burke.

www.bettcher.com

YIELD BOOST AT LA COMARCA MEATS

DMRI are excited to share the success story of La Comarca Meats in Lorca, Spain. La Comarca's 'Yield Boost' project aimed to increase the value of carcasses by improving yields at the cutting and deboning floor. This one-year project, which required no investment in new equipment, led to substantial economic gains.

The project involved a systematic procedure for continuously monitoring deviations from specifications on production lines and adopting corrective actions when detected. Additionally, a continuous improvement system based on yield and economic outcome indicators was implemented. DMRI provided all necessary training and coaching for managers, supervisors, and operators, with ongoing yields and deviations monitored by DMRI's software tools.

The 'Yield Boost' project operates under the Success Fee concept, ensuring a continuous positive cash flow for the company throughout the project. This concept measures the real improvement in yields compared with the company's baseline, providing a practical and profitable solution that benefits the company's operations. Alberto Santamaría, COO at La Comarca Meats, emphasized the fundamental impact of controlled yields in the cutting and deboning room, highlighting the significant improvements achieved through the collaboration with DMRI.

www.dti.dk

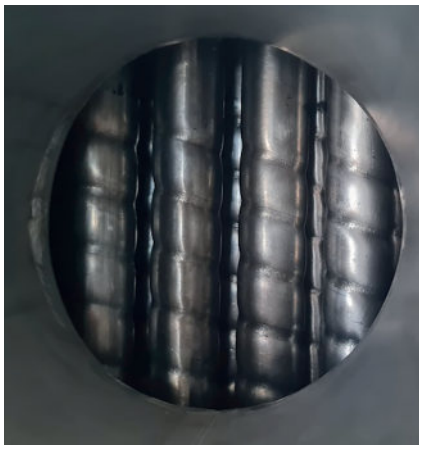
CORRUGATED TUBES IMPROVE HEAT EXCHANGER PERFORMANCE

By Matt Hale, Global Key Account Director, HRS Heat Exchangers

Over the last forty-plus years, HRS Heat Exchangers have gained a reputation for producing highly efficient tubular heat exchangers which provide unrivalled heat exchange capacity combined with consistent performance with a relatively small operational footprint. The key to this is our use of corrugated tube technology. In this article we look at the numerous benefits corrugated tubes provide over the use of smooth tubes in tubular heat exchangers.

The three most common types of heat exchangers are plate heat exchangers, tubular heat exchangers and scraped surface heat exchangers, although a number of other specialist designs exist. Plate heat exchangers are suitable for use with simple viscous fluids such as water, milk, and some thin oils, while highly viscous materials or those which require thorough mixing (for example to keep complex emulsions together) often require scraped surface heat exchangers. For most materials between these two extremes, tubular heat exchangers are the preferred choice.

A number of design configurations of tubular heat exchanger are available (such as annular space, double tube and multitube), but the biggest influence on the efficiency of tubular heat exchangers is the type of tube used, and simply put, corrugated tubes are more efficient at transferring heat than smooth ones. They also provide a number of other benefits.



HRS Heat Exchangers uses corrugated tubes in its tubular heat exchangers to create smaller, more efficient systems

Increased Efficiency

When a fluid moves through a tube, the dynamics are affected by factors such as pressure, viscosity, and the design of the tube wall. In a smooth tube, fluids usually follow a smooth path in which the particles which make up the fluid do not interfere with each other – known as laminar flow. However, where the smooth flow is disrupted, for example by disrupting the surface of the tube, tiny whirlpools form in the fluid creating turbulence – unsurprisingly known as turbulent flow.

This turbulence makes tubular heat exchangers more efficient by preventing viscous or suspended materials sticking to the wall of the tube, where they can form a boundary layer, which acts as insulation and prevents efficient heat transfer. The creation of this turbulent flow, and the resulting improvement over efficiency (compared to a smooth tube) is the key benefit of corrugated tube heat exchangers.

Smaller Footprint

Because a corrugated tube provides greater levels of heat transfer rate compared to a smooth tube of the same length, a heat exchanger with the same thermal performance can be smaller. For example, if corrugations increase the heat transfer by 10 per cent compared to a smooth tube, then the unit can be made 10 per cent shorter than an equivalent smooth tube while delivering the same performance. This increased thermal efficiency – which can be up to three-times that of a smooth tube heat exchanger – also means that less space is required to achieve the same level of heat transfer. Depending on the final application, a corrugated tube heat exchanger can therefore be up to half the size of its smooth tube equivalent. This is why HRS heat exchangers are popular for installations where space is restricted.

Reduced Maintenance and Cleaning

Because a corrugated tube reduces or prevents the formation of a boundary layer, it also greatly reduces the time and effort which is required to remove it. Therefore, operational time between cleaning cycles is much greater for corrugated tubes than smooth ones, further increasing the overall efficiency of the process.

In many situations, a corrugated tube provides sufficient turbulence to prevent the need for mechanical agitation of viscous materials (such as scraped-surface or screw-driven heat exchangers).

Using corrugated tube heat exchangers reduces fouling and improves energy efficiency

With no moving parts, in such situations a corrugated tube is easier to clean and maintain and may be more reliable. However, it is important to remember that for many materials or applications, a scraped surface heat exchanger is still the best choice.

When taken together, the benefits of corrugated tubes are so significant that at HRS Heat Exchangers, we don't use smooth tubes in our non-scraped tubular heat exchangers. The increased heat transfer efficiency, particularly at higher flow rates, means that less heat transfer area is required, so we can produce shorter, more compact designs which are also cheaper to manufacture.
www.hrs-heatexchangers.com

THE CM 70 FROM MASTER BUTCHER LANDES: SOUGHT AND FOUND

Cutter From K+G Wetter is a Well-Considered Choice

Master butcher Thomas Landes with his CM 70 from K+G Wetter

In a traditional butcher's shop, a new cutter is much more than a machine made of metal, motors and knives. 'You enter into a bond with the machine,' Thomas Landes admits. The master butcher was therefore meticulous in his research when it came to replacing the 40-year-old cutter in the family business in Denkendorf, Bavaria. After discussions with colleagues and various visits to manufacturers, the machine of choice was the CM 70 cutter from K+G Wetter with the CutControl recipe management software.

Hand-crafted Cutter for Boiled Sausage Specialties

The CM 70 from K+G Wetter has a central place in the Landes sausage kitchen, which is located directly behind the butcher's shop on the main street in Denkendorf. The compact cutter is a centerpiece of Landes' hand-crafted sausage production, as the various boiled sausage specialties are an essential part of the extensive sales counter. Four employees are responsible for preparing the meat delivered by local farmers for sausage production and sale in the shop.

A Convincing Performance

'We didn't leave anything to chance,' says Thomas Landes, recalling the search for the cutter that would accompany him in sausage production for decades to come. 'We took a close look at all the manufacturers that we considered to be the leaders in the field. In the end, it wasn't the purchase price that was decisive, but the individual points that we evaluated. What do a few thousand euros matter when you know that the cutter will earn money for at least a generation?'

'We were on site everywhere first, that is, in the machine manufacturers' factory.' In addition, Thomas Landes talked to fellow butchers about their experiences and watched various machines in action there. 'We felt comfortable with K+G Wetter from the very beginning, that's for sure,' recalls Thomas Landes. "We made an appointment and were allowed to look at everything. I have a lot of respect for that, and they really look after their employees."

Another plus point: K+G Wetter has a very high level of vertical integration and manufactures a great deal of its own products. An invaluable quality advantage.

A Long Search – Ready to go in A Flash

The decision-making process for the new cutter at Landes was as detailed as the machine was ready to go and the first sausage meat produced in a flash: 'If you've never seen it like that, it's exciting,' says Thomas Landes. 'We set up the cutter, laid the cable down into the basement, the electrician connected everything and an hour after delivery we were making sausage.' This is made possible by the unique compact design of the K+G Wetter cutter: everything is already integrated into the machine body, which saves a separate control cabinet with complex external cabling. 'Otherwise, you have to expect additional time for installation,' says Ralf Klein, the regional sales manager of K+G Wetter, who is responsible for the Landes butcher's shop.

Practical Details Make Work Easier

The machine has been in use at Landes' sausage production facility since October 2023. Thomas Landes is currently fetching the prepared ingredients from the cold store: the production plan includes basic sausage meat, which is made from meat, bacon, ice and spices and forms the basis

for various types of boiled sausage. To fill the machine, employee Georgios Theodoru opens the cutter's lid electrically at the push of a button. A feature that saves a lot of lifting work day after day. 'We've only seen this on a cutter of this size at K+G Wetter,' says Thomas Landes, pleased with the labour-saving feature.

The preparation of Landes specialties is precisely stored step by step in the CutControl recipe management system – for reliably top quality.

CutControl for Reliable Quality and Time Savings

As an experienced master butcher, Thomas Landes naturally has the preparation of traditional sausage specialties in mind. Nevertheless, the recipe management software CutControl from K+G Wetter played a crucial role in the choice of the new cutter: 'Nobody can do this like K+G Wetter,' says butcher Landes. The principle: recipes are stored in detail in CutControl, displayed directly on the large and clear touch display on the cutter and processed step by step. In addition, the program takes over the exact conversion of the ingredient quantities for each batch size. 'CutControl is a decisive advantage for me because you can rely on it completely, for example that the temperatures are not exceeded. The blade speeds are always exactly the same.' The result is exactly reproducible quality: 'If the basic material is right, the outcome is always the same good product. And to be honest, you wouldn't even bother to set the speeds as precisely as the programme does every time. I think that's great, and you can be sure that the employee will do it the same way.'

By opening and closing the noise protection lid, Thomas Landes controls the processing steps in the preparation of the basic sausage meat.

Thanks to CutControl, a large number of recipes can be stored and reliably prepared – a major contribution to quality assurance and the preservation of traditional butcher's knowledge. Thomas Landes has also saved various pure mixing programmes, for example for coarse bratwurst. In a series of precisely defined steps, the cutter ensures that the meat, spices and various ingredients are always perfectly mixed. Thanks to the automatic switch-off function, which can be set to a freely definable speed, time or temperature, overmixing is ruled out. 'You can also do other things without having to worry about anything going wrong, the material getting too warm or anything else. You can go down to the cellar and get a packet of spices that you still need. Because you can be sure that it will work out,' says Thomas Landes. Working time that saves significant amounts of time every day, step by step.

Clever Operating Details, the Finest Sausage Meat, Little Noise

The meat is in, Thomas Landes closes the lid and starts the first programme step. The first cutting step is completed in no time at all, and the sausage meat is already evenly fine. This is made possible by the baffle plate in the CM 70 from K+G Wetter: when it is used, the cutting chamber is smaller, and the sausage meat is cut particularly quickly and intensively. Thomas Landes: 'This was not available from other manufacturers, which is why they did not achieve this fineness of the sausage meat in such a short time. The baffle plate is a huge advantage.' The Landes butchery has relied on the sharpening service from K+G Wetter from the very beginning to ensure that its knives are always sharp. 'I wouldn't let anyone else touch them. I feel safe when I send them in.' The touch display even explains how to change the knife head step by step with clear

Thanks to the baffle plate, the sausage meat is cut particularly quickly in the reduced cutting chamber, perfectly bound and ready for filling.

pictures: 'It's really a great solution and it's fun. You can just see how it works,' says Thomas Landes.

The master butcher works through the basic sausage meat recipe, adding spices, bacon and ice, and then starts the next processing step. Incidentally, all he must do is close the noise protection lid without having to use the touchpad. 'As a butcher, you always have your hands full, but with CutControl, that's no longer an issue because you jump to the next step by lifting the lid. You don't even need the touch panel,' says Thomas Landes, describing his experiences.

The raised bowl rim on K+G Wetter cutters such as the CM 70 reliably protects against product loss even at maximum filling height.

Another well-thought-out detail becomes apparent when all the ingredients are in the bowl and the sausage meat is going through the last processing step: the raised cutter bowl rim ensures that the sausage meat stays in the bowl even when it is at its maximum level – this prevents product loss due to overflow and is of course much more hygienic.

The fact that you can still talk to each other while the cutter does it's work is another advantage of the CM 70, which the staff appreciate just as much as the hotel guests at Landes: thanks to the cast iron machine stand, which is exclusive to K+G Wetter cutters, the CM 70 runs extremely smooth. 'This cutter was by far the quietest,' says Thomas Landes, recalling his comparisons before the purchase. 'This fascinated us from the outset and is enormously important for the employees, but also for the hotel guests who live in the rooms above the butcher's shop."

At the Gasthof-Pension Post, which has its own butcher's shop, the people of Denkendorf and guests from near and far enjoy fresh sausage specialties from the production of Thomas Landes with the cutter from K+G Wetter.

A Thrifty Machine

The CM 70 is not stingy with quality, hygiene and durability, but the compact craft machine is extremely modest when it comes to energy consumption: 'Other machines of the same size have a motor that is twice as powerful. And has a correspondingly high power consumption. That is a very important issue,' emphasizes Thomas Landes. "You always need more and more electricity anyway. So, you are happy about every kilowatt saved, also because everything needs adequate fuse."

Lasting Values

The K+G Wetter CM 70 cutter has been in service in the Landes sausage kitchen since October 2023 – and will probably continue to do so for decades to come. And if the machine does have to make way for a successor at some point, it has another trump card up its sleeve: 'The resale value of K+G Wetter machines is enormous,' says Thomas Landes with a smile. Until then, the cutter will continue to provide generations of Denkendorf residents and guests with delicious cold cuts, traditional Leberkäs and crispy sausages – in a quality that is really tasty bite after bite.

The Landes Butcher's

The Landes family is now in its third generation of running the Gasthof zur Post in the Bavarian town of Denkendorf in the Altmühltal valley north of Ingolstadt. The butcher's business has been complementing the traditional restaurant and hotel business with its associated farming since 1981. Hotel guests enjoy the sausage specialties at breakfast, as do customers from Denkendorf and the surrounding area. And travellers and tradesmen enjoy a quick snack of regional specialties from the butcher's counter during their break.

www.kgwetter.de

CULTURED MEAT: MISSION IMPOSSIBLE?

By Henk Hoogenkamp - Author & Protein Technology Expert

Despite the many optimistic stories about cell-cultivated meat production, the reality in 2024 is that only a small fraction of the grand visions articulated in 2013—when the first $300,000 Mosa Meat burger was unveiled—have been realized. Even with a massive $1.6 billion in venture capital investments in 2021 and 2022, the anticipated market breakthroughs have not materialized. Instead, many of the more than 200 global cultured meat startups are facing contraction or even going out of business, casting doubt on the initial dreams of growing meat and fish from cells instead of slaughtering animals. In 2024, and likely in the years to come, venture capital is not something cultured meat companies can take for granted.

Compared to the venture capital boom of 2021 and 2022, it is estimated that 2024 will generate only a meager $36 million in new capital. This shift reflects changing sentiments in the world's food security landscape, which will not be as easily navigable as the founders of cultured meat companies initially preached.

The total global meat market stands at slightly over 50 billion kilograms (as of 2024). Even if all currently available cultured meat production facilities operate at full capacity, they would generate a maximum of 15 million kilograms—an extremely small fraction of what is required.

Disappointing Realities

The first signs of a significant market contraction among startups are not encouraging. SCiFi Foods in San Francisco, CA, permanently closed its doors in June 2024. New Age Meat closed earlier, and Berkeley, CA-based Upside Foods laid off research and equipment specialists. Aleph Farms in Israel also laid off about 30 percent of its workforce. These companies, along with several others, cited the challenging funding environment as the primary reason for their struggles, making it difficult to stay afloat, let alone build a commercial facility for cultured meat production.

On a broader scale, 2024 is proving to be a tough year for most biotech food startups to raise capital, turning the once-promising dreams into a frustratingly difficult reality.

Cultured meat startups are still grappling with the complexities of growing meat in a bioreactor, particularly with overcoming massive technological and engineering challenges. A major issue remains the search to increase cell density per unit of bioreactor volume. Companies like Upside Foods, Eat Just, and Mosa Meat are working on improving the efficiency of growth media and choosing the right engineering systems. These are critical concerns since producing growth media is expensive. Typically, the cell media is composed of energy sources like glucose, amino acids, salts, minerals, and vitamins dissolved in water.

Ignoring Reality

Yet, despite the negativity surrounding cultured meat ventures, the global food and meat processing industry is expected to produce 60 to 70 percent more food to feed the projected 10 billion people on Earth by 2050. To achieve this, new technologies such as molecular farming, precision fermentation, and cultured meat production—along with animal-free milk and chicken-free egg proteins—must be given a chance to flourish commercially.

The current state of startups in 2024 has made it painfully clear that venture capital and investments from legacy food companies will not be sufficient to meet the ambitious goals for future food production. Full-scale commercial manufacturing facilities require massive investments in the billions, with uncertainties surrounding public acceptance, profitability, regulatory approvals, and affordability. Consequently, there are increasing calls to reduce reliance on venture capital and legacy food company support and instead have governments fund the enormous upfront costs needed to build commercial-scale cultured meat facilities. Even non-profit organizations like New Harvest, which continue to support cultured meat development, often encounter significant funding challenges. To make cultivated meat commercially successful, government funding will be essential.

The situation becomes even more precarious when only small amounts of cultured meat are available, and profits are still expected. "It is difficult to make a profit when there is little to sell." The reality is that even if cost parity between slaughtered and cell-cultured meat is achieved, investors will quickly lose interest if no profits are generated.

Given the potential for mandated government funding, startups should consider changing course by outsourcing cell manufacturing rather than each building their own expensive manufacturing facilities.

The Hybrid Solution

For now, the most logical and profitable way forward for cultured meat is to seek assistance from plant protein ingredients. Plant proteins, such as soy and pea proteins, can be a lifeline for cultured meat if the focus shifts to hybrid meat products—a blend of cultured meat and structured plant protein. These hybrid products are not only great tasting but also have a much lower cost structure. The combination of affordability, premium nutrition, and great taste will encourage consumers to regularly choose these new food products.

For example, a burger or chicken nugget formulation containing as little as 5 percent cultivated meat can significantly enhance all organoleptic properties while boosting the value of plant protein sources beyond what they can achieve alone. These types of hybrid products are already commercially available and are being produced in small quantities by Eat Just at select restaurants in Singapore.

Cultured meat embedded in a blend of plant protein, fat, and water, surrounded by hydrated extruded plant protein, should not be viewed as a compromise of the early cultured meat visionaries. Instead, it represents a significant step forward in marketing hybrid meat products as an essential part of making nutritious, healthy, affordable, and great-tasting food options available and sustainable.

OCEANIA - LOSSES IN WORLD MEAT PRODUCTION DESPITE CONSIDERABLE MOMENTUM

By Hans-Wilhelm Windhorst -
Professor Emeritus, University of Vechta, Germany

The continents of Asia, South America and Africa have been characterized by remarkable dynamics in the past decade, both in terms of population development and meat production. The author has presented detailed analyses of the three continents (Windhorst 2024, 2024a, 2024b).

It is worth noting that there are hardly any recent studies on the role of Oceania in the global meat industry. This applies to both production and trade. The reasons for Oceania's neglect can certainly be seen in its small share in the global population and economic value added on the one hand and its peripheral location on the other, which makes access to important sales markets difficult. Despite remarkable dynamics in some areas of animal production, the continent has lost shares in world meat production in the period under review. This article will focus on documenting the role of Australia and New Zealand in meat production in order to close the existing gap.

Table 1: *Worldpopulationreview*

Country	Population	Share (%) in Oceania	Share (%) in world population
Australia	26.44	57.34	0.33
Papua New Guinea	10.33	22.40	0.13
New Zealand	5.23	11.34	0.05
Fiji	0.94	2.04	0.01
Vanuatu	0.33	0.72	< 0.01
Others	2.84	6.16	0.03
Oceania	46.11	100.00	0.57
World	8,122.13	-	100.00

The population of selected countries in Oceania (2023); data in million.

The Limitations of the Domestic Market as an Inhibiting Factor

With 44.6 million inhabitants, Oceania accounted for 0.57% of the global population in 2023. The continent´s population is highly concentrated regionally (Table 1). Australia, with 26.4 million inhabitants, shared 57.3% in the continent's total population, followed by Papua New Guinea with 10.5 million (22.4%) and New Zealand with 5.2 million (11.3%); the remaining independent countries of Micronesia, Melanesia and Polynesia contributed 2.8 million. Population density ranged from 2.2 inhabitants per km2 in Australia to 163 in Tonga. Both, the comparatively low population and the distance between the islands, are a problem because of the limited domestic demand for food and the high transportation costs, which reduce the competitiveness on the world market.

Table 2: *Source: own calculation based on FAO data*

Meat type	Oceania			
	2012	2022	Change absolute	Change (%)
Cattle meat	2,774	2,621	-153	-5.5
Poultry meat	1,291	1,674	283	29.7
Sheep meat	1,012	1,144	132	13.0
Pig meat	500	583	82	16.6
Meat total	6,042	6,538	496	8.2
	World			
Cattle meat	62,048	69,346	7,298	11.8
Poultry meat	107,162	139,219	32,057	29.9
Sheep meat	8,557	10,272	1,715	20.0
Pig meat	112,302	122,585	10,283	9.2
Meat total	307,532	360,618	53,086	17.3

The change in Oceania´s meat production between 2012 and 2022 in comparison to the global development; data in 1,000 t

Remarkable Momentum but Share in Global Production Declining

Between 2012 and 2022, meat production in Oceania increased from 6.0 million tons to 6.5 million tons or by 8.2% (Table 2).

A look at the development of the most important meat types reveals major differences. The production volume of cattle meat decreased by 153,000 tons or 5.5% in the period under

Table 3: *Source: own calculation based on FAO data*

Meat type	2012	2022	Change
Cattle meat	4.47	3.78	-0.69
Poultry meat	1.20	1.20	+/-0
Sheep meat	11.82	11.13	-0.69
Pig meat	0.45	0.48	+0.03
Meat total	1.96	1.81	-0.15

The change of Oceania´s share in global meat production between 2012 and 2022; data in %

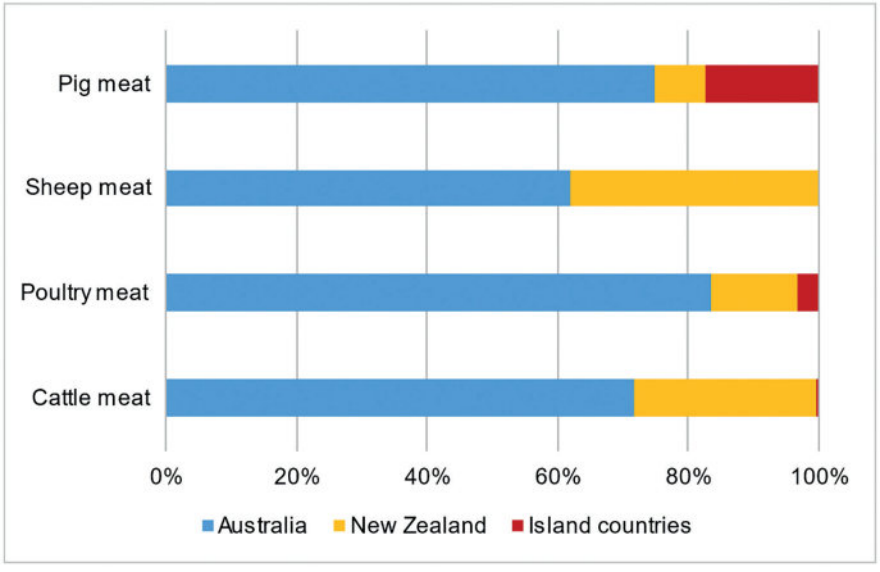
review. In contrast, production of the other meat types increased. Poultry meat in particular showed high absolute and relative growth rates. It accounted for 77.2% of the total growth in Oceania´s meat production. This reflects the red-white shift in global meat production and consumption, which can be observed (Windhorst 2021). The relative increase of 29.7% was almost identical with the value achieved at global level.

A comparison with the development of global production reveals that Oceania achieved a higher relative growth rate for pig meat, but a significantly lower for sheep meat. As will be shown in a later part of the article, this was mainly due to the decline in New Zealand´s production. Looking at the dynamics of meat production as a whole, a relative increase of 17.3% was achieved at the global level, more than twice as high as in Oceania. This considerable difference is also reflected in the decrease of the share in global meat production (Table 3). However, it is worth noting that the contribution to global meat production was three times as high as the continent's share in the world population. This indicates a high export quota.

Different Dynamics at Country Level

In a further step, the development of meat production at country level will be analysed. The countries of Micronesia, Melanesia and Polynesia are grouped together because they contributed only a small proportion to the continent's total production. They will be dealt with as "island countries" in this article.

Figure 1: *Design: A. S. Kauer based on FAO data*



The share of the main meat types in the meat production of the Oceanian countries (2022)

Between 2012 and 2022, cattle meat production in Australia fell from 2.2 million tons to 1.9 million tons or by 12.7%, while it grew from 607,000 tons to 728,000 tons or by 19.9% in New Zealand. Poultry meat, the second most important meat type, showed a remarkable dynamic. The production volume in Australia grew by 312,000 tons or 28.8%; in New Zealand, the absolute increase of 52,000 tons was significantly lower, however, a higher relative growth rate of 30.8% was achieved. In the island countries, beef production did not change in the decade analysed, stagnating at 15,000 t, which corresponds to a share of 0.6%. In contrast, poultry meat production rose from 37,000 tons to 56,000 tons or by 51.4%. A later section will document which countries were primarily responsible for this.

The development in the production of sheep meat and pork is interesting. Australia produced 153,000 tons more sheep meat in 2022 than in 2012, an increase of 27.6%. In New Zealand, in contrast, the production volume fell by 19,000 tons and only reached 437,000 tons, a decrease of 4.2%. Pig meat production developed similarly. In Australia, it rose by 84,000 tons to 436,000 tons or 23.9%. In New Zealand, it showed a downward trend, production declined from 51,000 tons to 45,000 tons or 11.8%.

While the island countries produced almost no sheep meat, their production volume of pig meat increased from 97,000 tons to

102,000 tons or 5.2%. However, their share in Oceania's pig meat production fell from 19.4% to 17.5% due to the dynamical development in Australia. The regional concentration of meat production in Oceania was very high, as can be seen in Figure 1. Australia accounted for 68.4% of total meat production in 2022, New Zealand 22.3% and the island countries 9.3%. As expected, Australia accounted for the highest share of all meat types. It was highest for poultry meat at 83.5% and lowest for sheep meat at 61.8%. New Zealand achieved the highest shares with 38.2% for sheep meat and the island countries with 17.5% for pig meat.

Major Differences in the Importance of Meat Types

A comparison of the share of the meat types in overall meat production shows major differences as well between the continent´s and global production as between countries.

Figure 2 documents the share of the meat types in 2022 at the global level and in Oceania. While poultry meat ranked in first place in global production, followed closely by pig meat; in Oceania, cattle meat was in first place, well ahead of poultry meat. Pig meat was only in fourth place behind sheep meat. This reflects the availability of large natural grasslands on the one hand and the long affiliation to the British Commonwealth on the other.

Figure 3 documents the differences in the importance of the individual meat types in selected countries. In Australia and New Zealand, beef took the leading position. However, while poultry meat ranked ahead of sheep meat in Australia, sheep meat was in second place in New Zealand. Both countries dominated the list of sheep meat exporting countries in 2022. With a combined export volume of 833,000 tons, they accounted for over two thirds of the global export volume. The greater importance of poultry meat in Australia is due to the consumption behaviour of the population in the urban centers and the importance of tourism.

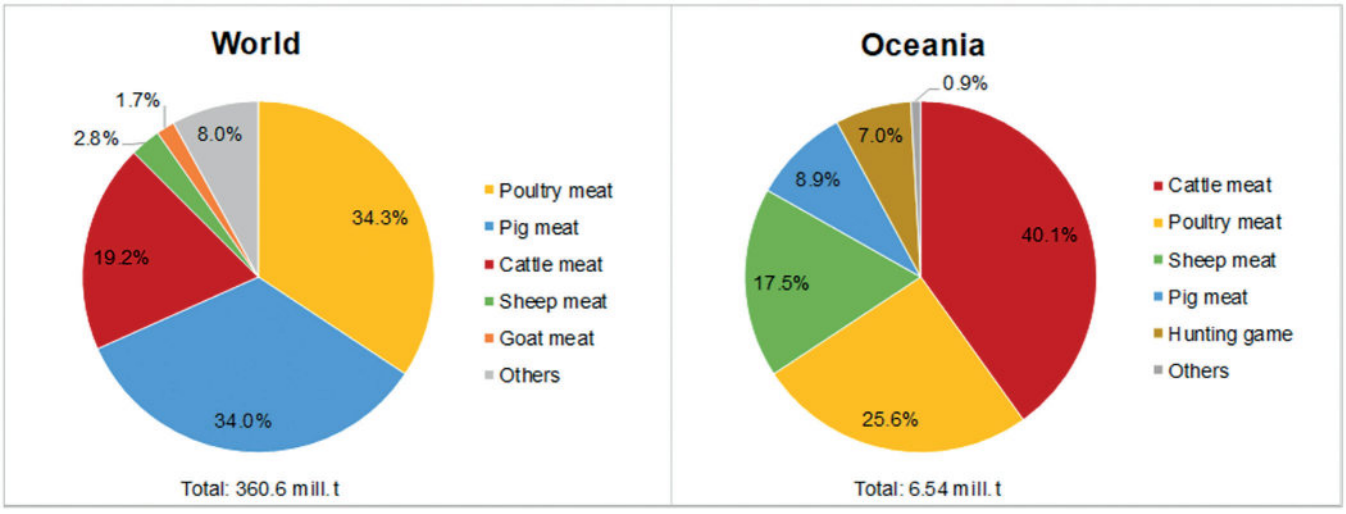
The distribution in Papua New Guinea, which had about twice the population of New Zealand, is interesting. With the exception of pig meat, commercial meat production was only of minor importance. In 2022, over 80% of the population's meat demand was still determined by game meat. Vanuatu and Tonga are characteristic countries regarding the importance of pig meat, which accounted for well over half respectively almost three quarters of meat production, followed by beef. Both animal species were predominantly kept extensively, which also applied to backyard poultry farming.

In contrast, poultry meat was the unchallenged meat type in Fiji, sharing almost 85% in total meat production (Diarra 2017). This is mainly a result of the growing tourism. Due to the origin of visitors from countries with different religious affiliations, poultry meat is offered mainly in the tourist hotels because there is no ban on the consumption of this meat type.

Summary and Outlook

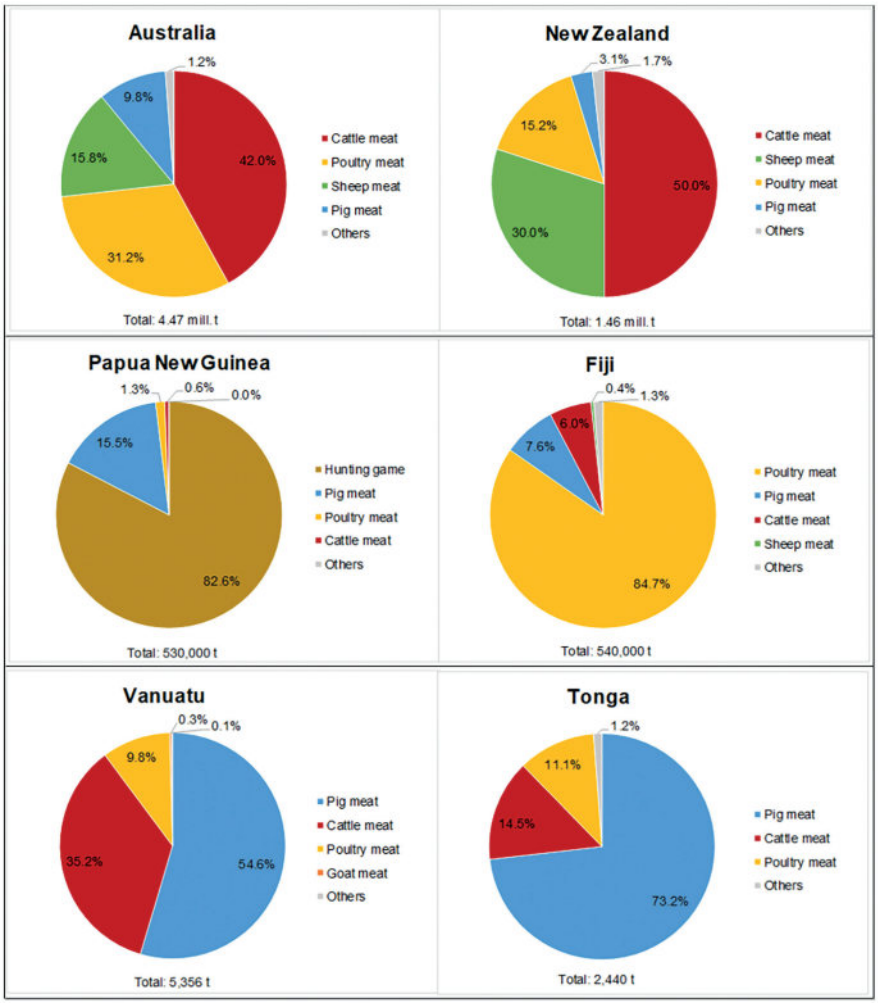
In the past decade, Oceania occupied only a subordinate position in world meat production,

Figure 2: *Design: A. S. Kauer based on FAO data*



The share of the main meat types in world and Oceania´s meat production (2022)

Figure 3: *Design: A. S. Kauer based on FAO data*



The share of the main meat types in the meat production of selected countries in Oceania (2022)

with the exception of sheep meat. The small population, the peripheral location to the major world markets and the scattered location of the islands were the most important steering factors for the falling behind the global dynamics. Although cattle meat still held the leading position in the continent's meat production, poultry meat showed by far the highest relative growth rate in the period under review. This reflected the global trend towards an increase in the production and consumption of white meat. On the global meat market, Australia and New Zealand achieved an undisputed leading role in the export of sheep meat. Trade with other meat types was only of minor importance.

It can be assumed that Oceania will lose further shares in global meat production in the current decade due to the low demand of the domestic market and its peripheral location to the most important meat importing countries. Poultry meat will be characterized by a very dynamical development in Oceania and will increase its share in the continent´s total meat production. In contrast, cattle meat production will further decline, simply due to the higher production costs and high retail prices. Sheep meat is likely to consolidate its position, mainly due to stable exports. Pig meat, which has been of comparatively minor importance, is unlikely to show high growth rates in the future, primarily due to the emerging trend in meat consumption in post-industrial societies. |

Data sources and additional literature

Diarra, S.: Poultry industries in the South Pacific region: issues and future direction. In: World's Poultry Science Journal 73 (2017), no. 2, p. 293-300.
Fisher, M. W. and B. S. Jones. "Australia and New Zealand." Long distance transport and welfare of farm animals. Wallingford UK 2008, p. 324-354.
Windhorst, H.-W.: The red-white shift in global meat production: In: Zootecnica international 43 (2021), no. 5, p. 32-37.
Windhorst, H.-W.: Was it the decade of Asia? The dynamics of global meat and egg production between 2012 and 2022. In: Meatingpoint 2024, issue 54, p. 60 – 64.
Windhorst, H.-W.: South America – the continent of cattle and chickens. In: Meatingpoint 2024a, issue 55, p. 12-15.
Windhorst, H.-W.: Africa - supply problems despite remarkable dynamics. Part 1: Africa's role in global meat and egg production. In: Fleischwirtschaft international
Windhorst, H.-W.: Africa - supply problems despite remarkable dynamics. Part 2: Production and supply at country level. In: Fleischwirtschaft international
Worldpopulationreview: https://de.search.yahoo.com/yhs/search?hspart=trp&hsimp=yhs-005&type=Y149_F163_202167_012724&p=World-populationreview.

VISIONARY QUALITY CONTROL FOR PACKAGING OF TRAYS WITH HAM CUBES

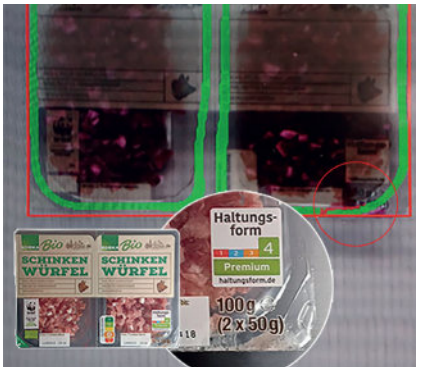
Schwarzwaldhof Implements Hyperspectral Seal Inspection for Better Packaging Quality

At Schwarzwaldhof, a subsidiary of EDEKA, they know what makes their Black Forest ham, sausage and bacon specialties so unique: the best ingredients, the experience of their employees combined with modern technology. And the latest addition to their extensive quality controls is a vision-based hyperspectral seal inspection system to detect trays with product in the seal to avoid leaking packages.

Beside the Black Forest sliced ham and sausages, an important product assortment are trays with ham and bacon chunks. The product is packaged on a MULTIVAC tray processing line, where the trays are filled and sealed under modified atmosphere conditions to preserve the freshness of the product.

The Schwarzwaldhof production site in Blumberg, an EDEKA Südwestfleisch company

Until mid-2023, the different inspection steps were X-ray, metal detection, weight control and finally, before placing in carton boxes, a visual inspection was also done by the operators. The X-ray was initially intended to detect seal contamination: as the product is gassed, seal inspection is crucial to preserve freshness. At a production rate of up to 120 trays per minute, this end-of-line packaging and inspection was performed by up to 5 operators, a challenging and stressful task.



Duo-tray with seal contamination (see detail). Red colour indicates contamination in the sealing area. Purple indicates contamination around the sealing area (green).

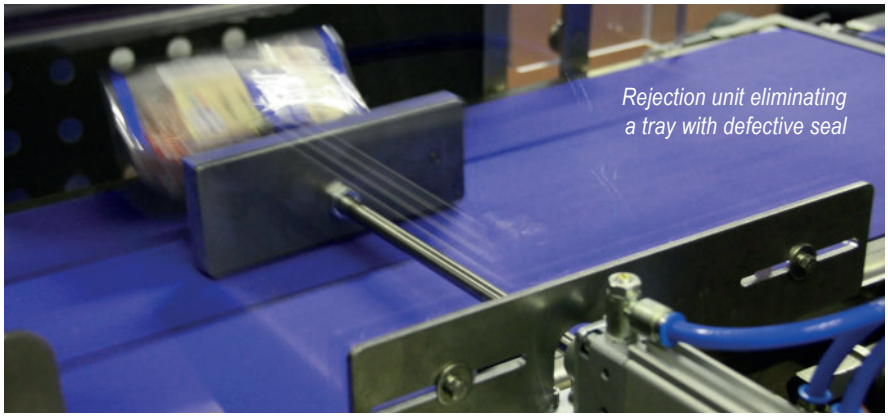
Schwarzwaldhof decided to optimize the end-of-line packaging and had two goals: install an automated tray stacker to reduce the number of packaging operators and secondly systematize the efficiency of the seal inspection. The X-ray system, that qualifies foreign bodies based on differences in densities, was not suitable for seal inspection as small parts of product were not reliably detected in the seal. Therefore, in 2022 Schwarzwaldhof started searching for an efficient, in-line seal inspection system that could cope with different - including printed - top seals and eliminate the need for visual inspection by the end-of-line packaging team.

The HyperScope® system is positioned between the MULTIVAC thermoformer and the metal detector

Groundbreaking Hyperspectral Seal Inspection

Schwarzwaldhof first saw HyperScope® hyperspectral seal inspection solution on a FachPack tradeshow. After successful testing of sample trays, Schwarzwaldhof decided to replace their X-ray system with the hyperspectral seal inspection system. HyperScope® uses hyperspectral imaging to detect seal contamination with obvious contrast, even with printed film. The inspection system features GPU-accelerated artificial intelligence (AI), enabling real-time, high-precision seal area detection. The detected sealing area is analyzed in several post-processing steps to detect e.g. seal breaches, contamination inclusions in the seal, etc. Finally, based on configurable decision criteria the package is accepted or rejected.

Hyperspectral cameras capture information from a large part of the electromagnetic spectrum including infrared wavelengths that penetrate the plastic top films. Hyperspectral imaging, therefore, unlocks new inspection possibilities where classic imaging often falls short, e.g., on printed film packages which are often used in premium products. The system can inspect up to 160 packages per minute, a speed that is well aligned with sliced, chopped and/or bulked-food production lines.



Rejection unit eliminating a tray with defective seal

"Seal defects can have a disastrous impact on the conservation of the product.", says the Packaging Manager at Schwarzwaldhof, "As we were streamlining our end-of-line production, it is very important for us that 100% of our products are inspected."

Different packaging variations with seal issues: Notice that HyperScope® is perfectly suited to detect seal issues in the tunnel between two compartments.

Smooth Installation, Performant Operation

The X-ray system was decommissioned and swiftly replaced by the HyperScope® system. HyperScope® is capable of processing different product variations, which is important as Schwarzwaldhof is producing for varied brands in several package weights and sizes. In total, more than 12 different product models were created and extensively validated. All daily inspection information for the different products is saved in a database that can be exported in many reporting formats.

An important benefit is the excellent remote support by Engilico's team. The system UI can be monitored and adapted from within Engilico's headquarters. As such, data can be captured to further train and finetune AI models, software upgrades or system fine-tuning can be efficiently addressed without wasting valuable time with local support visits.

"We experience less complaints, both internally as externally.", concludes the Packaging Manager, "HyperScope® is a true innovative and performant inspection solution that is particularly suited for trays, even with printed top film."

www.engilico.com

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Vacuum table-top machines made by KOMET are now available in the colour of your choice

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www.vakuumverpacken.de

REDUCING ENVIRONMENTAL IMPACT BY SURFACE PRINTING LIDDING FILM: RETURIN® 194-26

Several customers find it challenging to meet the demands regarding packaging solutions that meet high demands such as minimizing the plastic consumption combined with great end use performance.

At Resino Inks, our most noble task is to meet high demands from customers by constantly focusing on developing sustainable printing ink solutions with lower environmental impact and that are more sustainable throughout their lifecycle.

Strong Performance Printing in One Solution

One of our customers found a solution to meet consumers' requirements regarding performance and sustainability. They experienced that RETURIN® 194-26 was ideal for printing on lidding film for thermo formed rigid food packaging. The customer uses surface printed lids for their packaging, which is why the mechanical resistance from RETURIN 2K ink is very beneficial. RETURIN® 194-26 was originally developed for printing on polyamide-, cellulose- and fibrous meat casings as well as food grade packaging. It is designed

to provide very good adhesion, heat seal resistance and even sterilization performance.

RETURIN 194-26 ink - a sustainable printing success

The customer reduced plastic film from 85 micron to 34 micron and switched from multi component to a monolayer substrate. Furthermore, they eliminated their lamination process and thereby reduced both their carbon footprint and cost. They also experienced logistics efficiency since they were able to transport the same quantity of printed meters but around 40% less weight due to less plastic.

This case shows that our varnishes and inks create new opportunities for minimizing plastic consumption and that we strive to help our customers reduce their carbon footprint through our innovative approach to product development. One of the major concerns for customers is the use of lamination, which involves the bonding of multiple layers of material using adhesives. Lamination can enhance the packaging's durability, strength, and barrier properties, but it also increases the amount of plastic used and can be difficult to recycle. As such, there has been a growing interest in exploring alternative techniques such as surface print, which involves printing directly onto the packaging material.

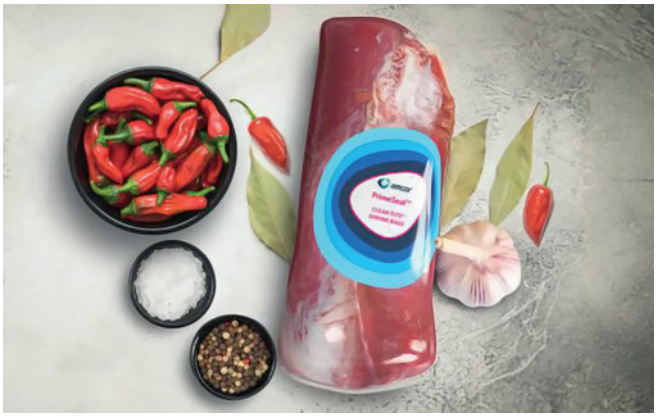
Kristian Karlsen, Director of R&D at Resino Inks explains: "Surface print has been shown to significantly reduce the amount of plastic used compared to lamination. In fact, surface print can half the amount of plastic used, resulting in a much lower carbon footprint and better sustainability profile. While surface print may have a lower environmental impact, it is important to assess its performance compared to lamination. Surface print is suitable for some applications, whereas other applications may still require the use of lamination".

The RETURIN® ink Range Can Meet Different Demands Such as:

- Boiling & Sterilization resistance
- Deep freeze resistance
- High flexibility
- Good adhesion
- Long pot-life
- Oil & grease resistance

www.resino-inks.com

AMCOR LAUNCHES ITS THINNEST SHRINK BAG DELIVERING UNIFORM MATERIAL THICKNESS TO REVOLUTIONIZE MEAT PACKAGING



Amcor (NYSE: AMCR, ASX:AMC), a global leader in developing and producing responsible packaging solutions, has announced the launch of its new Clear-Tite 40 shrink bag solution for fresh and processed meat. This new solution achieves an impressive 19% reduction in weight when compared to standard 50µ shrink bags. At only 40µ, the Clear-Tite 40 reduces the amount of plastic used per product, while maintaining product freshness.

Shrink bags are popular packaging solutions for meat products due to the high level of protection offered by oxygen and moisture barriers, and the strong seal that protects products during handling and transportation. Ensuring long-lasting freshness even at high humidity levels, shrink bags also help to extend shelf life and reduce food waste.

The Clear-Tite 40 bag achieves an estimated 16% reduction in the packaging's carbon footprint[1]. With its high shrink performance and excellent visual properties, consumers also benefit from these developments. Allowing shoppers to clearly view the product at the point of purchase, the Clear-Tite 40 solution maintains high visual appeal. All of Amcor's shrink bags are also printable, meaning brands can catch consumers' attention with striking, wrinkle-free packaging.

"In this fast-changing market, Amcor remains a reliable packaging partner. Our technical expertise, combined with our sustainability knowledge and operational capabilities, helps customers to achieve their sustainability goals with the best packaging solutions," said Robert Kleinschmidt, Vice President of the Meat Business Unit at Amcor.

As well as the upfront environmental benefits of plastic use, the reduction in weight means manufacturers and brands have the opportunity to reduce their EPR fees. In fact, customers who currently use 50µ shrink bags could save up to 19% in EPR simply by adopting the new Clear-Tite 401.

To ensure meat brands are achieving these savings, it is essential to maintain precise control over the thickness and weight of the shrink bags. Variations in thickness of many other shrink bags on the market result in increased costs, heavier packaging, and therefore higher EPR and plastic tax. Amcor's precise control ensures that customers receive shrink bags with consistent 40µ thickness, underscoring Amcor's commitment to quality and sustainability.

"The technical requirements for shrink bags make them notoriously difficult to make more sustainable, so the launch of Clear-Tite 40 is a major breakthrough for the industry. This new solution is a huge step forwards; promising a significant reduction in the amount of plastic used per bag, without compromising shelf life." said Rosalia Rosalinova, Senior Marketing Manager, Amcor.

"Meat manufacturers must carefully select their packaging to maintain a balance between sustainability and product quality. Amcor's new Clear-Tite 40 makes that simple. It works perfectly even at high humidity levels, enabling superior shelf life while ensuring that meat products look their best on the shelves. Consumers receive a fresh, appealing product, and manufacturers benefit from a reduction in both their EPR fees and their environmental impact," said Maija Fjällström, Senior Product Development Engineer, Amcor.

www.amcor.com/product-listing/clear-tite-shrink-bag

[1] *Based on Amcor's ASSET Life Cycle Assessment system - Comparison based on cradle-to-gate analysis of baseline packaging vs comparison product.*

SPEAKERS FROM SCIENCE AND INDUSTRY AT THE FUTURE PET FOOD CONFERENCE 2024

Addressing current challenges, identifying promising potential, and translating it into economic processes. The Future Pet Food Conference 2024, held in Biberach from November 5/ 6, showcases ways to achieve this in the pet food segment. The processing and packaging specialists Handtmann and MULTIVAC invite attendees to explore the entire spectrum of pet food from an interdisciplinary perspective. Science and business experts present the latest market analyses, successful strategy concepts, and practical implementation support.

Just how complex the pet food market is and what dynamics are currently driving it, is revealed by Kate Vlietstra from Mintel in her analytical presentation "Feeding the future: Exploring emerging trends in pet food" and Javier Munoz from Euromonitor who presents "Pet food industry market insights in Western Europe". Ulyana Fitsa from Kormotech talks to conference participants about creating a successful market strategy under the most difficult circumstances and with an inresilient infrastructure in her presentation "Unbreakable: How a pet food company from Ukraine entered the global Top 50".

Alternative ingredients are currently a powerful factor for growth in the pet food market. "Health benefits of insect based pet food" by Chloe Champion from Agronutis, "Hydrocolloids – the art of mixture" presented by Carolin Bohlke from Miavit, "Upcycled ingredients with functional, nutritional and health benefits" by Cindy Dekeyser from PB Leiner or "FeedKind®Pet - alternative proteins of the future, now!" presented by Herman Sloot from Calysta take a closer look at different approaches. Jim Lamancusa from the Pet Sustainability Coalition then reveals the latest "Sustainability trends in pet food". In "The value of packaging and how to reduce the carbon footprint over the entire life cycle", Bernd Brandt from the Vienna University of Applied Sciences talks about sustainable concepts in packaging. Guest speakers Klaus Deniffel from co-host Multivac and Matthias Schrägle from films specialist Südpack present "Innovations in pet food packaging. Focus on sustainability and cost efficiency", and put the focus on sustainable packaging solutions from a profitability perspective. Many hands-on sessions at the conference allow knowledge transfer into practice, as innovative products are manufactured using state-of-the-art production processes. In this context, Carsten Petry from Bühler AG outlines "Applications and advantages of extrusion technology for dry and wet feed production with fresh meat".

www.handtmann.com

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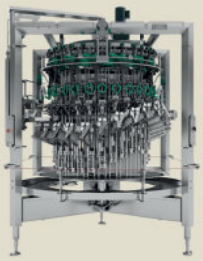
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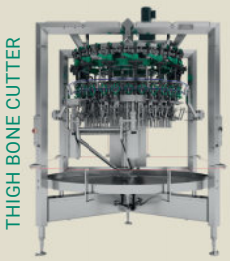
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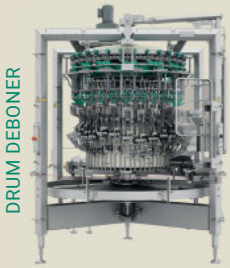
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