

MEATING POINT

magazine

SUSTAINABLE TECHNOLOGY, PROCESSING & PACKAGING

MEAT PRODUCTION AND CONSUMPTION IN THE USA BETWEEN 1970 AND 2020



THE BENEFITS OF
CLEANING-IN-PLACE

WHAT'S ON THE PROTEIN
PACKAGING AGENDA FOR 2024?

NOTHUM
FOOD PROCESSING SYSTEMS
IPPE HALL C, STAND 31169

NOTHING BEATS A NOTHUM


Less downtime. Less waste. More savings. Faster returns.

PREDUST **BATTER** **BREAD** **FRY**
VersaCoat **BatterPro** **SuperFlex** **ProTherm**



At Nothum, we specialize in equipment that adds value to your products.
Each machine is built for high flexibility and low operation costs.



 INTERNATIONAL
IPPE
PRODUCTION & PROCESSING EXPO

Hall C
Stand 31169

January 30 - February 1



Designing food processing systems since 1971.

Nothum.com
+31 85 013 6861

NOTHUM
FOOD PROCESSING SYSTEMS

Dear reader,

The International Production & Processing Expo (IPPE) 2024 will be held at the Georgia World Congress Center in Atlanta from January 30-February 1, 2024. IPPE is the world's largest annual poultry and egg, meat and animal food industry event of its kind. A wide range of domestic and international decision-makers attend this annual event to find solutions for their business, network with industry colleagues and learn about the latest technological developments and issues facing the industry. The 2024 IPPE has 1,200+ exhibitors that will occupy more than 590,000 square feet of exhibit space. More information on the show highlights and some featured exhibitors showcases can be found on pages 14 - 20.



Jenny Smart

Today, the USA is the second most important export country for broiler meat after Brazil. The USA also ranks second behind Spain among the leading exporting countries for pork. Poultry is expected to remain the world's largest imported livestock commodity by volume over the next 10 years. To meet rising demand, a number of countries increased domestic poultry production. Brazil, the United States, the European Union, and Thailand emerged as major poultry exporters.

Our cover story "Meat production and consumption in the USA between 1970 and 2020", by prof Hans - Wilhelm Windhorst, addresses the shift from red to white meat in both production and per capita consumption in the USA between the mentioned period. This is analyzed in more detail and the remarkable dynamics is explained in terms of the factors driving them.

As always, we feature some of the latest business and industry news, customer stories as well as research papers and technological innovations.

In conclusion, with this final edition of 2023, on behalf of our team I would like to express our sincere gratitude to all of you - our readers, contributors, advertisers and strategic partners!

Wishing you a Merry Christmas and a Happy New Year!

Enjoy your read!

PUBLISHER:

MEATING POINT MAGAZINE Ltd.
 41 Sidney Avenue, N13 4XA
 London, UK
 TEL: +44 (0)20 8581 2341
 FAX: +44 (0)20 8581 2341
 E-mail: info@meatingpoint-mag.com
 www.meatingpoint-mag.com

EDITORIAL BOARD:

Jenny Smart
 editor@meatingpoint-mag.com
 Ben Anthony
 benthony@meatingpoint-mag.com
 Steliyana Vasileva
 svasileva@meatingpoint-mag.com

MARKETING TEAM:

Aylin Nedzhib
 marketing@meatingpoint-mag.com
 Leni Naimova
 support@meatingpoint-mag.com
 Meylin Kara
 subscribe@meatingpoint-mag.com

DESIGN:

Taner Kyuchuk
 design@meatingpoint-mag.com

MEATING POINT MAGAZINE is published six times a year (February, April, June, September, October, December).

The online version of the magazine is available at www.meatingpoint-mag.com.

The copyright of material appearing in MEATING POINT MAGAZINE is held by MEATING POINT MAGAZINE Ltd. Reproduction of articles and pictures published in the magazine requires written permission of the Publisher. All trademark names cited in the magazine are property of their respective owners. The published assumes no responsibility for any errors in the articles and as expressed by the authors. MEATING POINT MAGAZINE reserves the right to use email addresses supplied to it for promotional activities.



When you have finished with this magazine please recycle it.

Contents

53 / 2023
 Volume 9

EDITORIAL	3
BUSINESS NEWS	6
INDUSTRY NEWS	8
IPPE PREVIEW 2024 IPPE Trade Show Floor Largest Ever	14
COVER STORY Meat Production and Consumption in the USA Between 1970 And 2020 By Prof. Hans-Wilhelm Windhorst	22
PROCESSING The Benefits of Cleaning-in-Place By Matt Hale	28
FOOD SAFETY "Checking in" with Fortress	30
CUSTOMER STORY Better Performance, Shorter Downtimes - High Product Diversity	33
PERSPECTIVES Salt: Not a Sweet Story - Part 2 By Henk Hoogenkamp	36
PACKAGING	40
CASE STUDY Push the Limits with 67% Less: Maximise Results While Minimising Emissions	46
SUPPLIERS GUIDE	48



IN THE NEXT ISSUE:

- * Slaughtering, Cutting , Sharp Blades for Processing and Preparation
- * Skinning, Deboning, Trimming, Portioning, Grinding, Separating,
- * Sorting and Conveyor Technology
- * Shelf- Life Extension of Packed Meat, Poultry and Seafood

Ordering Deadline: 12 Feb, 2024
 Publication Date: 23 Feb, 2024

INDEX OF ADVERTISERS:

Cabinplant A/S	9
Dubai World Trade Center - Gulfood	27
GEA Food Solutions B.V.	21
GL EVENTS (CFIA)	32
Industrial Auctions B.V.	11
Karl Tichy Handelsgesellschaft mbH	31
K+G Wetter GmbH	19
LIMA S.A.S	15
MIVEG GmbH	17
NOTHUM B.V	2
REX Technologie GmbH	41
U.S Poultry & Egg Association - IPPE	52

BUSCH VACUUM SOLUTIONS ACQUIRES CENTROTHERM CLEAN SOLUTIONS

Busch Vacuum Solutions announces the successful acquisition of centrotherm clean solutions. Together with Pfeiffer Vacuum, which has been part of the Busch Group for some time, the companies want to continue to grow in the area of sustainable gas abatement systems for the semiconductor market.

Busch Vacuum Solutions, one of the largest vacuum pump manufacturers worldwide, has acquired centrotherm clean solutions, one of the technology leaders in industrial gas abatement systems. The strategic acquisition underlines the commitment of Busch Vacuum Solutions and Pfeiffer Vacuum to sustainability and will help to further strengthen the position as a proven solution provider in the semiconductor industry and other related sectors.

“The acquisition of centrotherm clean solutions is a crucial step in our long-term strategy to advance sustainable technologies and solutions together with Pfeiffer Vacuum,” said Sami Busch, Co-CEO and Co-Owner of the family-run company Busch Vacuum Solutions from Maulburg. “The innovative

gas abatement systems from centrotherm clean solutions are a perfect addition to the Busch and Pfeiffer Vacuum product portfolio. Integrating the companies under one umbrella will enable us to serve our customers even better in the future and offer complete sustainable vacuum solutions. Additionally, the companies already collaborate successfully on individual projects in the field of service. Therefore, the customers of centrotherm clean solutions will also benefit from our worldwide service network in more than 45 countries.”

Centrotherm clean solutions has its headquarters in Blaubeuren, and is also present at other locations in Europe, America and Asia. As a provider of technologically leading gas abatement systems especially for the semiconductor and high-tech industries, the company employs over 300 people worldwide, who can draw on the experience of a thirty-year company history. The company’s headquarters and production site in Blaubeuren, as well as all worldwide locations and jobs, will be retained after the acquisition.



*The Busch family
(from left to right): Ayla, Dr Karl, Sami, Ayhan and Kaya Busch*

“Centrotherm clean solutions has achieved significant growth thanks to its technological leadership in recent years. In order to continue this successful development, a strategic partner is of great benefit,” emphasizes the founder and former owner of centrotherm clean solutions, Robert Hartung. “I found this partner in the Busch family and their company Busch Vacuum Solutions. The technologies and products from Busch, Pfeiffer Vacuum and centrotherm clean solutions complement each other perfectly. The timing of the acquisition is just right, as the companies can now strategically prepare for upcoming investments in new semiconductor factories.”

Managing Director Dr Angela Bayler adds, “The companies simply fit very well together. We share the same values and visions. This became more than clear in our initial discussions. We look forward to working and growing together!”



The headquarters of Busch Vacuum Solutions in Maulburg

www.buschvacuum.com

GIVAUDAN AND BERKELEY UNVEIL TRANSFORMATIVE NEW RESEARCH ON REDEFINING EFFICIENCY IN ALTERNATIVE PROTEIN

In their fifth annual collaboration, Givaudan and the University of California Berkeley have released transformative research paving the way for enhanced efficiency in alternative protein. The latest white paper entitled '10 Alternative Protein Pathways: Opportunities for Greater Efficiency' outlines key challenges and opportunities on the journey to co-create delicious and nutritious alt-protein experiences that delight consumers.

With more consumers expected to explore plant-based protein, opportunities abound for food producers and retailers to develop sustainable, healthy alternatives that deliver diverse food experiences. With its deep industry knowledge, Givaudan has once again teamed up with the University of California Berkeley Product Development Program to provide practical steps on how industry players can create mouthwatering, affordable, alternative protein products.

Sudhir Joshi, Professor, Board Member and Product Development Program Coach at the University of California Berkeley, said: "Alternative proteins can significantly reduce environmental impact and improve human health. Our findings identified four key areas where producers can focus on improving efficiencies and reducing costs for alternative protein products. These were further divided into specific steps companies can take to mitigate risk, while still making tasty, healthy, and cost-effective products."

The research explores the key challenges the industry faces, such as supply chain issues, resource consumption, production scale-up, and competitive pricing. It also offers 10 clear and actionable pathways to help alt-protein producers address these hurdles and maximise efficiency. This includes identifying ingredient combinations that ensure the best quality and value for both food innovators and consumers, and outlining ways to optimise the use of energy, water, and other natural resources. The end goal?



To enable the industry to create alternative protein experiences that are good for both people and the planet.

Flavio Garofalo, Global Director, Culinary & Plant Attitude, Givaudan, said: "In today's dynamic environment, the key to gaining a competitive edge lies in strategic partnerships. Companies that team up with others to pool their knowledge, expertise and resources will be better placed to spot market opportunities, unlock efficiencies, and scale innovations more quickly.

Every year, we join forces with the University of California Berkeley to investigate key topics related to alternative protein. Why do we do it? Because it helps us look at alternative protein in a more holistic way, which puts us in a better position to support our customers."

To bring the insights from its new research to life, Givaudan is also launching a Start-Up Challenge. The company will select five start-ups from around the world to reduce the costs of a standard recipe using the pathways outlined in the white paper, including raw material optimisation, hybrid products, process optimisation, and new technology and innovations.

Givaudan started its alternative protein journey over a decade ago, with the knowledge that these products are pivotal to a food future that's good for humans, animals, and the planet. The company's global protein network includes four hubs dedicated to developing holistic alternative and plant-based food experiences. These hubs enable Givaudan customers to co-create products ensuring they have the right taste, mouthfeel, colour, visual appeal and nutrition to meet consumer preferences in their markets. They also offer access to an entire ecosystem of experts in plant-based dairy and savoury products, along with specialised products, knowledge and technical equipment.

www.givaudan.com

AWARD WINNING INNOVATIONS FROM PROVISUR TECHNOLOGIES

Provisur is a leading industrial food processing equipment manufacturer headquartered in Chicago, Illinois, with a global network of sales and service locations. With the Hoegger® X3i and X4i Presses, Provisur presents industry-leading breakthroughs in advanced technology, boosting the company's legacy Hoegger® form pressing brand. The innovative Hoegger® equipment has recently been internationally recognized by placing high on Crains 2023 List of Chicago's most innovative companies for the second year in a row, and by receiving the prestigious Italian CibusTec Award.

True to its motto 'Pushing Boundaries', Provisur heavily invests a portion of its revenue in research and development. In 2023 alone, the company received seven patents. The Hoegger® X3i and X4i Presses was the focus of this year's Crain's innovation award as well the CibusTec award.



Brian Perkins,
President Provisur Technologies Inc.



Provisur® Hoegger® X4i - for larger capacities

Hoegger® X-Presses Maximizing Throughput and Yield

Hoegger® form presses are used for many different meat products, such as bacon, English bacon, pork loin, fresh beef, Philly Steak, and smoked and dried meat. Meat producers require standardized products that are formed to a consistent shape, and which they can then deliver to the US, the European and international markets. "The vast majority of U.S. retail bacon is Pressed and Sliced on our machines," says Brian Perkins, president of the Chicago-based company. "Our Hoegger® Presses ensure uniform product dimensions that enable efficient subsequent processing with maximum yield and reduced losses."

Speed and Precision with Servo-Controlled Press Technology

At the heart of the Hoegger® X-Presses is servo-controlled hydraulic technology that provides fast and accurate pressing. The power of the central hydraulic

unit is available for every axis of the hydraulic unit and is applied exactly where it is needed at any given moment. It enables precise travel profiles and controlled application of force, guaranteeing maximum yield at minimum operating costs, even with large belly deformations. The technology reduces belly cracking and keeps deep wrinkles to a minimum. The unique pressing process presses each and every belly to its best possible yield.

Embracing the Future: Industry 4.0

The Hoegger® X3i and X4i Presses have an intuitive assistant for machine setup and process optimization. User-friendly control elements simplify input while at the same time offering an audit trail that delivers complete traceability of all changes to the machines and recipe settings. Versatile loading and unloading modules enable fully automatic product lines developed with the requirements of industry 4.0 in mind. Process reliability is maximized through modern control and monitoring functions, but when

needed, support can be activated via remote access. Both Hoegger® X-Presses feature an open and

innovative machines with their well-thought-out hygienic design are suitable for standalone use or

Innovation at its Core

Innovation is at the heart of what Provisur does. The company has two Innovation Centers - one in Mokena, Illinois, and the other near Paris, France. Staffed with experienced application experts and food scientists, customers can test the latest food processing technologies with their products. In collaboration with Provisur engineers, product specialists and food science teams, they can experiment new formulations, brainstorm and explore the processing floor to develop applications tailored to their production lines. "We're always trying to help our customers improve their product," says Brian Perkins, President of the Chicago-based company. "The name of the game is quality, yield and automation."

www.provisur.com



Provisur® Hoegger® X3 - entry level pressing

agile development platform that enables fast and easy integration. They have fewer components and are modular so that they can be customized as required. These

integration in high-performance production lines. The Hoegger® X-Presses reduce operating costs while ensuring high availability to achieve a fast return on investment.

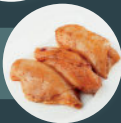
Fixed weight packaging

Increased automation of your packaging lines

Fresh



Marinated



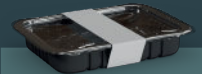
Giblets



Processed/IQF



Tray



Bag



Box



JAN. 30 - FEB. 1, 2024
STAND NO. C28165

Cabinplant®

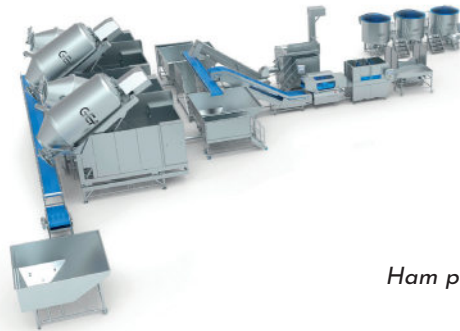
Visit cabinplant.com

HAM, MULTIJECTOR & MULTICARVE

GEA's New Marination System Ensures Premium Quality Ham



Multicarve multijector line



Ham processing solution

Leading food technology supplier GEA has developed a system for tenderizing meat that optimizes the distribution of brine and provides ham with better sliceability - not to mention a reduction in slicing losses.

By using the GEA MultiCarve, an innovative tenderizing process between the injection and tumbling stages, food manufacturers are reproducing succulent ham products that offer consistently high quality characteristics like mouthfeel, taste and texture time and time again, with pork and poultry cuts.

Consumers are looking for ham that is tasty, tender and in convenient and cohesive slices. This is where the GEA MultiCarve is proving to be invaluable for pork and poultry cold cut manufacturers. Following injection, the meat that is to be used for ham is put through a set of bladed rollers, improving protein extraction, exposing greater surface area and releasing any tension within the meat, resulting in a more succulent texture and a well bonded product later on.

This releasing of tension works wonders for the meat. Being an

animal product, cuts of pork do vary in terms of their fat to meat ratio, the grain of the meat in each piece, the tenderness and so on. By putting the meat through the MultiCarve stage before further processing, it can contribute to reduce tension, so the ham can be formed more smoothly later on.

The MultiCarve can be equipped with a selection of different rotating knife rollers, which can be adjusted as required either to gently follow the contours of the meat or, alternatively, more vigorous rolling can be used for tougher cuts such as shoulder ham. Putting the meat through this process also has the added benefit of reducing the time needed for curing, ramping up productivity.

Using GEA's MultiCarve as an integral part of their ham processing,



food manufacturers are preparing quality products that retain the right balance of moisture, succulence and tenderness, ready for tumbling, forming, cooking and slicing & packing.

Pork remains the world's most widely eaten type of meat, with pork-based products accounting for 36% of all meat consumed.¹ Since pigs are efficient to rear and well-managed the world over, pig products are forecast to retain their hold on the market for the foreseeable future, with their popularity increasing year on year.

Ham is massively important in this market, given its popularity as a convenient option for sandwiches and salads. Creating products that look appealing, taste good, have the right texture and mouthfeel,



¹ <https://ask.usda.gov/s/article/What-is-the-most-consumed-meat-in-the-world>



Willem Poos

and the ability to slice well has never been more important.

Willem Poos, Product Group Owner for Marination at GEA added: "GEA's technology for the preparation of ham really is best-in-class because of its reliability, speed, and consistent accuracy. As well as this, the machinery has been designed with GEA's slogan: 'Engineering for a better world' in mind. When ham and poultry slicing logs are difficult to slice, there is more waste on the slicing line. The MultiCarve is addressing this issue, by treating and preparing the meat to provide products that deliver the results time and time again."

GEA offers complete line solutions for ham processing, including brine preparation, injection, tenderizing and tumbling, right through to slicing and packaging.

www.gea.com



WWW.INDUSTRIAL-AUCTIONS.COM

Online auction machinery for the food industry in Ystad (SE)



Online auction machinery for the food industry in Kapelle (NL)



Register for free

Find and bid

Win

Pay and pick up

JBT TO DEBUT TWINDRUM™ PROYIELD™: A BREAKTHROUGH IN SPIRAL OVEN COOKING, YIELD AND QUALITY

The new Generation Stein TwinDrum™ PRoYIELD™ Allows Customers to Dramatically Improve Product Yield and Save Energy Costs in the Process



heat and color distribution over the products inside the oven, thanks to the addition of Computer Fluid Dynamics and an Air Equalizer to ensure perfect air delivery.

By reducing the internal temperature variation across the TwinDrum's conveyor belt from as high as 6°C to a little as 1°C, the PRoYIELD ensures consistent cooking and product color across the entirety of products moving through the oven. The pioneering technology not only preserves product moisture and maximizes yield but also mitigate the risk of overcooking and unwanted weight loss.

The Heat Distribution Challenge

For food processors using industrial spiral ovens, achieving the most even, left-right temperature across a conveyor belt for poultry and other products has long been a challenge with temperature variations all-too common.

JBT, the technology solutions provider to the global food and beverage industry, has announced the launch of the new updated version of Stein TwinDrum™ PRoYIELD™ 600 Spiral Oven, a breakthrough in spiral oven engineering designed to redefine processing standards worldwide. Featuring a patented double-impact airflow technology perfecting uniform cooking with consistent temperature distribution across the conveyor belt. The result is unmatched product yield, quality and energy efficiency benefits.

and cooked food products such as chicken wings and fillets, while at the same time helping achieve a **5% reduction in energy use**. It's also versatile enough to cook burgers and patties, breaded products, pork, croquettes, seafood and ready meals.

Maximizing Product Uniformity!

Featuring **patented double-impact airflow technology**, the PRoYIELD ensures superior

A leap-forward in spiral oven design, the PRoYIELD takes the original TwinDrum two-zone cooking system and makes it even better by dramatically improving airflow consistency across the machine, enabling customers to effectively cook products at lower temperatures. The result is an estimated up to **7% increase in yield** for all forms of roasted



The problem has meant that to get the products closest to the center drum consistently fully-cooked, those positioned towards the outer-edges **faced the problem of overcooking**. In the case of cooked chicken, as products in the conveyor belt's inner side reached the necessary temperature range of 77°C-78°C to ensure food safety, those on the outer edges often experienced higher temperatures, ranging from 80°C-85°C, due to the variation of heat distribution.

Teddy Svensson, JBT's lead engineer on the development of the PROYIELD: "Getting an even temperature over the width of a conveyor belt is notoriously difficult and it had proven problematic for every machinery manufacturer working in the industry. With the design that we have on our TwinDrum oven, the air rotates around the inside of the machine and down the spiral. I started to investigate how to better deliver air to the inner side to get a more even heat distribution."

Improved Results Through Innovation

By making some subtle, but ingenious changes Svensson and his team managed to achieve exactly that outcome. "We developed a new heat-load model and found that the **temperature was significantly improved** from the original design where we had 5-6°C variation from the left to the right side, we got it down to 1-2°C," he explained.



The PROYIELD not only avoids overcooking products, the dramatic reduction in the overall temperature variation means cooking takes place **evenly across the whole of the oven**, ensuring product weight and moisture is retained. The process also allows processors to **save energy** as there is no need to heat the oven to higher temperatures than necessary.

The spiral oven cooking technology used in the JBT TwinDrum PROYIELD Spiral Oven **builds on decades of oven engineering** by adding a uniform temperature and excellent roasting capabilities via an efficient two-zone spiral system. The TwinDrum spiral oven's design enables processors to increase their processing yield compared to alternative ovens in the market, while at the same time ensuring consistent cooking of food items by uniformly distributing the hot air across the conveyor belt.

Modular Cooking Solutions From JBT

JBT offers a wide range of steam, convection, impingement, spiral and contact cooking technologies to suit processors of all sizes. These include the Stein and also range of spiral ovens, the Double D rack and high impingement linear ovens and the Formcook range of contact and combi cookers.

The new Stein TwinDrum PROYIELD Spiral Oven can be integrated with these other JBT products to form **complete in-line processing solutions**, including the Stein and also coating & frying equipment as well as Frigoscandia range of chilling and freezing systems.

The Stein TwinDrum PROYIELD Spiral Oven can be tested at JBT's Food Technology Centre in Helsingborg in Sweden.

www.jbtc.com

2024 IPPE TRADE SHOW FLOOR LARGEST EVER

The 2024 International Production & Processing Expo (IPPE) has surpassed 600,800 square feet of exhibit space and has secured more than 1,295 exhibitors with two and a half months remaining until the show opens. This will be the largest trade show floor in IPPE's history, covering all four halls of the Georgia World Congress Center.

"We are really pleased with the expanded show floor square footage and the level of exhibitor participation. This is going to be an exciting show that you will not want to miss," stated IPPE show organizers. IPPE is sponsored by the U.S. Poultry & Egg Association (USPOULTRY), the American Feed Industry Association (AFIA) and the Meat Institute.

The 2024 IPPE will provide attendees with a full week of education programs, innovative technology, engaging activities on the show floor and enhanced networking opportunities with industry leaders from the animal food, meat, and poultry and egg industries. The vast trade show floor will showcase the latest technology, equipment and services used in the production and processing of



animal food, meat, and poultry and egg products. Combining the expertise from AFIA, USPOULTRY and the Meat Institute, IPPE will also feature more than 80 hours of dynamic education sessions focused on current industry issues.

The 2024 IPPE has surpassed 570,000 square feet of exhibit space and secured more than 1,070 exhibitors. As the only annual exposition highlighting the best of the poultry and egg, meat and animal food industries, the 2024 IPPE will offer timely and important information and an efficient way for producers and processors to find solutions to enhance their operations.

"We are looking forward to seeing everyone at IPPE 2024," remarked show organizers. "The strong exhibitor participation demonstrates that our exhibitors are enthusiastic about presenting cutting-edge technologies and services that will continue to propel the industry forward."

Scheduled for Jan. 30 - Feb. 1 at the Georgia World Congress Center in Atlanta, Ga., IPPE will bring new experiences and the most current innovations and solutions in the animal food, meat, and poultry and egg industries. IPPE will also feature dynamic education programs focused on the latest industry issues.

www.ippexpo.org

MULTIPLE SOLUTIONS FROM MAREL

At IPPE 2024, Marel is eager to connect with industry professionals from the poultry and meat sectors across the Americas. At Marel's booth, visitors can experience interactive demonstrations and

'immersive rooms', witness new product unveilings, and engage in informative conversations. In all these matters, the key topic will undoubtedly be the integration of automation, digitalization, and

modularity to propel business forward.

In the ongoing pursuit of sustainable, efficient and affordable food production, Marel stands at the

forefront of the transformation in food processing. Acknowledging the ever-evolving demands of consumers, Marel is committed to providing agile solutions tailored for meat and poultry processors.

Connectivity

The challenges faced by the industry inspire our continuous innovation. Through robotics, automation and digitalization, Marel optimizes raw material usage, throughput and sustainability, all while minimizing dependence on labor. At IPPE 2024, our focal point is on connectivity, emphasizing the belief in equipment communication for holistic operational efficiency.

From the efficiency of single-skill machines to comprehensive integrated solutions and from primary to further processing, Marel encompasses the entire spectrum of food processing. Regardless of the size of processing business, Marel solutions are designed to be compatible, flexible, and grow with the specific needs of the poultry and meat industries.

At its IPPE booth, Marel will highlight a multitude of innovations for the poultry and meat industries. We can only mention a few of them below.

Nuova-i



Marel's new Nuova-i eviscerator is a major step towards an intelligent, digitalized primary process. The Nuova-i allows for automated

flock adjustments. These can be controlled by a touchscreen, allowing a switch to the perfect flock settings in a matter of seconds. Thanks to the internal machine software, Nuova-i can measure its own performance, allowing real-time insight into each unit. The remote monitoring, evaluation and improvement of performance and status illustrate Nuova-i's connectivity. Even remote support is possible.

ALPINE

Ensure a consistent and optimal yield from your anatomical leg cuts with ALPINE. While keeping the legs in-line, this system performs precise anatomical cuts, and can meet specific customer specifications. Integrated sensors identify and prevent the presence of undesirable back pieces. Designed for both ACM-NT and ACM-EH cut-up lines, ALPINE accepts water and air-chilled legs from broilers weighing 1200 grams to the super HD 'big bird' range of 4,500 grams. The integrated HMI screen provides

monitoring functions, including tracking product losses.

ATHENA



ATHENA is a fully automated breast meat deboning system, processing 6,000 chicken breast caps per hour accurately, accommodating an extensive range of weights, sizes and shapes. ATHENA dynamically adjusts to individual breast caps without the need for manual settings. Recipe changes are simplified through the HMI screen or a remote wireless device. This system not only conveys breast meat products but also transmits vital data like flock information and product carrier performance. After automated harvesting, it ensures singulated positioning of fillets onto the belts, easing downstream processes.

LIMA, at your service, worldwide

Visit us at:
IPPE 2024
Stand LIMA
C43125

QUALITY IN SEPARATION

INTERNATIONAL
IPPE
PRODUCTION & PROCESSING EXPO

A complete range from 100 to 20 000 kg/h (220 to 44 000 lb/h)

LIMA, a team of specialists dedicated to quality in meat / bone separation & meat grinding-désinewing through technology

WORLDWIDE SERVICE AND SALES

- High optimum yield
- Nice structured meat or ground meat
- No prebreaker needed
- Hygienic operation
- Quick dismantling
- Minimum supervision
- Space saving

Feel free to contact us - 100% free to contact

LIMA

456 route de Rosporden, Z.I. Guelen, 29000 Quimper, France
Tel. : +33 (0)2 98 94 89 68 - www.lima-france.com - lima@lima-france.com

RoboPacker

With its small footprint, supreme gripper technology and high adaptability, the RoboPacker robotizes and improves catch-weight packing operations of chicken breast fillets, drumsticks and tenders. It can create tray patterns and manage product styling. One RoboPacker can fill up to 80 trays per minute with a predetermined number of products, making it well-suited for feeding one packing machine.

RevoPortioner 1000

Whether you're producing burgers, nuggets, or crispy wings, we have a state-of-the-art solution to help you transform your processing. At IPPE, you can experience the RevoPortioner 1000, which builds on the proven technology of previous generations, and offers a significant increase in volume with an unrivaled consistency in product shape and weight. Our new RevoBreaker 1000 produces

never-seen-before, homestyle product characteristics and can run high production volumes, combined with high pickups.

StreamLine

StreamLine is an intelligent trimming line solution for beef processors that trim primals to specification prior to portioning to steaks or direct delivery. By automatically distributing primals to operators and monitoring the trimming process in real time, it maximizes worker efficiency and minimizes the cost of conversion. Empowered with complete production control, your trimming process becomes significantly more organized, efficient, and profitable. At IPPE you can experience this StreamLine with a built-in scale for hand portioning check weighing and an integrated skinner on wheels that fits to the line.

V-Cut 300

Prime steak producers can truly level up with the V-Cut 300.

The machine perfectly compensates for the size variance of the beef cuts so that uniform steaks can be produced as required for retail and foodservice. The V-Cut 300 offers a cutting solution that guarantees equal portions of the same weight, thickness and shape, even from odd-shaped primals from pork, beef and turkey. Portioned like this, the products are ready for automatic loading in trays so that the processor can save manual processes.

Connect with Marel's experts for the North and Latin American markets, who are ready to welcome each visitor personally. Our team is prepared to give made-to-measure advice on how to enhance new and existing operations with sustainable and intelligent solutions, optimizing meat and poultry production.

www.marel.com



Booth C-22159

REX TECHNOLOGIE TO SHOWCASE VACUUM FILLER & PORTIONING SYSTEMS

REX-Technologie is not only a machine manufacturer, but also supports its customers with its expertise in the field of food production.

The REX RSS 70 cutting system offers all this in one machine - it is flexible and universal. It can be used as a stand-alone machine or in combination with the REX RKS 85 calibration system. The fully automated post-twisting process is highly profitable and

extremely labour efficient, providing a quick return on investment.

The thrippe-edged sickle knife precisely separates the sausages at the twist section. This increases the cutting performance which is supported by the REX servo drive. Whether natural or artificial sausage casings are used, the RSS70 is always successful due to its extremely high cutting performance. The smooth machine housing has the typical REX

hygiene design, and is made completely of stainless steel, making it extremely easy to clean. The standard protective cover



guarantees optimal protection of the control units during cleaning.

The RSS 70 has a large touch-screen control which is easy to use and ensures simple programming.

The control can also be synchronised with the filling machine control and as a result facilitates the handling and monitoring of the overall plant in the "in-line" process. The feed and discharge belts, which can be easily adjusted to suit the sausage casing calibre, ensure a secure guiding of the sausages into the cutting unit, whereby even curved goods can be easily processed.

Thanks to the newly developed electronic calibre adjustment that is optionally available product changing is simplified and maximum process security guaranteed.

Rex Technologie will be represented by its sales representative Am Trade Systems, Inc.

www.rex-technologie.com



Booth C-19175



MIVEG
SMART SKEWER SYSTEMS

FROM THE RAW PRODUCT TO THE READY-TO-SELL SKEWER PRODUCT INCLUDING PACKAGING. WITH ONLY ONE CO-WORKER.

WWW.MIVEG.COM
E-MAIL: INFO@MIVEG.DE
PHONE: +49 9195 99 99 20

ONE MAN SHOW

FULLY AUTOMATIC SKEWER PRODUCTION.



MINCED MEAT ON SKEWERS. IN ALL SHAPES. UP TO 7.200 SKEWERS PER HOUR.



MIVEG ASP 7200 – PP2021

MARINATING MEAT & POULTRY MADE EASIER

Cabinplant, innovative and global supplier of tailor-made processing solutions, presents an innovative and value-creating solution for marinating meat and poultry products packed in fixed-weight portions:

- Post-marinating of fresh poultry meat enabling deliveries in small batches

- Post-marinating allows for small production batches

Supermarkets need frequent deliveries of fresh and varied marinated products on display in the counter. For producers, this requires a production set-up enabling production in small batches and frequent shift of marinades.



However, marinating of meat products usually requires time-

consuming cleaning of production equipment, like tumbler, elevator, multihead weigher, tools for the weigher, and marinade dispenser.

The Cabinplant marinating system disrupts the process because marinating is done after portion weighing. The marinade is added to the fresh meat in a special mixing-tool just before the meat is dropped in the tray. Only the tool and the dispenser need to be cleaned, allowing a much more frequent shift of variants.

The change-over time is down to less than 20 minutes and the cleaning time is reduced with up to 80 percent. In addition, the meat is treated far more gently because it will no longer

be marinated in a large drum with perhaps several hundred kg of meat.

- Our marinating solution is already a proven solution and installed at several of the world's large poultry producers. A European meat producer has tested the solution, where one part of the batch was marinated in a traditional drum and the other part was marinated after portion weighing. Blind tests showed that consumers preferred the taste and look of the Cabinplant-products, says Henning Ingemann Hansen, Director of Research and Development, Cabinplant.

The marinade dispenser can be integrated with the weigher

to make the dosage variable relative to the weight of the meat. If the meat weighs more than minimum, the amount of marinade is reduced accordingly. This saves marinade and results in packages of consistent weight.

The Cabinplant marinating system is placed in line with the packing line and after weighing the products are packed in trays or thermopacks. The solution can be used for both meat and poultry. A patent has been applied for the solution which is combined with Cabinplant's multihead weigher.

www.cabinplant.com



Booth C-28165

FORTRESS MAKES INSTANT CHECKWEIGHING COMPLIANCE EASY

Food safety and checkweighing specialist Fortress Technology will reveal how meat and poultry processors can quickly adapt to consumer trends and adhere to legislative weight regulations using its Raptor Checkweighing series at IPPE 2024.

Tolerance tables vary depending on the product type, packaging and weight. Manually determining and programming the correct checkweighing tolerance for prepared meat and poultry applications and pack sizes can be a drawn-out and confusing process. It can also be prone to human error.

To help processors accommodate these weight check product

variations, Fortress integrates defined tolerance tables into its Raptor Checkweigher software. This provides instant adherence to the regional legislative weight regulations, while simultaneously lowering operational costs and increasing profit margins.

Protecting consumers and brand reputation, as well as meeting legislative weight requirements, the robust Raptor Checkweigher series - available in four belt widths - also targets operational inefficiencies. This can include product overfill and giveaway, non-conforming food packs and packaging waste.

Easily integrated with existing metal detection equipment, the Raptor Checkweigher delivers



The ergonomic slim-line Raptor Checkweighing series now features automated tolerance tables as well as airflow covers to improve weighing accuracy.

dynamic weight monitoring. Its modular electronics suite allows for full upstream and downstream integration of the system into existing product lines, with minimal customizations required.

The in-motion, three-belt checkweigher captures thousands of sample readings of individual packs every second. By digitizing the checkweighing process, meat and poultry processors can rapidly achieve productivity gains and save thousands of dollars in product giveaway.

For premium meat products, the return on investment as a result of reduced giveaway and potential non-conformance to weight regulations is extremely quick. Payback, in some cases, can occur in just several weeks or less, claims the food safety specialist.

Also featuring integrated data collection software, everything

from trends, pack rates and live OEE data is instantly reported. Production and QA personnel can utilize this trend feedback to monitor and fine-tune production line performance, even prior to the weight check process.

For example, if a meat manufacturer finds inconsistencies in the size of meatballs, this indicates that the processing machinery is not operating accurately. Beyond highlighting this fault, a Raptor Checkweigher can provide a controlled feedback signal to upstream automation equipment used to portion food products. This signal specifies when to increase or decrease the fill quantity accordingly, eliminating the need for human intervention.

According to the U.S. Department of Agriculture, annual domestic consumption of chicken is anticipated to reach 100 lbs. per person in 2023. Conversely, higher prices for beef has meant consumption has dropped to its lowest since 2018.

To help processors within the sector adapt to these changing demands, the new slim-line, ergonomic Raptor Checkweigher on show at IPPE 2024 presents many more time and cost-reducing features.

www.fortresstechnology.com



Booth C-19139

MEET LIMA AT IPPE 2024 FOR HIGH QUALITY MEAT AT HIGH YIELD!

LIMA are specialists in mechanical separation who have been developing, manufacturing and selling meat-bone separators, deboners and grinders-desinewers worldwide through a network of more than 70 distributors to the

full satisfaction of their customers since 1981!

As IPPE show is about to kick off in Atlanta, LIMA is looking forward to breaking new record numbers in terms of visitors and

results, with high-quality contacts in the Americas.

Distributors from all continents will bring to FPEC & LIMA's booth many interested meat processors from the poultry, beef, lamb and fish industries.

HYGIENIC SECURE

Discover our outstanding new vacuum industrial bowl cutters for your outstanding products.
Made in Germany!

www.kgwetter.de

K+G WETTER

CERTIFIED
HYGIENE & SAFETY
CERTIFIED

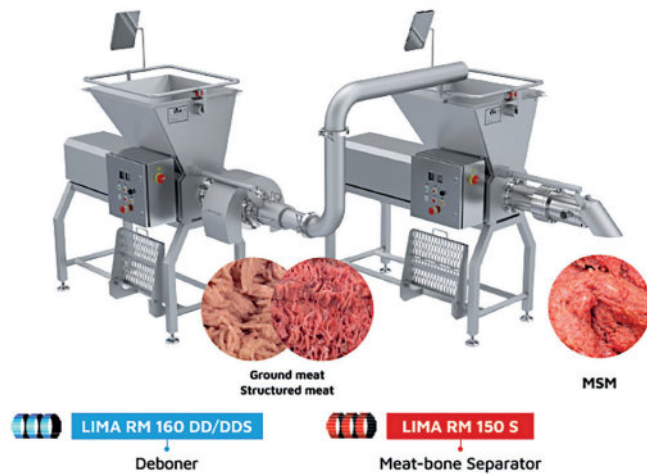
ANUGA
2024
HALL 6.1,
BOOTH A010

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, 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 in a LIMA DD/DDS deboner-desinewer enabling to produce very HIGH quality separated meat, in terms of Structure, Color 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

TWO-STEP SEPARATION



"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.

Moreover, LIMA sees tremendous success with its NEW range of

LIMA Grinders - Desinewers GD/GDM specifically developed for poultry bone-out raw materials: trimmings with or without wishbones, deboned thigh and drumstick meat.

This NEW technology enables to produce a very high-quality ground - desinewed poultry meat in terms of texture & color at very high yield. This recovered meat is NOT a mechanically separated meat but a true ground and desinewed meat produced out of bone-out meat cuts or trimmings.

Other main advantages of LIMA Grinders-Desinewers GD/GDM: very high yields from 85 to 99 %, optimized C/P ratios, low temperature increase, very hygienic design and very low maintenance costs.

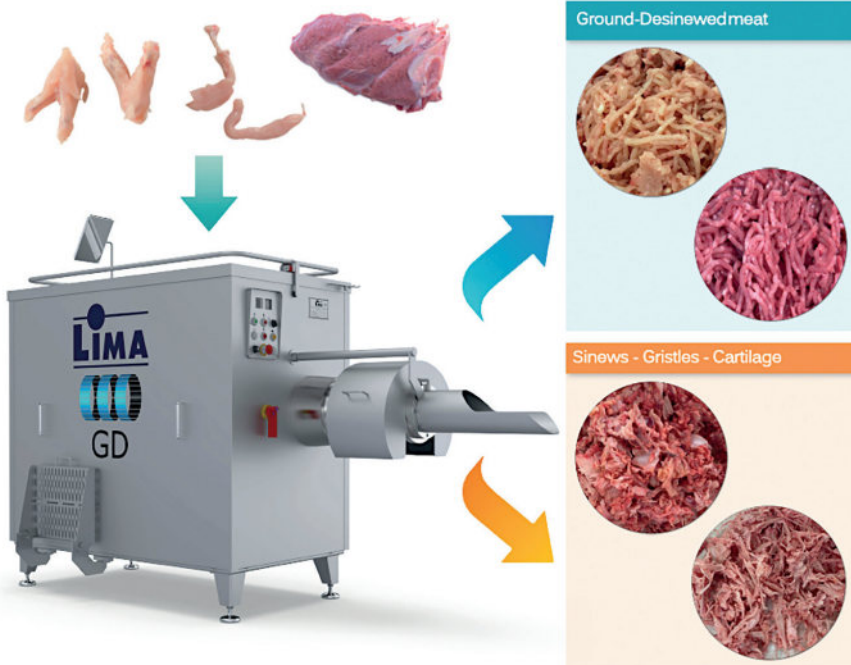
Beef meat processors can also benefit from LIMA Grinders-Desinewers GD/GDM.

The range of more than 70 LIMA machine models can process from 100 to 20 000 kg/h of raw product.

www.lima-france.com



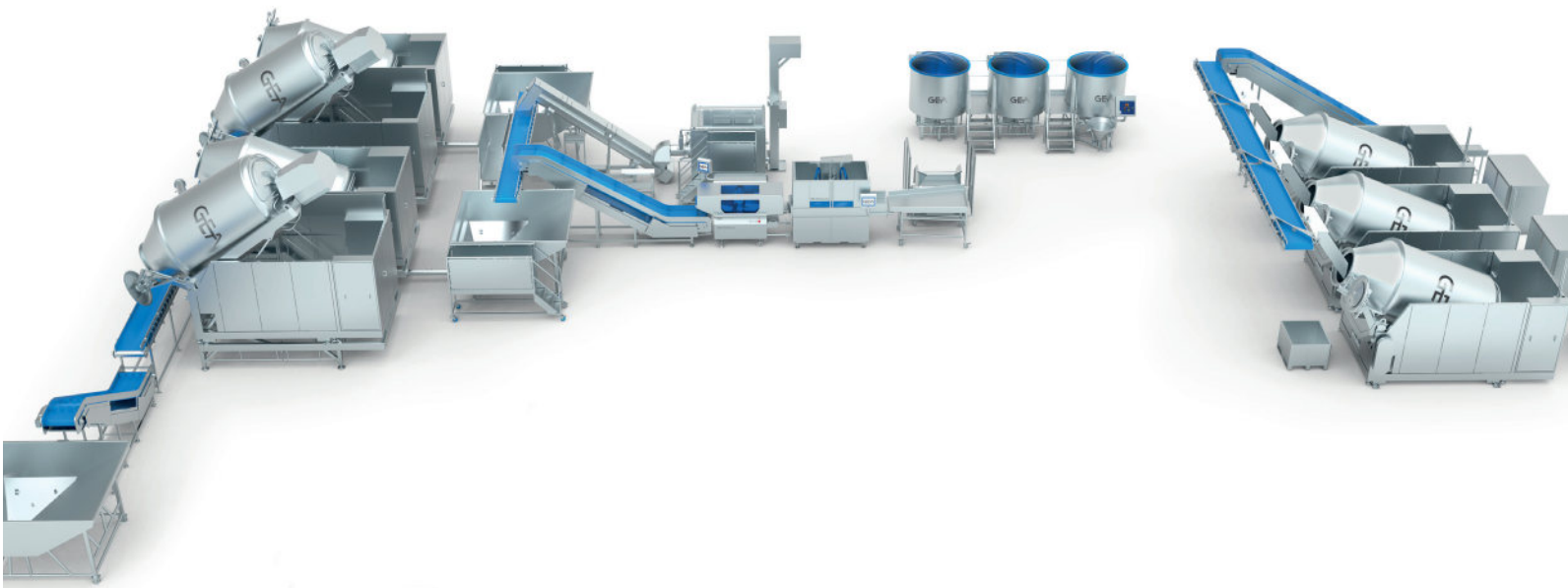
Booth C-43125



Visit us at



Booth C35125



The step-by-step approach to premium quality ham

You know the challenge! Healthier, more natural ingredients; less salt; green label production; exemplary hygiene and food safety. In short: high quality production for premium products. At GEA we understand that quality is created from the start of the process with the right set of equipment.

Get the raw materials right, then focus in turn on: defrosting, brine preparation, injection, tenderizing, tumbling, massaging and curing, molding and forming, cooking and smoking, slicing and final packaging. Every stage is critical. And GEA is with you, every step of the way.



GEA.com/contact

GEA Engineering for a better world.

MEAT PRODUCTION AND CONSUMPTION IN THE USA BETWEEN 1970 AND 2020

By Hans-Wilhelm Windhorst¹
 Prof. Emeritus at the University of Vechta, Germany

At the beginning of the decade, the author presented a fundamental analysis of what he called the red-white shift in the production and consumption of meat at continental and country level (2021a). It could be documented that the USA played a pioneering role in this development. In this article, the shift from red to white meat in both production and per capita consumption in the USA between 1970 and 2020 will be analysed in more detail and the remarkable dynamics will be explained in terms of the factors driving them.

The Success Story of White Meat Began in the 1990s

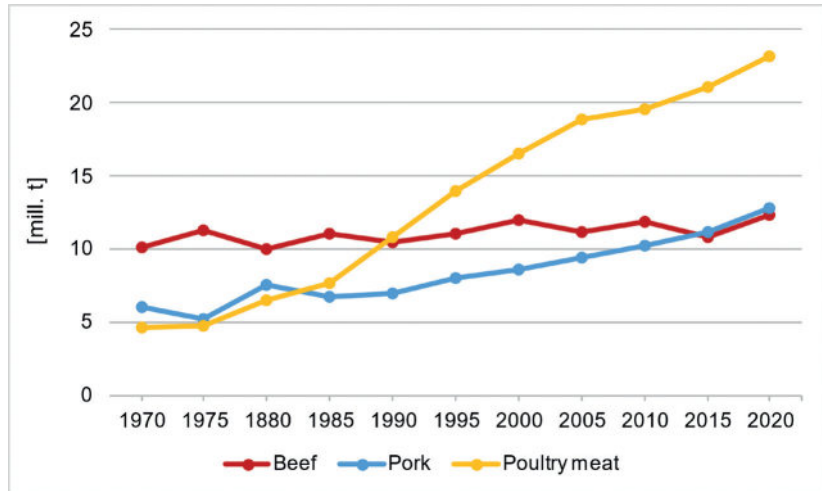
Beef held a leading position in both production and consumption in the USA until the end of the 1980s, when it was replaced by poultry meat. Figure 1 shows the year of the change. While beef production declined in the following decades, reaching its lowest level of less than 11 million tonnes in 2015, poultry meat production increased steadily. By 1995, the production volume had already tripled and by 2020 it had almost quintupled. 2020 was a special year because the Covid-19 pandemic changed the purchasing behaviour of the meat consumers. Multiple lockdowns of restaurants, closures of school and university canteens and a decline in tourism with hotel closures led to a sharp drop in out-of-home

consumption. More meals were prepared in private households again, which led to an increase of meat sales in the food retail sector.

Looking at the development of production over the entire five-

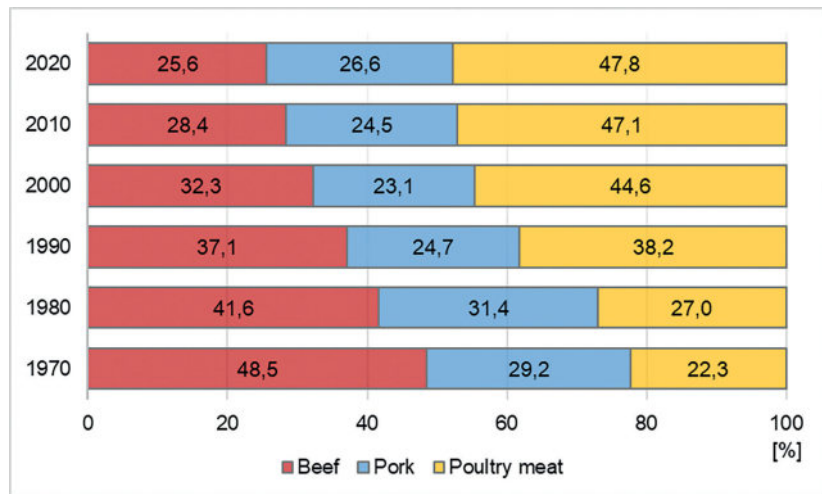
decade period, the difference between red and white meat becomes particularly clear. While the production volume of beef only increased by 2.3 million tonnes or 22.6%, poultry meat grew by 18.5 million tonnes or 498.8%.

Figure 1: (Design: A. S. Kauer, based on FAO and National Chicken Council data)



The development of beef, pork and poultry meat production in the USA between 1970 and 2020

Figure 2: (Design: A. S. Kauer, based on FAO and National Chicken Council data)



The changing share of the meat types in total meat production of the USA between 1970 and 2020

Pork caught up with beef towards the end of the last decade and production doubled in the period under review. However, this was not a result of an increasing per capita consumption, as will be shown in a later section, but of growing exports.

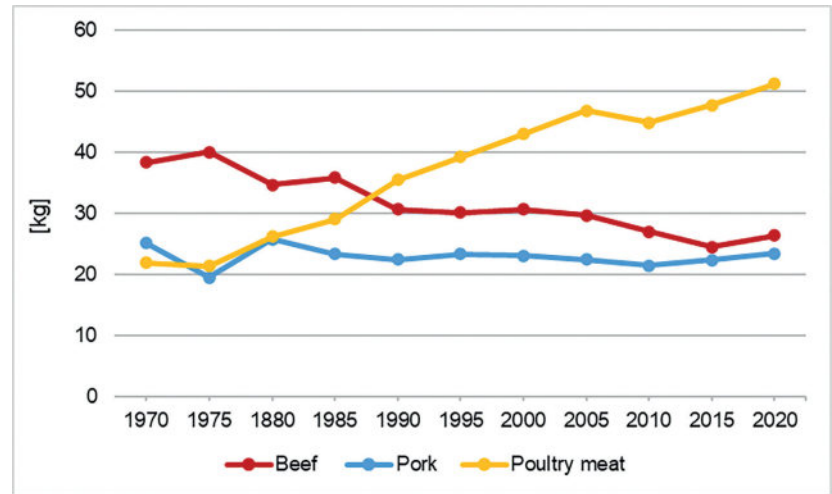
The red-white shift is impressively illustrated in Figure 2. Over the five decades, the share of beef in total meat production fell from 48.5% to 25.6% and that of pork from 29.2% to 26.5%; in contrast, the share of poultry meat rose from 22.3% to 47.8%.

The Red-White Shift in Per Capita Consumption Began Towards the end of the 1980s

The shift in per capita consumption from red to white meat began to emerge towards the end of the 1980s (Figure 3). Beef consumption fell from 40.1 kg in 1975 to 30.7 kg in 1990, pork consumption from 25.8 kg in 1980 to 22.5 kg ten years later. At the same time, per capita consumption of poultry meat rose from 21.9 kg in 1970 to 35.5 kg in 1990.

In the following decades, both beef and pork consumption

Figure 3: (Design: A. S. Kauer, based on FAO and National Chicken Council data)

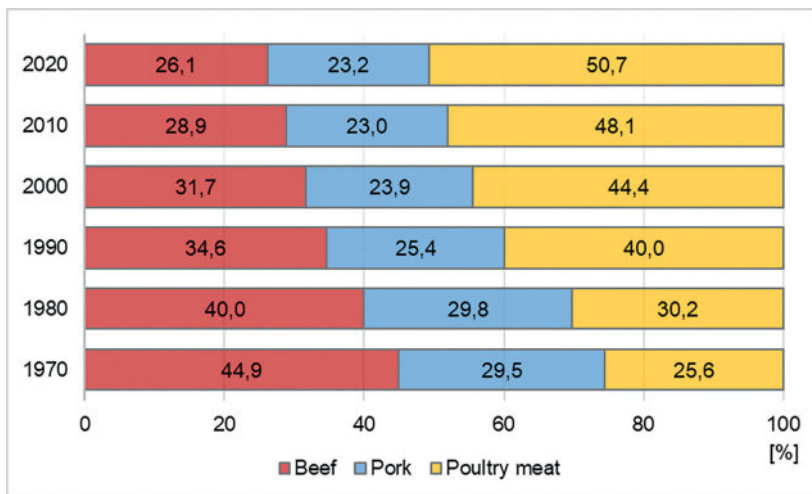


The development of the per capita consumption of beef, pork and poultry meat in the USA between 1970 and 2020

declined continuously, reaching their lowest levels in 2015 and 2010 respectively. The exceptional situation in 2020 as a result of the Covid-19 pandemic has already been mentioned. In contrast, the consumption of poultry meat increased remarkably, with the exception of 2015, when massive outbreaks of the avian influenza virus (Windhorst 2016) not only reduced supply, but also resulted in a certain reluctance to buy. Per capita consumption rose particularly fast in the 1990s. In this decade, numerous new fast-

food chains emerged alongside the already established fast food restaurants of McDonalds, Burger King and Kentucky Fried Chicken (Geary 2021). Although they were developed back in the 1960s by Robert C. Baker,¹ a food scientist at Cornell University, chicken nuggets were slow to find their way into fast food chains, but then began their triumphal march around the world in the 1980s. Both the chicken burger and the chicken nuggets became generally accepted dishes, independent from the social status and the personal income of the consumers.

Figure 4: (Design: A. S. Kauer, based on FAO and National Chicken Council data)



The changing share of the meat types in the overall meat consumption between 1970 and 2020 in the USA

Figure 4 clearly illustrates the change that has taken place. While beef was the undisputed leader in 1970 and poultry meat still ranked behind pork, the change was completed by 1990. Poultry meat accounted for 40.0% of total meat consumption, rising to 50.7% in 2020. While beef lost 18.8% and pork 6.3% of their share compared to 1970, that of poultry meat doubled. It had become the dominant meat type, not only in production but also in consumption.

¹ https://de.wikipedia.org/wiki/Robert_C._Baker

What Role did Economic Policy Play?

It is interesting to ask why the change occurred in the 1980s. The presidency of James E. (Jimmy) Carter (1977-1981) was characterised by economic and financial problems. The unemployment rate was high, the per capita income stagnated and the purchasing power of large sections of the population declined. The beginning of Ronald Reagan's presidency (1981-1989) saw a radical change in financial and economic policy, which is characterised as Reaganomics.² Although a massive reduction in the top tax rate and numerous legislative initiatives succeeded in ending the recession in the short term, the longer-term goals were not realised. The main winners were the wealthy, while the losers were the lower income groups and the less qualified. The hoped-for income effect could not be achieved, meaning that the purchasing power remained low. This explains why poultry meat, which was significantly cheaper than beef and pork, was able to reach higher market shares, especially broiler meat.

His successor in the presidency, George H. W. Bush (1989-1993), remained rather colourless in terms of economic policy. It was only under President William Jefferson (Bill) Clinton (1993-2001) that there was a positive economic development, significant growth and an associated continuous decline in unemployment as well as a consolidation of the budget (Thunert 2002). Rising personal incomes allowed consumers to

spend more on food, which was reflected above all in a significant increase in meat consumption, which rose from 86.7 kg (1980) to 92.5 kg (1995). He also supported global free trade, including signing the North American Free Trade Agreement (NAFTA), which resulted in a sharp rise in US exports.

The publication of scientific articles on the links between high blood cholesterol levels and cardiovascular disease certainly played a role in the dynamics described above. They were primarily directed against the consumption of fatty meat and eggs. In contrast, white meat was considered to be low in fat, low in cholesterol and therefore healthy. In combination with a comparatively low price, this explains the continuous increase in poultry meat consumption.

The Triumph of the Broiler

White meat is often understood as meat from fattened young chickens, which in the USA are called broilers. However, the contribution of turkey meat should not be underestimated, even though it is far behind that of broilers in terms of both production volume and per capita consumption. In 2020, 2.6 million tonnes of turkey meat were produced, with a per capita consumption at 7.1 kg.

Deep-fried broiler meat, sometimes breaded, found its way into the eating habits of Americans with Kentucky Fried Chicken. Increasing demand led to the formation of vertically integrated companies, which often united the entire production chain from

hatchery to marketing under one corporate umbrella.³ They tied farms to themselves as contract growers (Windhorst 2021b). A pioneering role in shaping the expansion of broiler growing from the early 1950s was played by Frank Perdue (Perdue 2021), including his marketing strategy (It takes a tough man to produce a tender chicken) by advertising his product with his name.⁴ An approach that was subsequently imitated by many others.

Figure 5 shows the development of broiler slaughter and meat production between 1970 and 2020. The number of broilers slaughtered tripled in the period under consideration and exceeded 9 billion in 2020. It is noteworthy that both the live weight and the ready-to-cook product increased more than fivefold. This is due to the steadily increasing weight of broilers. While the average final fattening weight was only 1.65 kg in 1970, it reached 2.12 kg in 1995 and 2.92 kg in 2020. This increase was made possible by the success in hybrid breeding and high-protein feed. The necessary growing period for fast-growing breeds was reduced to less than 30 days for light broilers and around 42 days for heavy birds. In extensive farming systems, which are less significant in the USA, up to 80 growing days may be necessary. In contrast to the EU, intensive production is viewed less critically in the USA. This applies to both the short growing period and the stocking density in the barns.

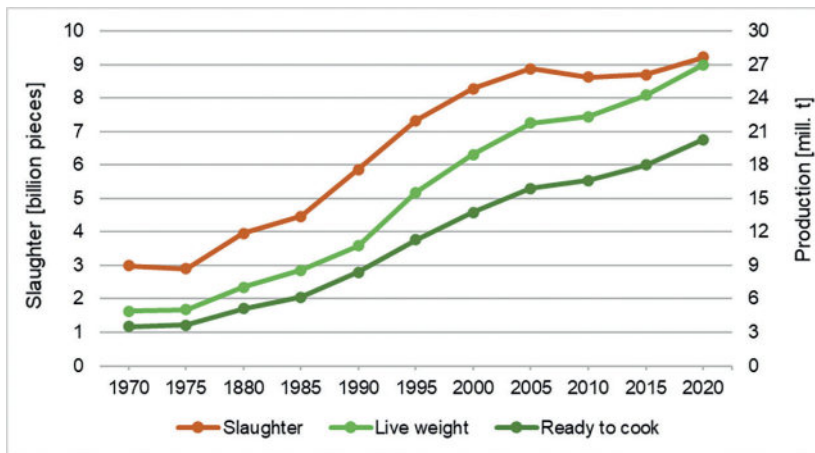
However, recent scientific analyses on the environmental impact of

² <https://www.wirtschaftsdienst.eu/inhalt/jahr/2020/heft/1/beitrag/reaganomics-wegbereiter-des-trumpismus-6072.html>.

³ https://www.nass.usda.gov/Publications/Trends_in_U.S._Agriculture/Broiler_Industry.
https://www.ers.usda.gov/webdocs/publications/44254/12067_eib38_1_.pdf?v=2969.6.

⁴ https://www.youtube.com/watch?v=MSvCK_xH84s.

Figure 5: (Design: A. S. Kauer, based on FAO and National Chicken Council data)



The development of broiler slaughter and broiler meat production in the USA between 1970 and 2020

intensive broiler growing indicate that although the currently prevailing production system (vertical integration with contract growing) has been optimised in terms of economic efficiency, no comparable optimisation has yet been achieved in terms of reducing the environmental impact. According to the authors, there is still considerable potential here, both for integrators and contract farms (Beale et al. 2023). However, implementing such processes is likely to lead to higher production costs and will not remain without impact on buyer behaviour and on the highly competitive global market.

The transition to increasingly heavier broilers was partly a result of the change in the way meat was offered. Whereas in the 1970s, whole broilers were still sold in food stores and offered as a meal in restaurants, carcasses were increasingly cut up in the following decades. The most valuable cut was the breast fillet, the size of which was particularly focussed on in breeding. It was either deep-fried in larger pieces (e. g. at Kentucky Fried Chicken) or cut into smaller pieces, which were then sold as chicken nuggets

or chicken fingers. Quarter legs became the most important export product. Less valuable parts (necks, wings, drumsticks) were exported in large quantities.

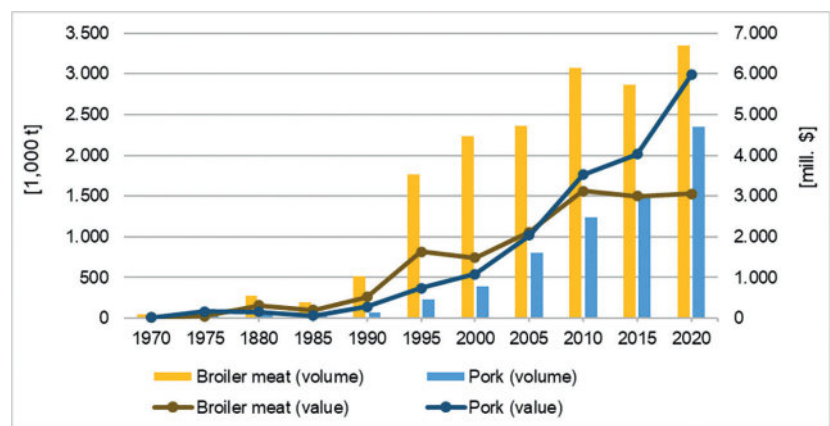
The Role of Exports in the Red-White Shift

In addition to the steady rise in per capita consumption, which resulted in the increasing production of broiler meat, the growing demand on the world market was also an important driving factor behind the remarkable dynamics. In 1970, the export of broiler meat was still insignificant, as can be seen in Figure 6. Only 43,000 tonnes

were exported, which corresponded to 1.2% of production. By 1995, the export volume had already risen to 1.7 million tonnes or 15.6% of production. In the following years, exports increased continuously, except in 2015 because of the massive outbreaks of the avian influenza virus in the Midwest of the USA, and reached a volume of 3.3 million tonnes or 16.5% of production in 2020. The USA was the leading exporting country of broiler meat until 2010, when it was overtaken by Brazil. The value of exported broiler meat rose from \$24.4 million in 1970 to \$4.3 billion in 2020. While only \$570 per tonne exported was achieved in 1970, it was already over \$1,000 towards the end of the last decade. Broiler meat became an important agricultural export product.

It has already been pointed out in a previous section that the doubling of pork production between 1970 and 2020 was not a result of an increase in per capita consumption, as was the case with poultry meat, but of the remarkable development of exports. Figure 6 shows that the export of pork was still insignificant until 1990. In 1970, less than 20,000 tonnes were exported, accounting

Figure 6: (Design: A. S. Kauer, based on USDA, FATUS data)



The development of the volume and value of broiler meat and pork exports by the USA between 1970 and 2020

for only 0.3% of production. Only since 2000, and especially since 2010, has there been a rapid increase in export volumes. In 2020, 2.3 million tonnes were exported, corresponding to 18.3% of production. This generated almost \$6 billion on the global market. In the past decade the value per tonne exported ranged between \$2,500 and \$2,800, which was about two and a half times higher than that of broiler meat. Mexico's imports in particular rose significantly. At the beginning of the current decade, the country accounted for around 40% of US pork exports and was by far the most important destination country alongside Japan, China and South Korea. The free trade agreement between the USA, Mexico and Canada (USMCA, formerly NAFTA) played a key role in this development.

It is worth noting that the USA, one of the leading beef exporting countries, was also a major beef importer. This hid an interesting strategy on the part of both the government and the leading companies in the production and trade of beef. While mainly valuable cuts were exported, lean meat, which was processed into minced meat, was at the top of the list of imported products. The demand could not be met from domestic production if the valuable steak meat was not to be processed into minced meat.

This is why lower-quality beef was even imported from developing countries, blended with valuable cuts in the USA and then sold domestically or re-exported. In the USA over 45% of the beef was used as ground beef in the production of burgers and hot dogs.⁵ As prices for the valuable steak meat were significantly higher on the global than on the domestic market, a domestic shortage emerged, which affected retail and restaurant prices and led to the stagnating or declining per capita consumption (see Figure 3).

Summary and Perspectives

The shift from beef and pork to poultry meat began to emerge in the USA as early as the mid-1980s. By 1990, it was completed in terms of both per capita consumption and production. The gap continued to widen over the following three decades. In 2020, poultry meat accounted for 47.8% of meat production and 50.7% of meat consumption. Broiler meat played a particular role in this, enjoying a veritable triumph in fast-food-chains and fast-food restaurants. In addition to the steady rise in domestic demand, sales opportunities on the global market also played an important role. While only 1.2% of production was exported in 1970, it had risen to 16.5% by 2020. Today, the USA is the second most important

export country for broiler meat after Brazil. The USA also ranks second behind Spain among the leading exporting countries for pork. Here, rising exports were responsible for the remarkable growth in production and not, as was the case in broiler meat, a rising per capita consumption, which indeed changed only slightly. Domestic demand for beef will hardly change in view of the stagnating per capita consumption, but exports could increase in view of a rising demand on the global market and lead to a positive trade balance. It can be assumed that the role of the three meat types will change little in the coming years, both in terms of production and consumption. The overall consumption of meat will tend to stagnate or even decrease, which is likely to affect beef and pork in particular.

Plant-based meat substitutes and meat from cell cultures will change consumers' eating habits in the coming decades. However, the years following the Covid-19 pandemic, during which there was a veritable boom in the consumption of plant-based meat substitutes, have shown that this did not continue as expected, but rather that there was a wait-and-see attitude, which, in addition to criticism of the product quality, was also caused by scepticism about the high degree of technology used in production (Windhorst 2023). ●

⁵ <https://www.fortunebusinessinsights.com/beef-market-106640>

References

- Beale, C. M. et al.: Economic and environmental assessment of U.S. broiler production. In: Poultry Science 102 (2023), Article 102887. <https://doi.org/10.1016/j.psj.2023.102.887>.
- FAOSTAT: <https://www.fao.org/faostat/en>.
- Geary, G.: Made in California. The California-Born Burger Joints, Diners, Fast Food & Restaurants that Changed America. 2021.
- National Chicken Council: Industry Stats and Facts. <https://www.nationalchickencouncil.org/industry/statistics>.
- Perdue, M.: The Frank Perdue Way: Simple Steps, Super Success. (Life-Changing Classic, Volume XXXIV). Boiling Green, Pennsylvania 2021.
- Thunert, M.: Wirtschaftsentwicklung und Wirtschaftspolitik in den USA unter der Clinton-Administration. In: Aus Politik und Zeitgeschichte vom 24. 6. 2002. <https://www.bpb.de/shop/zeitschriften/apuz/25369/wirtschaftsentwicklung-und-wirtschaftspolitik-in-den-usa-unter-der-clinton-administration>.
- USDA, FATUS GATS: <https://apps.fas.usda.gov/gats/default.aspx?publish=1>.
- USDA, NASS: Trends in U.S. Agriculture: Broiler Industry. https://www.nass.usda.gov/Publications/Trends_in_U.S._Agriculture/Broiler_Industry.
- Windhorst, H.-W.: Economic impacts of the AI-outbreaks in the USA in 2015. A final evaluation of the epizootic disaster. In: Zootecnica international 38 (2016), no. 7, p. 34-39.
- Windhorst, H.-W.: The red-white shift in global meat production. In: Zootecnica international 43 (2021a), n. 5, p. 32-37.
- Windhorst, H.-W.: In the country of chicken meat. The dynamics of the U S broiler industry. In: Fleischwirtschaft international 2021b, no. 4, p. 16-18.
- Windhorst, H.-W.: Instabile Nachfrage ändert das Angebot. Eine Situationsanalyse zu Investitionen in alternative Proteine. In: Fleischwirtschaft 103 (2023), Nr. 7, S. 46-49.

Gulfood

19-23 FEB 2024
DUBAI WORLD TRADE CENTRE



THE LARGEST ANNUAL F&B SOURCING EVENT IN THE WORLD

A new global chapter is unfolding in the future of food. It's time to innovate for a more sustainable, thoughtful, and brighter future for the entire F&B ecosystem across the world.

REGISTER TODAY
AT [GULFOOD.COM](https://www.gulfood.com)



THE BENEFITS OF CLEANING-IN-PLACE

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



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

Cleaning/Clean-in-Place (CIP) systems have been around since the 1950s and in many regions and industries, they are now the standard method of maintaining hygienic and effective equipment operation. Yet we still encounter clients and manufacturers who are unfamiliar with the concept and continue to purchase or specify production equipment or systems which rely heavily on manual cleaning routines, often involving time consuming and expensive equipment breakdown.

A Brief History of CIP

The production of safe food and drink products is of paramount importance to producers and maintaining hygienic (or sterile) conditions is key to this. Historically, most food production equipment was cleaned by hand, requiring

the disassembly of piping, tanks and other items. Not only was this costly in terms of the time and labour required, but it also resulted in significant production downtime, and limited the design and size of processing equipment. Some sources suggest that CIP systems were first implemented when dairies were forced to switch from metal pipes to Pyrex glass tubes during World War II, but the first automated CIP system was installed in a family-owned dairy in 1953 in the US. Non-dairy systems followed in the 1960s and the first pharmaceutical system was installed in the late-1970s. Despite this, in many industries and regions of the world, the benefits of CIP are little understood, and the use of CIP lags behind that of other territories, such as Europe.

Why Choose CIP?

CIP is an automated method of cleaning food processing equipment without disassembly using validated procedures. CIP systems offer a number of advantages, including:

- Reducing human errors which can lead to mistakes, such as using the wrong cleaning solution concentration, or not thoroughly rinsing equipment.
- Improved health and safety by reducing or preventing employee exposure to cleaning chemicals.
- Greater operational efficiency as less production time is lost during cleaning, and employees

are not required to spend long periods cleaning equipment.

- Improved product quality and consistency and less contamination of product.
- Saving water, chemicals and energy through accurate, repeatable and automatic actions.

A Smart Approach to Hygiene

Prior to cleaning, as much product as possible needs to be removed from the equipment. This is often done by physical removal or using air or water under pressure. Some systems, such as the HRS R Series of scraped surface heat exchangers, can even be run in reverse to remove and recover as much product as possible. Some of the most common elements of a CIP system include pre-rinsing, a high temperature caustic or chemical wash, and various intermediate and final rinses. Washing processes use a combination of chemicals and agitation (such as turbulent flow in corrugated pipes) to remove dirt.

All of these processes are controlled by integrated controls and systems such as flow meters, conductivity transmitters and turbidity sensors. Depending on the system, the final rinse may use potable or sterilised water, or another form of sanitising rinse containing bleach or peracetic acid (PAA), although in many situations it is preferable to rely on water alone. Air may also be passed through



An HRS multi tank (MT) CIP system

the system to ensure it is fully dry before production recommences.

CIP systems are generally classified as either single use or reuse. Single use systems discard all the liquid after use, while reuse systems store cleaning fluids for reuse in subsequent cleaning cycles. CIP systems can be integrated into the original manufacturing equipment or can be based on standalone systems which operate on and control one of more pieces of equipment. Modern CIP systems will assist with record keeping for the purposes of traceability, including records of key parameters such as temperature, pressure, chemical concentration and cleaning time.

Design Considerations for CIP

If CIP is to be effective, not only does the CIP system itself need to be well designed, but the production equipment should also be considered with effective CIP in mind from the outset. Equipment and machinery must be hygienically designed and easy to manage, maintain and audit.

The design process must not only ensure effective cleaning but should



Many HRS heat exchangers and processing systems include integrated CIP systems, such as our Asepticblock Series

also be as efficient as possible in terms of water, chemical and energy use. Considerations for the equipment itself include areas such as surface roughness, clean welding and the prevention of inaccessible areas or corners where dirt and/or cleaning chemicals may build up. Reliability is also an important consideration and CIP systems must be designed to operate for as long as the working lifetime of the equipment involved. It is also important to consider how user-friendly the control systems for the CIP are. For example, are they part of the overall control interface or a separate system?

CIP Systems from HRS

HRS offers both integrated and standalone CIP systems. Integrated CIP is included in many of our complete systems, such as HRS pasteurisers and sterilisers, as well as our Asepticblock Series (where the AF aseptic filler & pasteuriser/steriliser are combined in one skid) and stand-alone aseptic fillers, for example.



HRS offers a single tank (ST) cleaning-in-place (CIP) system for small applications

Our standalone CIP systems are fully skid mounted and have modular designs for quick and easy site installation. The single-tank (ST) system is designed for simple cleaning applications where recovery of the cleaning fluid is not required, while multi-tank (MT) systems are suitable for more complex situations.

For small, portable applications, the tank can be heated to 85°C using electric heating elements, but steam heating using an HRS K Series multitube heat exchanger is also available. Units start at 500 litre capacity, and single tank systems are available up to 2,500 litres. Larger systems can be provided using multiple tanks, and centrifugal sanitary pumps are fitted as standard. Systems are fully automated using Programmable Logic Controller (PLC) systems and Human-Machine Interfaces (HMI), which can be standalone or integrated into the factory's main control system.
www.hrs-heatexchangers.com

“CHECKING IN” WITH FORTRESS

Fortress Technology has launched a new slim-line Raptor design that prioritizes operator ergonomics. Sharing their extensive knowledge of international net weight verification rules that govern food checkweighing, Fortress explores the ‘compliance essentials’ that can protect brand integrity while simultaneously lowering operational costs.

Efficient weight control and checkweighing systems are integral to meeting consumer expectations. In addition to inspecting under and overweight packages and ensuring compliance with net content regulations, deploying smart checkweighers inline and at the end of food processing lines can provide a source of untapped Quality Assurance, waste reduction and brand protection.

Product giveaway is the long-accepted outcome of observing weight legislation rules. However, when food manufacturers overfill packaging to avoid falling foul of international and domestic weight legislations, it can lead to a considerable loss of profit. Even nominal overfilling can add up. In a new Whitepaper published by Fortress Technology, Raptor Checkweigher Product Manager Matthew Gidman examines the risks versus regulations and delves into the pitfalls of non-conformance.

Cost of Cutting Checkweighing Corners

Global weight regulations are in place to protect consumers against short measures. The cost if caught selling underweight

packaged food products can lead to penalty fines, ranging from several hundred to thousands of dollars. In regions where the rules are even more strict, knowingly distributing underweight products could be deemed fraud.

The picture could be even worse for a multi-national food company with global reach. A widespread recall could rise to several million dollars for an entire batch of underweight processed and packaged products.

Longer-term brand image also needs to be considered. A social media report can rapidly spiral, leading to potentially serious consequences if a recall is not

recall, while 15 percent said they would not purchase that brand from the manufacturer again.

Stricter Rules and Regulations

To avoid issues with weight legislation it is common practice for food plants to overfill. Yet, given the cost of ingredients, food commodities, and packaging, combined with the current cost of living crisis, overfilling is no longer considered a good or sustainable business practice.

In order to cut down on product waste and lost profits, it is advisable for food processors to familiarize themselves with the



Fortress integrates defined tolerance tables into its Raptor Checkweigher software, providing instant adherence to the local legislative weight regulations.

acted upon swiftly. The resulting impact can be highly detrimental. These are often avoidable if food defenses are robust and risks are regularly reviewed. Consumer research by Harris Interactive reports that 55 percent of people would switch brands temporarily following a product

weight legislation requirements for any region where their products are sold or exported to. The rules in Canada, the U.S., and Europe seem quite aligned although subtle differences do exist.

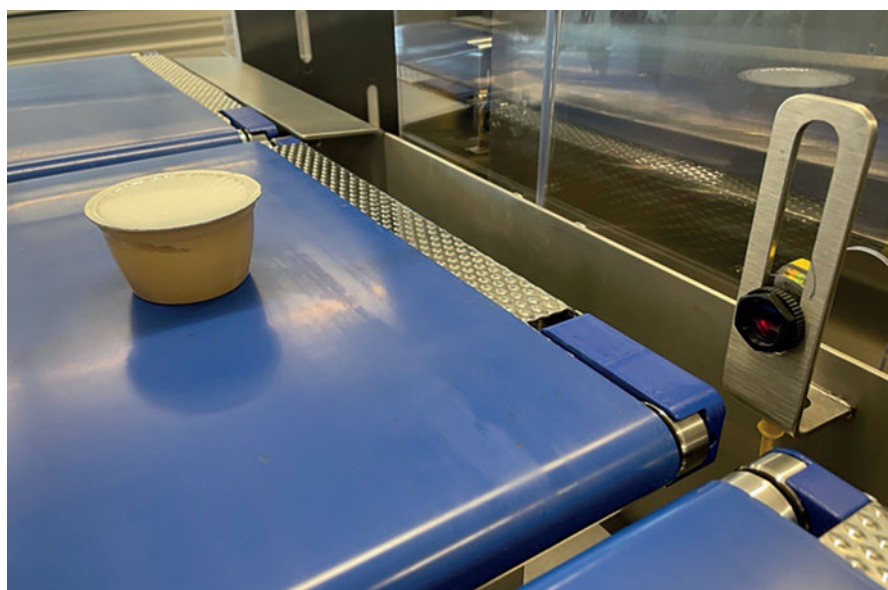
Typically, most global weight regulations follow three general rules:

- The average weight of a product batch must not be below the nominal label weight on the package.
- The percentage of packages that fall below the nominal weight should typically not exceed 2.5%. These are called the limits of error (LOE) in Canada, maximum allowable variation (MAV) in the US, and tolerable negative error (TNE) in Europe.
- No individual package can have a weight that falls outside the nominal quantity by more than twice the domestically defined tolerance table.

Tolerance tables can be difficult to navigate. Manually determining and programming the correct checkweighing tolerance for specific product applications and pack sizes can be a tedious and confusing process, which can be prone to human error.

To help processors accommodate numerous weight check product

variations, Fortress integrates these defined tolerance tables into its Raptor Checkweigher software, providing instant adherence to the local legislative weight regulations.



The Raptor weight sensors reset rapidly, allowing for instant and precise weight checks of individual packs in real-time.















+ 43 664 44 33 22 1
www.tichytrading.at

Optimizing Checkweighing Efficiency

It is widely regarded that weight checking every product on processing lines is good manufacturing practice. Fortress engineered digital signal processing into the Raptor Checkweighing series to enable the weight sensors to reset rapidly, allowing for instant and precise weight checks of individual packs in real-time. Trend feedback signals can then be instantly fed upstream to filling, portioning and, packing automation equipment, signaling when to increase or decrease fill quantity.

Another benefit of automated checkweighing is the utilization of automated reporting and data tools. Besides reducing false rejects and product waste, the use of modern network technologies allows



Many processors now recognize the essential role checkweighers play in the wider quality control program.

for automatic data transmission. With integrated data collection software, everything from trends, pack rates and live OEE data is instantly reported. Production and QA personnel can then utilize this trend feedback to monitor and fine-tune production line performance, even prior to the weight check process.

For example, if a meat manufacturer finds inconsistencies in the size of meatballs, this indicates that the processing machinery is not running accurately. Beyond highlighting this fault, precision checkweighing systems can provide a controlled feedback signal to upstream automation equipment used to portion food products. This signal specifies when to increase or decrease the fill quantity accordingly, eliminating the need for human intervention.

Staying on Trend

Linking consumer lifestyle trends back to checkweighing tolerances

is equally important. In wellbeing and weight control products, for example, absolute weight conformity is non-negotiable. If a snack pack states 100 grams, the tolerance cannot deviate by more than 0.5 grams.

Inline checkweighers can be used to maintain batch-to-batch consistency. Widely used on commercial bakery lines, with the market value of “free-from” products expected to increase to USD 270.22 billion by 2029ⁱ, inline weighing will inevitably become more commonplace.

Free-from products typically use expensive ingredients in the manufacturing process; some costing two to three times more than conventional flour products. Additionally, the U.S. Food and Drug Administration (FDA) declared in 2014 that a product carrying the label “gluten-free” must contain less than 20 parts per million or less of gluten. This places even greater regulatory

pressure on producers to adhere to weight specifications.

Adapting to Fluctuating Costs

Although automated checkweighing is not as tightly regulated currently as HACCP inspection equipment, many processors now recognize the essential role these systems play in the wider quality control program. Particularly in the sectors where food ingredient costs increased by as much as 40 percent in 2022, placing even greater pressure on processors to curtail product giveaway.

Matt concludes: “A checkweigher should not just be regarded as a regulatory necessity. Although these machines are integral to meeting consumer expectations, checkweighers play an equally critical role in prioritizing food safety and reducing giveaway. It is always good practice to regularly revisit operational processes and practices and examine all food waste risks.”

The standard Raptor checkweigher is available in four belt widths - 100mm, 200mm, 300mm and 400mm - and can verify the weight of products up to 17lbs. For bulk applications, e.g. pet food, ingredients, grains and other large items, the Raptor BBK can weigh up to 55lbs, with a heavy duty version available up to 110lbs. Fortress can also integrate its new Raptor Checkweigher with a metal detector and has even created a number of customized multi-aperture, multi-lane combination systems.

www.fortresstechnology.com



27th
edition
RENNES
MARCH 12-13-14
2024
RENNES PARC EXPO

THE FOOD INNOVATION IS INVENTED HERE!

NEW CHALLENGES, NEW SOLUTIONS



+300
news
exhibitors



1700
exhibitors



NEW!

**A special
CSR prize**



awarded during
the Innovation Trophies

NEW!

300m²
dedicated to
start-ups



**Water, energy,
decarbonization...**
the answers to your challenges
at the show



**DOWNLOAD
YOUR FREE
BADGE**
www.cfiaexpo.com



→ Cfiaexpo.com    #CFIARennes24 | @cfiaexpo



INGREDIENTS | EQUIPEMENTS & PROCESSES | PACKING & PACKAGING

BETTER PERFORMANCE, SHORTER DOWNTIMES - HIGH PRODUCT DIVERSITY

Sonnberg Biofleisch Optimizes Production with Formax SX330 Slicer



Interview with Stefan Huber of Sonnberg

The concept is very well received by many customers: Sonnberg Biofleisch has experienced continuous growth in the past fifteen years.

Adaptation of Production Systems to the Growing Company

With Stefan Huber, Katja Reisinger-Huber and Thomas Reisinger, the family's second generation is now also dedicated to the company's success. Stefan Huber, a butcher by trade, is responsible for the purchasing of production systems and therefore faces the task of maintaining a machine park that can meet the growing order volume. Sonnberg was in search of a new slicer for slicing the different products offered in accordance with customer requirements. As Stefan Huber explains, the new system had to perform even better in order to meet the increase in demand: "On the basis of experiential values and customer requirements we produce small quantities for stock. In addition to good performance, our systems also have to be highly flexible, since we manufacture a broad range

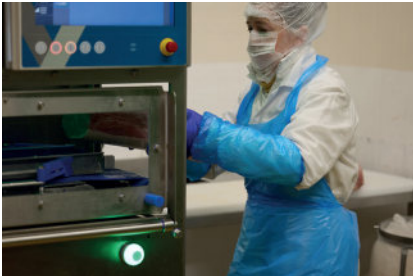


With the SX330 slicer, changeover to a new product is fast and easy

Sonnberg Biofleisch, based in Austria, supplies food retailers and restaurants with high-quality organic meat products. For the diversity of products processed every day, the company requires efficient systems that are designed for fast changeover. The new Formax SX330 slicer from Provisur Technologies helps Sonnberg achieve greater efficiency in manufacturing: The flexible system minimizes downtimes and offers maximum performance with a footprint of only a few square meters.

Unwavering commitment to 100 percent organic food - that is the promise of quality given from day one by Sonnberg Biofleisch, a family-owned company in the Upper Austrian municipality of Unterweissenbach. Manfred Huber, organic farmer and company founder, followed his conviction that premium-quality meat is not possible without sustainable livestock and

farming. His products have opened up new frontiers: Back in 2002, Sonnberg laid the foundation for the company's success as the first organic butcher shop to deliver to Austria's organic supermarkets. In 2004, the company expanded by establishing its own organic slaughterhouse. Today, Sonnberg is the largest 100 percent organic meat producer in Austria, with operations throughout the entire production chain: from slaughtering and deboning to processing, slicing, portioning and packaging. The company's 110 employees produce the high-quality meat and meat products in one- and two-shift operations. "The quality criterion 'organic' has always been at the heart of our company philosophy. In the manufacture of our high-quality foods, animal welfare, soil conservation and circular economy are the highest priorities," says Stefan Huber, son of the company founder.



User-friendly loading of the slicer

of products, so that our facilities have to be able to handle about 15 different products every day. In such a scenario, every minute that we need for product changeover counts." In addition to short setup times with minimal auxiliary equipment, the decision-makers at Sonnberg wanted a system with a small footprint. In the event of a malfunction, fast service availability was also a high priority. Through a recommendation from Leidenfrost Lebensmitteltechnik GmbH, Stefan Huber discovered the production systems offered by Provisur Technologies. The company is an innovative supplier of industrial food processing machines, as well as integrated production systems for processing of diverse foodstuffs. Today, Provisur unites well-known established brand names under one roof.

Formax Slicer - High Performance in a Compact Design

The Provisur product range also comprises the most robust and highly flexible slicers of the Formax brand. Sonnberg chose the model Formax SX330, an innovative slicer that is optimally tailored to small series. The high-performance, compact system is now used for slicing many different organic meat products offered by Sonnberg, including Pariser sausage, dry sausage, ham, smoked pork loin, salami,

pork belly, air-cured ham, beef ham, bacon, frankfurters, cheese sausage, fennel salami, cooked ham, and much more. High productivity is guaranteed by the high-speed blade and a large cutting throat size. The Formax SX330 slicer is configurable to individual requirements and is designed for both manual and automatic loading. At Sonnberg, it is equipped with a scale for precise weighing, as well as a tilting chute and an ejector for underweight portions. In addition to the high yield and precise slicing processes, the organic meat producer benefits from diverse product presentation options, such as stacks, shingles, etc. "The short set-up time saves us a lot of time in our workday. The quality of the sliced product is another plus: All products come out of the machine in perfectly sliced, appetizing portions. And the built-in scale ensures a reliable fixed weight," says Stefan Huber in praise of the machine. Sonnberg supplies the sliced and portioned products not only to food retailers - from organic supermarkets to the corner shop - but also restaurants, which purchase about 40 percent of



Formax SX330: Perfect slices and a perfect stack

the meat products. The majority remains in Austria, but Sonnberg's one-hundred percent organic products are meanwhile also available in Germany and other EU countries.



Scale and ejector for precise fixed-weight portions

Future of the Industry is Dependent on Automation

What Stefan Huber especially appreciates about Provisur as the company that supplies the machine is the uncomplicated business relationship and short response times of the Leidenfrost company: "A slicer that is always ready for use is immensely important for our company. If we need assistance, we can contact Provisur at any time. That has reduced our downtimes substantially." With a view to the future of the industry, Stefan Huber has high expectations from technological solutions: "It is difficult to find personnel for monotonous tasks in meat production. Many of these tasks can be carried out more efficiently if they are automated, which frees up personnel for other responsibilities. In this connection, as a visitor to IFFA 2022 I was especially impressed by the compact Formax FMS handling system from Provisur, which can produce multiple portions in an automated process - for me, it is the most innovative development that I have seen in our industry in a long time."

www.provisur.com

SALT: NOT A SWEET STORY

By Henk Hoogenkamp, Protein Applications Expert

Part 2

Salt and Junk Addiction

Prominent world societies like those in the UK, US, and China are consuming dangerous levels of sodium. In China, most of the salt is added while preparing and cooking their own meals. Eating lots of processed foods and “compulsive-eating snacks” -also classified as junk foods- can become addictive. Salt and fat are especially pleasing to the mouthfeel. With the addition of crunch and sugar, it becomes hard to control compulsive eating. There is a clear correlation between marketing of products high in fat, sugar, and salt and the dietary habits of (young) people. Curbing exposure to junk food advertisements on TV and streaming platforms can be an effective tool to help people make healthy diet choices.

Going Forward

There are two distinct approaches to accomplish sodium reduction:

- A gradual reduction in the consumer’s perception of saltiness by selecting a stealth approach.
- Maintain the salt perception but reduce the sodium and substitute with potassium and small amounts of magnesium.

Stealth or Sea Salt

Part of the problem is that salt provides important benefits for

processed-food manufacturers and meat processors. Salt is a cheap ingredient that is ideally suitable to extend shelf life. It also enhances flavor, improves texture, and serves as an ideal masking agent for bitterness. An added issue is that many people would say no when asked if sodium reduction means switching to an alternative synthetic or chemical additive. Aside from the fact that consumers are accustomed to a certain flavor profile, many technical hurdles in removing salt from food formulations are still unsolved.

Salt might have a negative perception, but if the phrase “sea salt” appears on a label, consumers will have a very favorable opinion. Clearly, consumers have a negative perception of “salt”, while they have a positive impression of “sea salt”. Sea salt is naturally rich in potassium chloride and other minerals. According to the Innova Database, more consumers are using sea salt at home and new products containing sea salt are routinely being introduced.

Bring It On

Although most consumers believe that low-sodium products are inferior in taste, it is true that taste preferences may change as the amount of salt is gradually changed over time.

There are a few solutions to decrease sodium content without notably changing salt perception:

- Using smaller salt microspheres can make more sodium available in the mouth for tasting. Only some 30 percent of salt is perceived when food is eaten while the balance is simply swallowed. When smaller microspheres are used, the surface area increases substantially while it dissolves faster and improves the interaction with the tongue, thus, obtaining a greater salt perception.
- Combining sodium chloride with aromas like vanilla extracts may boost the salt perception. This is also true when typical umami compounds like soy sauce, green tea, and Parmesan are used to simulate salt enhancement.
- A sodium-and-potassium combination can be used in the same crystal or grain. Such a combination performs just like regular salt with little or no bitterness.

The typical retail-driven food supply in the Western world makes it difficult for consumers to choose low sodium foods. Of the average daily intake of 3,600mg per day, about 70-80 percent comes from industry-processed and prepared foods.

Sodium Intoxication: the Medical View of Prehypertension

Hypertension -known as high blood pressure- affects more than one in three adults aged 25 and over worldwide. This equals about one

billion adults. Pre-hypertension is the grey area between normal (under 120/80mm/Hg) and high (over 139/89mgHg), which is also a reason for concern. The condition especially affects an increasing number of young people.

preventable death. There is a genetic disposition to develop hypertension. High salt intake, high-calorie foods, lack of physical activity, and alcohol consumption all play an important and decisive role in the increase

hormonal stress response and perceived corticosterone stress levels. While stress hormone levels can be favorable in the short term, long term elevated stress levels can cause immunosuppression, obesity, insulin resistance



There is a strong correlation between salt intake and blood pressure. In nearly all cases, a low sodium diet shows an almost immediate decline in blood pressure. Salt is a contributor to high blood pressure, which has been linked to higher risk of heart attack, brain hemorrhages or stroke -the leading causes of

in hypertension. Associated with hypertension are increased risks of developing kidney failure and blindness.

High levels of dietary salt intake are not only associated with high blood pressure, increased incidences of stroke, and heart attacks but also increasing

(diabetes Type 2), as well as impact mood and sleep patterns.

Renaissance Potassium

“Potassium is an important mineral that keeps the heart pumping and the brain working.” If insufficient potassium intake occurs, several body functions may become unbalanced.

The importance of minerals in the daily diet is enjoying a renaissance. There is more than just anecdotal evidence on the important dietary role of potassium. People in the last few decennia have not only over-consumed sodium but also under-consumed potassium. Potassium is naturally found in vegetables and fruits and is helpful in reducing blood pressure and cardiovascular mortality. The scientific data supported by EFSA and FDA recommends this mineral to maintain normal blood pressure, muscular, and neurological functions in the body.

Contrary to sodium consumption, potassium intake via dietary intake needs boosting. Dietary potassium can lower blood pressure by blunting the adverse effects of sodium on blood pressure. Besides these important functions, potassium nutrients are also associated with reducing bone loss and preventing the development of kidney stones. Hence, it is likely that the nutraceutical food industry will develop special fortification foods containing dipotassium citrate and potassium gluconate to boost diet absorption of this important natural mineral.

Several factors are correlated with the reduction of blood pressure following increased potassium supplementation. Preferably, increased potassium fortification intake should be done via whole food coupled with a salt (sodium chloride)

reduction to achieve the benefits of an optimum sodium/potassium balance. Increasing potassium intake can be obtained by selecting foods like vegetables, pulses, fruits (bananas, kiwi, pineapple), and nuts.

Dietary potassium intake will not only delay elevated blood pressure levels but also delay or defer the need for antihypertensive prescription medication. A healthy adult should aim to consume 3,500-4,700mg of potassium daily from foods. The minimum recommended intake is 2,300mg for women and 3,000mg for men.

To put the discussion into perspective: There are physiological consequences to consider when consuming too little sodium. At decreased levels of intake, triglyceride levels increase, as well as insulin resistance and the activity of the sympathetic nervous system. All these factors can also increase the risk of heart disease. It may be concluded that sodium reduction is an issue of potential harm for subgroup populations. General advice for dietary sodium intake is incredibly difficult since there are quite a few variables to consider which can influence the health of the individual person.

The Yeast Alternative

Yeast is a microorganism which belongs to the fungus family. Yeast is known for its superb fermentation properties for

traditional products like bread, beer, wine, miso, and "sauerkraut". However, yeast also plays a critical role in modern age biotechnology such as animal-free dairy proteins, egg-free albumen, and plant-based meat alternatives. Yeast plays an incredible role in the flavor and taste development in processed foods and (plant) meat products. The latter is especially important to support sodium reduction, which allows about 30 percent less salt without compromising on taste.

The Phosphate Angle

Phosphates in processed food and processed meat are frequently used for technological reasons - as acidifying agents, acidity buffers, emulsifying agents, and for intensifying flavor. Phosphate is present in many processed foods like spreadable cheese, meat products, beverages, canned and frozen vegetables, and soups, as well as baked goods. Natural phosphate esters are also typically present in protein-rich foods like lean meat and are broken down slowly in the gut before being reabsorbed into the body.

The huge increase in processed food consumption has triggered the use of added phosphate, which is estimated to have doubled from 1980 to 2020 from below 500mg per day to 1000mg per day. Most food legislation rules do not require quantification but

simply identify the presence of phosphate or its E-number on the food label.

Some population groups -particularly infants, children, and adolescents- have too high dietary phosphate intake. Too much phosphate is a special concern to people who already have kidney damage or chronic renal disease. Typically, the most significant increase in blood phosphate levels occurs in people who eat dairy foods and cereal/ grain-based foods that contain artificially added (inorganic) phosphate. Recent research indicates that elevated phosphate intake is possibly correlated with mortality in people and may cause organ calcification in renal (kidney) patients -a correlation between high blood phosphate and cardiovascular disease in healthy people.

The main role of phosphates in processed food, meat, and beverages is to loosen the structure of a protein, as well as to serve as a "melting salt" in fat-filled cheese spreads and prevent separation in beverages. The EFSA Panel is recommending maximum permitted levels of phosphate as a processing aid. It should be noted that when used as an anti-caking agent, there is no real maximum permitted level for phosphate.

It is expected that phosphate additives used for meat and food manufacturing will regain new discussions. In Germany, the



use of phosphates in processed meat products is strictly regulated and even forbidden in most meat products. In most countries, the use of phosphates is (vaguely) regulated to maximum inclusion levels of 0.5 percent.

In the processed meat industry worldwide, salt and phosphate are probably the most frequently used additives in nearly all categories: emulsified, coarse, enhanced, and whole-muscle meat products.

It is necessary to distinguish between natural (organic) phosphates and chemically derived phosphates. Natural or organic phosphates are mainly found in protein-rich foods like meat, fish, eggs, and dairy. These naturally occurring phosphates are slowly broken down in the gastrointestinal

tract and gradually re-absorbed into the bloodstream from the intestines. While phosphates occur naturally particularly in high protein foods, these organic phosphates are absorbed by the body at a level of about 50 percent. Inorganic phosphate additives are more readily absorbed at levels between 90 and 100 percent.

In contrast to organic phosphate, industrially processed foods have much higher levels of added phosphate to obtain certain product modulations and cost advantages. For example, chemically derived phosphates are used as preservatives, yield-manipulating agents, acidity buffers, and emulsifying support, as well as for intensifying flavor and reducing warmed-over-flavor in cooked meat products, sodas, and many forms of frozen food. ●

“TRANSFORMING THE RETAIL MEAT AISLE FOR SUSTAINABLE SUCCESS”



more shelf life. If normal shelf life is 8-10 days, VSP offers 14-16.

The ability to be displayed on supermarket shelves for more than two weeks is a huge advantage and its smooth presentation removes the “ick” factor some shoppers can have when selecting fresh meat.

By increasing the time products remain fresh, retailers can reduce food waste, a key concern for consumers.

This extension of shelf life also contributes to cost savings by lowering the frequency of restocking and reducing the amount of meat products discarded due to spoilage.

In today’s retail landscape, the meat aisle presents several challenges for retailers. The rise of private label sales, driven by economic and political factors, coupled with consumers’ growing concern for sustainability, has retailers seeking innovative solutions. This article explores the pressing issues faced by retailers and how packaging can help overcome these challenges in the meat aisle.

Private Label Proliferation

Private label products are gaining momentum across markets. In Europe, a staggering 70% of consumers frequently purchase private label items as part of their grocery shopping, with 10% being dedicated private label loyalists. Rising inflationary pressures have led consumers to prioritize “Price” as the top reason for choosing private label products.

While private label sales surge, 28% of grocery shoppers have indicated that sustainable packaging plays a role in their purchasing decisions.

Consumers believe that retailers are moving toward sustainability, but they desire more significant efforts in “Food waste reduction,” “Less excessive packaging,” and “More sustainable packaging.”

Addressing the First Pain Point: Food Waste Reduction

Amcor’s SkinTite “second skin film” not only enhances product presentation but also significantly extends the shelf life of meat products.

Compared to MAP, brands and retailers can easily gain 4-6 days

Addressing the Second Pain Point: Less Packaging

The traditional use of tray and lidding packaging, especially in the case of minced meat, results in a significant amount of plastic waste. Additionally, such packaging can be rigid and heavy, making it less



environmentally friendly and less cost-effective for retailers.

Retailers can significantly reduce their amount of plastic by moving away from traditional tray + lidding packaging towards flowpacks and thermoforming films. Amcor's PrimeSeal™ Recycle-Ready Thermoforming Films and Flowpacks offer a more sustainable alternative. They are not only lighter but also use significantly less plastic, thus reducing the environmental impact and plastic waste. These solutions are also certified as recyclable, making it easier for consumers to dispose of packaging responsibly. Moreover, the reduced weight can lead to cost savings in transportation and handling.

Addressing the Third Pain Point: More Sustainable Packaging

Consumers are increasingly prioritizing sustainability, and they have a growing preference for packaging that aligns with their eco-conscious values. In their eyes, paper packaging is viewed as a more sustainable choice, and



gives a more natural and artisanal look to the product.

We recognizes the shift in consumer preferences towards paper-based packaging and offers an ideal response with Packpyrus. This solution not only caters to the retailer's needs but also aligns perfectly with consumers' desire for more alternatives to plastic. Packpyrus, is a paper-based packaging with 80% fibers, completely eliminates the need for traditional plastic trays. Additionally,



its humidity-resistant properties ensure that the product remains in optimal condition, enhancing the overall shopping experience and satisfaction for consumers who seek both quality and sustainability. With Amcor's Packpyrus, retailers can make a strong commitment to sustainability, satisfying their customers and promoting their brand as an environmentally responsible choice in the meat aisle.

Conclusion

As consumers increasingly opt for private label products and prioritize sustainability, Amcor is leading the way in extending shelf life, reducing plastic use, and embracing more sustainable alternatives. Through these pioneering packaging solutions, retailers can meet consumer demands while fostering a more sustainable and responsible meat aisle, benefiting both businesses and the environment.

www.amcor.com

REX TECHNOLOGIE
VACUUM FILLER & PORTIONING SYSTEMS

RVF 220-900

REX Technologie GmbH & Co. KG
Irlachstrasse 31 • A-5303 Thalgau
Phone +43(0)6235-6116-0
Fax +43(0)6235-6529
Mail: sales@rex-technologie.com
www.rex-austria.com

WHAT'S ON THE PROTEIN PACKAGING AGENDA FOR 2024?

By Ben Elkington,
Head of Innovation for food packaging at Klöckner Pentaplast

As we step into 2024, the global protein industry is experiencing significant changes, which will undoubtedly shape how packaging is conceived, designed and developed.

A central part of any protein product's core value proposition - its packaging - must always respond to changing market dynamics and align with the key trends that are shaping the industry.

will remain at the top of the protein market agenda for 2024. Consumer studies from research firms such as McKinsey show that shoppers are still making purchasing decisions based on their values and ideals, and increasing legislation is only accelerating the need for sustainability at all levels of business. Naturally, packaging has an enormous role to play in making this possible.

Although it's more complex to close the loop in food contact packaging, it's not impossible. Technologies such as our kp Elite® MAP trays, combined with our kp Tray2Tray® programme, show that it can be achieved.

kp Elite® is a high-performance mono-material modified atmosphere packaging (MAP) tray designed to deliver full end-to-end sustainability. It's manufactured with up to 100% recycled PET (rPET) lowering the carbon footprint of the pack and is fully recyclable post-consumer use.

So what does that look like for fresh protein producers and packers in 2024?



Refocusing the Conversation on Sustainability

The drive to reduce the overall environmental impact of business

One of the central aspects of this is circularity and reducing the amount of packaging that ends up in landfill. For 2024, we expect to see a rapid rise in protein packaging recyclability.

The Plateauing Vegan Market

The rise of plant-based diets and the popularity of vegan protein alternatives have been remarkable in recent years. However, one of the noteworthy observations for 2024 is the plateauing of the vegan market as its growth continues to slow. Plant-based proteins still have a very clear and defined space in the market, but the initial surge in interest has waned, and the market is maturing. Crucially, competition among plant-based brands has intensified. This not only makes it harder for challenger brands to gain market share but also that existing products must work harder to gain - and maintain - competitive advantage. Competition is an area where packaging can make all the difference and in 2024, we expect to see greater emphasis

on packaging innovation in the meat-free protein sector, as brands look to differentiate themselves and capture market share.

Consumer Awareness of Packaging

Today's shoppers are more engaged and switched on than ever before, and this includes their understanding of packaging formats. 2024 marks a year where consumers are no longer just interested in the contents of a pack but are keen to understand how it affects the environment, how it's manufactured, and how to select packaging that improves their overall product experience. Demonstrating this in action, research from the TwoSides initiative has found that more than 40% of consumers would avoid purchasing from brands that aren't actively increasing the recyclability of their packaging.

A lot of the more technical packaging acronyms, such as rPET, PE, HDPE and PET, are becoming known and recognised by consumers too. This indicates that brands can become more specific when talking about their packaging choices when communicating with shoppers.

As we look ahead to the future of the protein sector and its packaging decisions, this suggests that businesses can include more technical information on substrate choices when it comes to communicating sustainability benefits, as well as clear post-use recycling instructions. Circularity relies on specific, actionable steps that consumers can take in order to feed packaging back into the material loop after use, and incrementally reduce the industry's overall reliance on virgin materials.

Combining Hygiene and Convenience

The demand for hygiene and convenience in protein packaging will remain high in 2024. Consumers are looking for packaging that ensures the safety and freshness of their protein products, while providing a convenient and hassle-free pack experience.

While easy open and reclose technologies are becoming more commonplace and welcomed by consumers, absorbent pads, typically supplied with fresh protein cuts and often disliked by consumers, are under renewed scrutiny. With this in mind, padless tray technologies are set to climb the packaging agenda for 2024, providing consumers with a greater hygiene experience as well as a lower overall pack environmental impact.

liquid and is easy to rinse and recycle without mess. Plus, showcasing our commitment to circular economy principles, it can be made using up to 100% recycled PET.

The protein packaging industry in 2024 is marked by significant shifts, very much in line with an evolving consumer market. Alongside changing consumer needs and a strong drive toward industry sustainability, the increasing demand for hygiene and convenience underscores the importance of innovative packaging solutions in 2024.

As the year unfolds, staying tuned to these trends is essential for the protein supply chain from farm to fork. The protein packaging industry is evolving, and the choices made in 2024



A great example of this can be seen with kp Zapora®, kp's padless tray technology developed to provide a better user experience with protein packaging. The design captures and retains

will have a lasting impact on the industry's future. It is a year of transition, where adaptability and sustainability will be key to success.

www.kpfilms.com

ALWAYS ON THE SAFE SIDE

Self-Adhesive Labelstock with an Extremely Low Migration Tendency

- A recent comprehensive European study shows how sensitive consumers still react to the issue concerning the migration of substances into food.
- This risk with labels can be minimised easily and cost-effectively with the HERMA standard adhesive 62Dps due to its extremely low migration tendency.
- This adhesive demonstrates its strengths particularly on packaging films, even in cool/moist conditions and in high-speed labelling, such as blow-on processes.

The possible migration of substances from packaging materials into food is an issue that continues to cause serious concern to consumers throughout Europe. This became apparent recently in a study by the European Consumer Association BEUC entitled: "Unwrapped: What consumers say about safe and sustainable food packaging"¹. 1,000 representatives from each of the eleven participating countries took part in the study. 70 percent of the responses are concerned about the health effects of chemicals in food packaging. "Food manufacturers in particular are therefore doing well to keep the migration risk as low as possible, says Hendrik Kehl, Product Manager at HERMA. "In terms of labels and self-adhesive materials, however, it is now more simple and cost-effective as ever before." As a specialist in self-adhesive materials, HERMA offers its multi-layer adhesive 62Dps



Does it really only contain what it says it does? European consumers are extremely sceptical according to a new study. At least for labels, migration safety can be achieved very easily and cost-effectively - with HERMA's double-layer adhesive 62DPS.

with an extremely low migration tendency for 16 different label materials, many of which are available in the net width range that can be delivered at short notice. This adhesive demonstrates its strengths particularly on packaging film. "Even in critical applications in cool/moist conditions, it shows very good performance and is hard to beat from an economic point of view," emphasises Hendrik Kehl from HERMA. The 62Dps may be in direct contact with dry and moist food. In addition, it is suitable for fatty foods to which a correction factor of at least 3 can be assigned in accordance with Regulation (EU) No. 10/2011. Due to the very high tack characteristics, the 62Dps also achieves optimal results in high-speed dispensing systems, which

work with blow-on processes, for example. "Overall, the 62Dps shows the advantages of a multi-layer adhesive structure", says Hendrik Kehl. "In the past, it was necessary to choose between excellent adhesive force and very low migration tendency, but thanks to the multi-layer coating process that HERMA has brought to the market, it is now possible to get the best of both worlds." As a low-migration alternative to 62Dps, HERMA also offers the adhesive 62Gpt which has been developed for particularly challenging environments and conditions. "In the food sector, however, our experience shows that in 95 percent of all cases the 62Dps is the optimal variant, also from an economic point of view."

www.carapetyan.com

¹ <https://www.beuc.eu/reports/unwrapped-what-consumers-say-about-safe-and-sustainable-food-packaging>; last downloaded on 04.12.2023

KP ELITE® UNLOCKS FULLY CLOSED LOOP PACKAGING SYSTEM FOR FRESH PROTEIN MARKET

In a notable leap forward for sustainability-driven packaging design in the European fresh protein market, Klöckner Pentaplast (kp) has relaunched kp Elite®, the company's boundary-breaking modified atmosphere MAP tray, manufactured from 100% recycled PET (rPET), to create a fully closed loop packaging system for the industry.



Forming the core of the new offering, kp Elite® is the only fully recyclable, lightweight, modified atmosphere mono-material packaging tray to be certified 100% recyclable* by cross-industry initiative RecyClass. kp Elite® seamlessly integrates into existing PET recycling systems, setting a new standard for end-to-end circularity in protein packaging.

Marking exciting new potential for protein sector sustainability, kp Elite® can be combined with the innovative kp Zapora® padless tray and certified recyclable kp FlexiLid® EH 145 R barrier lidding film, creating a fully recyclable, case-ready MAP solution from one supplier.

Cecilia Guardado, Marketing Director, Trays, at kp, commented: "By communicating kp Elite®'s closed loop credentials, we're aiming to drive the fresh protein market further than ever before. Packaging circularity is one of the biggest challenges in the protein market, but when combined with our kp Tray2Tray® initiative, kp Elite® takes a vital step forward in reducing waste and promoting a more resource-efficient protein packaging ecosystem.

"Part of our kp 'Investing in Better' sustainability strategy is that we want to make 100% of our packaging solutions recyclable by the end of 2025, and kp Elite® is another crucial step in achieving that. Plus, with our kp Zapora® padless tray technology, we're able to enhance the consumer experience. We're ticking a lot of boxes at once. We've listened to both our customers and the consumer, to create a solution that can do it all."

Bringing efficiency to the processing and packing sector, kp Elite® MAP is designed to seal through contamination, reducing the need for rework and repacking and requiring a lower sealing time and temperature. The resulting hermetic seal also minimises leaks. For retailers and consumers, kp Elite® offers a peelable seal, exceptional clarity, and extended shelf life to enhance product appeal.

"We're on a mission to prove that sustainability and performance can coexist without compromise," Cecilia continues. "Combined with kp Zapora® and kp Tray2Tray®,

kp Elite® is a clear example of our commitment to efficiency, performance, and sustainability, particularly in light of the upcoming Plastics Packaging Waste Regulations, which mandate the use of post-consumer recycle (PCR) in packaging. There are huge benefits, not just for producers, packers and distributors, but also for consumers who value its ease of use and clarity."

"We work to an ethos of 'Packaging with integrity', and our values are made clear through everything we do. kp Elite® is a prime example of this in action; while the industry uses higher PCR or virgin material based on cost, we commit to using 100% PCR where possible - and communicating this on-pack. With this relaunch, we are challenging the conventional choice of Polypropylene (PP) trays for protein packaging and showing a better way forward. We are paving the way for a future where rPET-based kp Elite® leads the industry in sustainable, high-performance packaging."

www.bit.ly/49vgHLS
www.kpfilms.com

PUSH THE LIMITS WITH 67% LESS: MAXIMISE RESULTS WHILE MINIMISING EMISSIONS

In a time marked by a focus on innovation, precision, reliability, automation, and sustainability within the food industry, a partnership between two industry leaders has led to a revelation: Faerch’s patented Ultra Low Stacking trays. Achieving up to 67% space savings during transport, storage, and handling, whilst achieving a tray denesting success rate of 99.96%, these trays deliver exceptional results.

Unlocking 67% Space Savings

At the heart of the Ultra Low Stacking tray’s innovation lies the noteworthy 1.5 mm gap between each tray, a significant contrast to the 3-6 mm gap found in traditional trays. An intricate stacking configuration that required an adaptable and precise tray denesting solution. A challenge that could only be solved through close collaboration between tray manufacturer and tray denesting manufacturer.

How It Started: Engineering a Collaborative Approach

In 2020 Norwegian Norfersk needed to transition to a new type of tray to meet their environmental sustainability goals. They decided to switch from PP to PET made from 99% recycled content and fully recyclable. Rasmus Haage Sørensen, Project Manager at Norfersk, said:

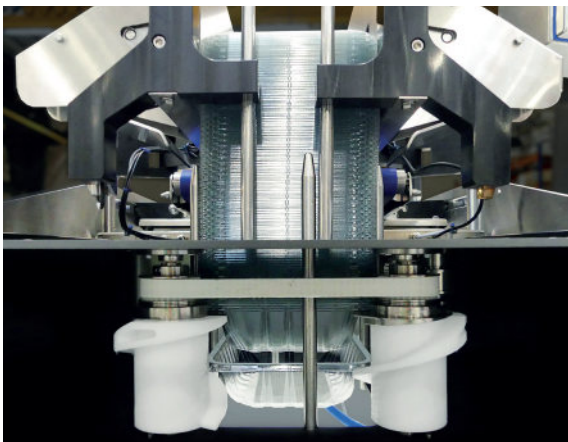
“Like the rest of the world, we have a desire to do what we can to preserve our raw materials as long as possible and contribute to a global goal of recycling as much plastic as possible. In addition, we needed to find a way to reduce our emissions by transporting more trays per truck.”

To ensure optimal performance, reduced space, and delivery costs for Norfersk, the collaborative effort between Faerch and Qupaq was established. The goal was to develop a low-stack tray in

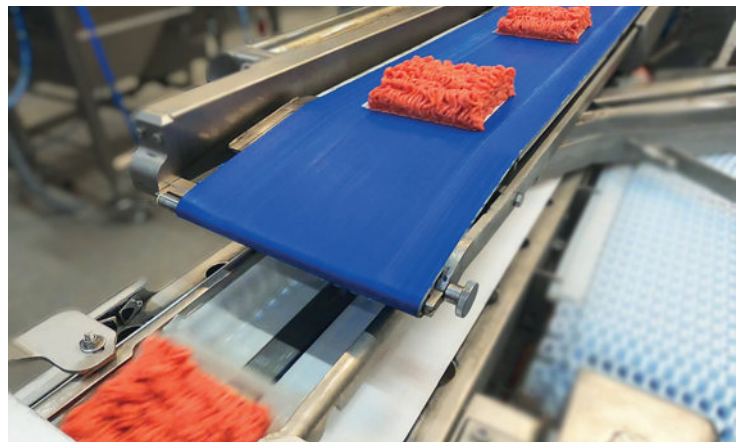
Norfersk Overview:

- Norfersk is a wholly owned subsidiary of Nortura SA, an agricultural cooperative owned by 19,000 farmers across Norway.
- Norfersk annually produces approximately 20 million kilograms of meat.
- The company boasts more than 140 employees and generates an annual turnover of approximately 2 billion NOK.
- Norfersk is recognized as one of Norway’s largest meat producers.

PET, that was designed to be compatible with a denesting tool, accommodating trays of varying heights to ensure smooth transitions. Several meetings, drawings, and discussions later, the Ultra Low



The Ultra Low Stacking trays inside the INTRAY Buffer Servo Denester. A peak inside the machine where tray denesting occurs.



From Norfersk production: Minced meat being placed into the Ultra Low Stacking trays with a fast, reliable, and fully automated process.



The Ultra Low Stacking trays compared to regular trays. A showcased example of how much space the same number of trays occupies.



Close-Up: The Ultra Low Stacking trays compared to regular trays. Here, you see the difference in stacking spacing, demonstrating how the same number of trays can occupy significantly less space by using a lower stacking height.

After more than three years in production, Norfersk highlights the following achievements resulting from the synergy of Faerch's Ultra Low Stacking trays and Qupaq's INTRAY Buffer Servo:

- A 99.96% denesting success rate, resounding in exceptional uptime.
- Approximately a 67% reduction in transport, handling, and storage requirements, resulting in significantly lower CO2 emissions.
- A substantial reduction in maintenance costs has been saved compared to the years before.
- Smooth transitions between trays with different heights with no need to switch tools.
- More than 38 million trays denested since the implementation.

Stacking trays were finally created as the perfect combination and fit for Norfersk's production. With the use of Qupaq's INTRAY Buffer Servo denester, calibrated to accommodate these trays, Norfersk achieved a reliable production line with an extraordinary tray denesting success rate of 99.96%.

Optimising Operational Uptime

Considering the impressive tray denesting success rate of 99.96%, it's worth noting that even the rarest denesting errors are automatically rectified by the INTRAY Buffer Servo's smart auto-correct feature. This ensures impeccable production uptime with no production stops, showcasing the system's remarkable reliability.

A Sustainable Paradigm Shift

The Ultra Low Stacking trays did not only meet Norfersk's need for a tray that matched an adaptable production while being made from recycled material, but it was also proof that innovation and sustainability are intertwined

ideals - something the Ultra Low Stacking trays both deliver on.

Highlighting up to 67% space savings during transport, transit packaging, storage, and handling, these trays translate to significantly reduced CO2 emissions – a testament to Faerch and Qupaq's commitment to crafting solutions that excel across multiple dimensions. Simply: less is more.

The Future of Packaging

In essence, Faerch and Qupaq developed a match between the trays and the tray denester, resulting in resounding success at Norfersk. With more than 38 million trays denested at Norfersk, the Ultra Low Stacking trays serve as a proof that innovation flourishes in environments where complementary competencies come together to produce results greater than the sum of their parts. Rasmus Haage Sørensen's statement encapsulates this achievement:

"Now the big question is whether the investment can pay off, and the answer is simple: yes, it can. The amount of money invested in this project pales in comparison to the returns we've seen."

In summary, this collaboration did not only redefine what's achievable in terms of functionality, but it also showcased the importance of the dance of millimetres that contributes to a brighter, more efficient, and sustainable future within the packaging solution.

www.faerch.com
www.qupaq.com

**AMB SpA**

Via San Martino 28
33038 San Daniele del Friuli (UD)
Italy
Tel: +39 0432 946111
Fax: +39 0432 946111
Email: info@ambpackaging.com
Web: www.ambpackaging.com

**Albert Handtmann
Maschinenfabrik GmbH & Co. KG**

Hubertus-Liebrecht-Str. 10-12,
88400 Biberach/Riss, Germany
Tel: +49 7351 45 1432
Fax: +49 7351 45 20 1432
Email: info.machines@handtmann.de
Web: www.handtmann.de

**Amcor**

Immeuble Les Portes de La Défense,
1 rue de Mantes
92700 Colombes
France
Tel: +33 1 57 00 36 00
Web: www.amcor.com

**Cabinplant A/S**

Roesbjergvej 9
5683 Haarby,
Denmark
Tel: +45 63 73 20 20
Email: cpi@cabinplant.com
Web: www.cabinplant.com

**Alert Packaging Ltd.**

Bray Business Park, Southern Cross Route,
Killruddery, Bray, Co. Wicklow, A98 NY65
Ireland
Tel: +353 1 286 0300
Email: sales@alertpackaging.ie
Web: www.alertpackaging.com

**CEMSAN Slaughterhouse Systems**

Saray Mah. Keresteciler San.Sit.
4.Cad. No:49 Kahramankazan, Ankara
Turkey
Tel: +90 312 801 02 22
Email: cemsan@cemsanmakina.com
Web: www.cemsanmakina.com

**CSB-System AG**

An Fürthenrode 9-15,
52511 Geilenkirchen,
Germany
Tel: +49 2451 6250
Email: info@csb.com
Web: www.csb.com

**ESPERA-WERKE GMBH**

Moltkestraße 17-33
47058 Duisburg
Germany
Tel: +49 203 3054-293
Fax: +49 203 3054-12293
Email: info@espera.com
Web: www.espera.com

**Coligroup SPA**

via del Lavoro A. 9
25032 Chiari (Brescia)
Italy
Tel: +39 030 7000761/2/3
Fax: +39 030 713370
Email: info@colimatic.com
Web: www.colimatic.com

**GEA Food Solutions Bakel BV**

Beekakker 11,
5761 EN Bakel,
The Netherlands
Tel: +31 492 349 349
Fax: +31 492 349 416
Email: info@gea.com
Web: www.gea.com

**FESSMANN GmbH and Co KG**

Herzog Philipp Straße 39D
71364 Winnenden
Germany
Tel: +49 7195 701-0
Email: info@fessmann.de
Web: www.fessmann.com

**Fabbri Group**

Via per Sassuolo 1863
41058 Vignola (Modena)
Italy
Tel: +39 059 768 411
Email: sales@grupprofabbri.com
Web: grupprofabbri.com

**FRUTAROM SAVORY SOLUTIONS**

A.-Schemel Str. 9
50205Salzburg
Austria
Tel: +43 662 6382 1301
Fax: +43 662 6382 808
Web: www.frutarom.eu

**G. Mondini S.p.A.**

Via Brescia 5
25033Cologne (BS)
Italy
Tel: +39 030 705600
Fax: +39 030 7056250
Email: info@gmondini.com
Web: www.gmondini.com

**Higel Kältetechnik e.K.**

Neugasse 19
D-77694 Kehl-Marlen
Germany
Tel: +49 7854 9090
Fax: +49 7854 985615
Email: info@higel-kaeltetechnik.de
Web: www.higel-kaeltetechnik.de

**HIPERBARIC**

Calle del, Calle Condado de Treviño, 6,
09001 Burgos,
Spain
Tel: +34 947 47 38 74
Web: www.hiperbaric.com



Hifferman nv

Groenenhoek 134
2630 Aartselaar
Belgium
Tel: +32 (0)3 450 92 41
Email: corporate@hiffermangroup.com
Web: www.hifferman.be



Habasit International AG

Römerstrasse 1,
P.O. Box, CH-4153 Reinach BL,
Switzerland
Tel: +49 (0) 6071 / 9 69-0
Fax: +49 (0) 6071 / 9 69-52 33
Email: Habasit.Communications@habasit.com
Web: www.habasit.com



Ishida Europe Ltd

11 Kettles Wood Drive,
Woodgate Business park,
Birmingham, B32 3DB, UK
Tel: +44 (0)121 6077700
Fax: +44 (0)121 6077666
Email: info@ishidaeurope.com
Web: www.ishidaeurope.com



Industrial Auctions B.V

Looyenbeemd 11,
5652 BH Eindhoven,
Netherlands
Tel: +31 (0)40 240 9208
Fax: +31 (0)40 240 9209
Email: info@industrial-auctions.com
Web: www.industrial-auctions.com



JEROS A/S

Nyborgvej 8,
5750 Ringe,
Denmark
Tel: 45 221 02004
Email: jeros@jeros.com
www.jeros.com



Krehalon B.V.

P.O. Box 414
7400 AK Deventer
The Netherlands
Tel: +31 (0)570 624 333
Email: sales@krehalon.com
Web: www.krehalon.com



Klöckner Pentaplast Group

4 Kingdom Street
London, W2 6BD
United Kingdom
Tel: +01977 692 111
Email: kpinfo@kpfilms.com
Web: www.kgwetter.de



K+G Wetter GmbH

Goldbergstrasse 21
35216 Biedenkopf - Breidenstein
Germany
Tel: +49 6461 9840-0
Fax: +49 6461 9840-25
Email: info@kgwetter.de
Web: www.kgwetter.de



LASKA Maschinenfabrik Gesellschaft mbH

Makartstraße 60, 4050Traun, Austria
Tel: +43 7229 606-302
Fax: +43 7229 606-6302
Email: info@laska.at
Web: www.laska.at



KARL SCHNELL GmbH & Co.KG

Muehlstrasse 30
73650 Winterbach
Germany
Tel: +49 7181 962 0
Fax: +49 7181 962 100
Email: info@karlschnell.de
Web: www.karlschnell.com



Loryma GmbH

Am Falltor 3
64673 Zwingenberg
Deutschland
Tel: +49 6251 1799-0
Fax: +49 6251 73964
Email: loryma@crespeldeitersgroup.com
Web: www.loryma.de



LIMA S.A.S.

456, route de Rosporden
Z.I. Guelen - 29000 Quimper
France
Tel: + 33 (0) 298 948 968
Fax: + 33 (0) 298 948 969
Email: lima@lima-france.com
Web: www.lima-france.com



MiVEG GmbH

Am Sandfeld 17
D - 91341 Röttenbach
Germany
Tel: +49 9195 99 99 216
Fax: +49-177-95 99 915
Email: info@miveg.de
Web: www.miveg.de



Meyn Food Processing Technology B.V.

P.O. Box 16
1510 AA Oostzaan
the Netherlands
Tel: +31 (0)20 2045 000
Fax: +31 (0)20 2045 001
Email: sales@meyn.com
Web: www.meyn.com



MAUTING s.r.o.

Mikulovská 362
691 42 Valtice
Czech Republic
Tel: +420 519 352 761
Fax: +420 519 352 764
Email: info@mauting.com
Web: www.mauting.com



Marel Red Meat B.V.

Albert Schweitzerstraat 33
7130 PG Lichtenvoorde
Netherlands
Tel: +31 (0) 544 390 500
Email: info.meat@marel.com
Web: www.marel.com



Marel Further Processing B.V.

Handelstraat 3
5831 AV, Boxmeer
Netherlands
Tel: +31 (0) 485 586 122
Fax: +31 (0) 485 586 222
Email: info.fp@marel.com
Web: www.marel.com



Marel Poultry B.V.

Handelstraat 3
5831 AV, Boxmeer
Netherlands
Tel: +31 (0) 485 586 111
Fax: +31 (0) 485 586 222
Email: info.poultry@marel.com
Web: www.marel.com



PRODUCTOS SUR, S.A

Saavedra Fajardo, parc. 27/7
San Ginés (Murcia)
30169 Spain
Tel: +34 968 881 991

Email: info@prosur.es
Web: www.prosur.es



Nothum Food Processing Systems

631 South Kansas Avenue
Springfield, Missouri
65802 USA
Tel: +1 417-831-2816
Email: nothum@nothum.com
Web: www.nothum.com



REX-Technologie GmbH & Co. KG

Irlachstraße 31
5303 Thalgau
Austria
Tel: +43(0)6235-6116-29
Fax: +43(0)6235-6529
Email: office@rex-technologie.com
Web: www.rex-technologie.com



Poly-clip Systems GmbH & Co.KG

Niederckerstraße 1
65795 Hattersheim a. M.
Germany
Tel: +49 6190 8886-0
Email: contact@polyclip.de
Web: www.polyclip.com



Resino Trykfarver A/S

Metalbuen 13
DK-2750 Ballerup,
Denmark
Tel: 45 44 97 34 88
Email: resino@resino.dk
Web: www.resino.dk



Sesotec GmbH

Regener Str. 130
94513 Schönberg,
Germany
Tel: +49 (8554) 308-0
Fax: +49 8554-2606
Email: info@sesotec.com
Web: www.sesotec.com



Maschinenfabrik Seydelmann KG

Hölderlinstraße 9
70174 Stuttgart,
Germany
Tel: +49 (0)711 / 49 00 90-0
Fax: +49 (0)711 / 49 00 90-90
Email: info@seydelmann.com
Web: www.seydelmann.com



Provisur Technologies GmbH

Magdenauerstrasse 34
9230Flawil
Switzerland
Tel: +41 713941560
Fax: +41 713941569
Email: info@provisur.com
Web: www.provisur.com



STEEN F.P.M. International

Fransé Weg 33
B-2920 Kalmthout
Belgium
Tel: +32-(0)3/665.04.00
Fax: +32-(0)3/665.34.58
Email: info@steen.be
Web: www.steen.be



SAIREM

82 rue Elisée Reclus
69150 Décines-Charpieu
France
Tel: +33 (0)4 72 01 81 60
Email: welcome@sairem.com
Web: www.sairem.com



Sealed Air Ltd

1-3 Cromwell Road
St Neots, Cambs
PE19 1QN, UK
Tel: +01480 224000
Email: info-pack@sealedair.com
Web: www.sealedair.com



Sealpac International bv

Langekamp 2
NL-3848 DX Harderwijk
The Netherlands
Tel: +31 (0)341 46 20 30
Fax: +31 (0)341 46 20 33
Email: info@sealpacinternational.com
Web: www.sealpacinternational.com



Karl Tichy Handelsgesellschaft mbH

Salaberg 23,
A-3350 Haag
Austria
Tel: +43 664/4433221
Fax: +43 7434/44459
Email: tichykarl@aon.at
Web: www.tichytrading.at



ULMA Packaging

Garibai, 28
20560 Oiñati (Gipuzkoa)
Spain
Tel: +34 943 73 92 00
Email: info@ulmapackaging.com
Web: www.ulmapackaging.com

SUBSCRIBE TO MEATING POINT MAGAZINE TODAY AND RECEIVE YOUR HADR COPY MAILED DIRECTLY TO YOUR OFFICE

Fill in the form below to process your inquiry!

1. Business Classification:

Type	Industry Sector	Position
<input type="checkbox"/> Manufacturer	<input type="checkbox"/> Meat	<input type="checkbox"/> Management
<input type="checkbox"/> Supplier	<input type="checkbox"/> Poultry	<input type="checkbox"/> Product Development
<input type="checkbox"/> Distributor	<input type="checkbox"/> Fish	<input type="checkbox"/> Production
<input type="checkbox"/> Import/Export	<input type="checkbox"/> Ingredients	<input type="checkbox"/> Packaging
<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Other (please specify)	<input type="checkbox"/> Research& Development

2. I wish to subscribe to Meating Point Magazine for a year.

The subscription shall start in beginning of

UK - GBP 56

EUROPE - EUR 86

USA and the rest of the world - USD 96

Payment:

Check enclosed

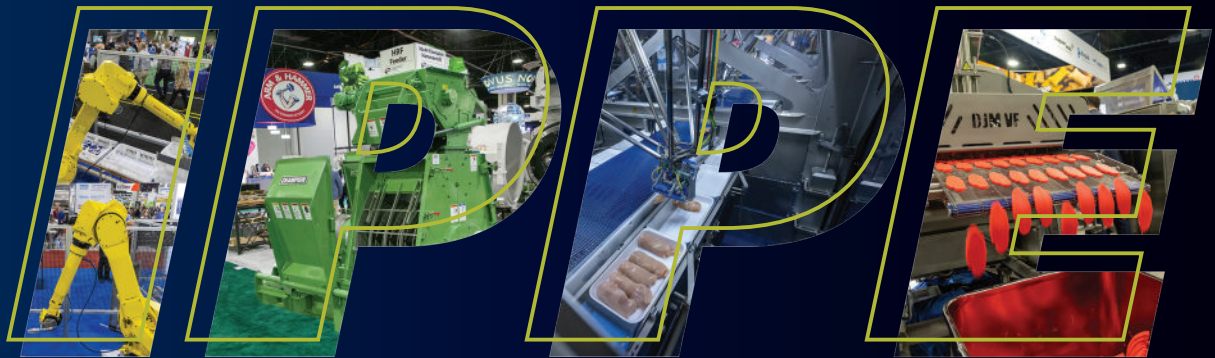
Bill me

Paypall

3.Subscriber's contacts:

Company:.....	Country:.....
Name:.....	Phone:.....
Position:.....	Fax:.....
Address:.....	E-mail:.....
Date:	Signature:.....

MAIL US TO: SUBSCRIBE@meatingpoint-mag.com
or
CALL : +44 (0) 7763 751 782



EXPERIENCE IT ALL

Experience the latest innovations, solutions for your business and world-class education, while connecting with other animal food, meat, and poultry and egg professionals from around the world. It's all at IPPE 2024. You should be, too!

JAN. 30 - FEB. 1, 2024

ATLANTA, GA USA

ippexpo.org