

# MEATING POINT

magazine

SUSTAINABLE TECHNOLOGY, PROCESSING & PACKAGING

## MEAT PACKAGING SUSTAINABILITY PROBLEMS HAVE FLEXIBLE SOLUTIONS



THE WORLD IN TRANSITION:  
CLEANER CONSUMPTION

DIGITAL QUALITY CONTROL  
FOR THE MEAT INDUSTRY



# CONTROL THE CRUMB

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Are you tired of un-even coatings and dusty production facilities? 60 years of processing experience and 25 years of evolution have gone into the new CrumbMaster Gen 2 from GEA. This dedicated crumb coater is fully enclosed, so creates less dust for a cleaner working environment. Design enhancements achieve the highest quality coating and breading with consistent coverage to all products, top, bottom and sides. Ultimate crumb control to master your coating process for a happier workforce, better products and satisfied customers.



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## Dear reader,

**S**ustainability attributes, such as recyclability, biodegradability, and packaging waste are growing areas of interest for food processors, retailers, and consumers. The meat industry is increasingly more interested in developing innovative and efficient solutions to guarantee quality and distribution of sustainability. One of the main factors that influence such crucial aspects is packaging. Starting from the introduction of packaging to develop the post slaughtering management of big meat cuts, especially in case of bovine meat, meat packaging has been developed to prolong the shelf-life of fresh small -size meat cuts, as an extended shelf-life is a meaningful contribution to reducing food waste. Thus, ready - to - cook fresh or minimally processed products have been packed using innovative packaging technologies to control microbial development, to assure optimal sanitary aspects, and to maintain physical, chemical, and sensorial parameters. Companies have upped their efforts on providing durable high-barrier films that extend shelf- life, allowing for less food waste. Further to this, they developed lighter packaging that reduces the amount of material used and reduces transportation weight.



Jenny Smart

The best “meating point” to see all numerous débuts in the 18 fully booked exhibition halls and fascinating solutions from the world of packaging is interpack, Dusseldorf, Germany, to be held between 4th - 10th May, 2023. After a six-years break, with over 1,000 exhibitors the fair is bigger than ever. Megatrends such as sustainability and digitalisation, numerous economic and ecological, but also political and social changes and challenges are of concern for companies and provide a boost to innovation at this year’s interpack. The circular economy will be a top theme: It seems to be a simple model, but is also all-encompassing and poses major challenges in many areas. In the age of climate change, the important thing is to produce as little unrecyclable waste as possible. Hand in hand with this goes the need to conserve resources. Therefore, interpack will showcase sustainable processing and packaging solutions as well as digital services that help to make production processes efficient and sustainable.

Find some of the innovations to be showcased at interpack 2023 on pages 18 - 35.

As usual we feature the latest business and industry news, along with interviews, research and developments.

## Enjoy your read!

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## REX-TECHNOLOGIE OFFERS BROAD RANGE OF VACUUM FILLER & PORTIONING SYSTEMS



**UFM 300**

The various models of the UFM 300 series are the ideal forming machines for all fresh meat and convenience food products.

Optional UV sterilisation for the FB 300 conveyor belt guarantees the highest possible level of bacterial eradication thus enhancing hygiene standards, giving machine suitability in high risk environments.

The water spraying unit prevents the product sticking to the blade or conveyor belts.

### A Single-Row Dumpling Shaper - UFM 300-1

The uncomplicated and automated way to shape dumplings. The form cutter mounted directly to the conveyor belt guarantees exact portioning and the form roller beneath creates the ideal shape. The form rollers are available in various diameters for a range of dumpling sizes.

### The Industrial Dumpling Forming Solution - UFM 300-2 / 300-3 / 300-4

These provide an uncomplicated and automated way to shape dumplings.

The filling flow divider separates the portions into several rows.

### The Perfect "Home-Made" Burger - UFM 300-5

The portions are pressed into perfect "home-made" burgers via the form belt with optimal dimensional stability.

### The Universal Shaping Wizard - UFM 300-6

The UFM 300-6 is the universal solution for hamburger and dumpling production in combination with the REX filling machine.

### The Flexible Solution for Cevapcici - UFM 300-7

The UFM 300-7 is a flexible solution for Cevapcici, croquettes, sticks and all extruded and precisely portioned products.

### The Form Genius - UFM 300-8

The UFM 300-8 is the optimal solution for the production of minced meat blocks and meatloaf.

### Complete Line Solution - MC 3-3 and RHP 240

The REX mincer portion line range developed by REX is designed to meet all industrial requirements. The modular system is quickly and easily adapted to a customer's specific requirements. This makes the REX minced meat line a most cost-effective line solution, without compromising the product quality.

The final perforated disc in the MC 3-3 is adapted individually

to the end customer's mould size. Product widths range from 60 to 220 mm with a very wide selection of final granulation grades. A special final perforated disc can be used to portion multiple rows of Cevapcici on paper, for example. A very important aspect of ground meat production is the grinding process. The pregrinded product is exactly portioned by the filling machine and ground in the REX MC 3-3 meat grinder to the final grain and product size. The individual speed regulation of the grinder drive guarantees a perfect grind.

The independent servo drive of the filling mincer, set and monitored via the touchscreen controls of the filling machine, makes it possible to adjust the cutting speed appropriate to the respective portion size. The minced meat portioner RHP 240 completes the line. It is linked to the filling machine and attached to the minced meat filling mincer MC 3-3. In that way, it conveys the processed product flow and cuts portions exactly to size, resulting in a very high level of product precision.

### The Advantages at a Glance

- Equipment simple to operate
- Free-flow technology delivers a perfect product image
- Optimum product flow minimizes product warming
- Very exact portioning of +/- 1 %
- Paper dispenser for different product sizes
- Perfect, quickly and simple system synchronization when linked to a line

[www.rex-technologie.com](http://www.rex-technologie.com)

# PROVISUR CONTINUES TO BE RECOGNIZED AS ONE OF THE MOST INNOVATIVE COMPANIES

Provisur Technologies is a leading industrial food processing equipment manufacturer headquartered in Chicago, Illinois, USA, with a global network of manufacturing, sales, and service locations. The company tag line, 'Pushing Boundaries', highlights Provisur's drive to constantly develop innovative technologies for food processing machines.

## Innovation at its Core

Innovation is at the heart of what Provisur does. The company has two Innovation Centers - one in Chicago, Illinois, and another in Paris, France, where customers, in collaboration with Provisur engineers, product specialists and food scientists, can experiment with new formulations, brainstorm, and explore the processing options to develop tailored applications and solutions.

Collaboration between Provisur experts and customers is a mainstay of the innovation process. The company develops patented technology to meet the ever-changing needs for the food processing industry, often originating from creating tailored solutions that solve customer challenges.

## Making Headlines

For the second time innovations from Provisur made it all the way to the top ten of Crain's List of Chicago's Most Innovative Companies for 2022. The list is compiled by Ocean Tomo, a consultancy specialized in intellectual property (IP) and comprises twenty high-performing innovators. Rankings are based on the quality of patents awarded to each company. *"Behind each one are stories of passion, persistence and inspiration harnessed to create something new,"* says Crain's. The list recognized Provisur for its 16 patents in 2022.

## Beehive RSTD06: State of the Art Patented Technology Proves Drive for Innovation



The Beehive RSTD06, widely recognized as one of the most versatile protein separators in the industry, was featured as an example of the company's spirit of innovation. It is just one example of the over 350 patented technologies

the company has globally throughout its range of equipment.

"The versatile machine processes a wide variety of raw products including pork, chicken, beef, turkey, fish, mutton as well as fruits and vegetables and can be used to debone, desinew, and defat," says Dave Schumacher, General Manager for the Separation Business at Provisur. *"This new technology further expands the machine's application range to include high-performance beef separation as well."*

## Versatility in Action

"The core of our business is to support our customers in providing safe, affordable and high quality food products to the world," explains Brian Perkins, President of Provisur. *"The growing demand for higher sustainability on the one hand and cost efficiency on the other, can only be met by innovative ideas and technologies. Our R&D teams are constantly striving for better solutions to support objectives like less food waste, highest flexibility, less use of water and energy and long life machine components while enabling customers to produce efficiently."*

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## WITH HYGIENIC DESIGN READY FOR DAILY CLEANING DV 650 AND DV 800 FP-R FROM LEYBOLD: COMPACT, HYGIENIC, ROBUST

Vacuum systems used in food and packaging processes must contribute to safe and efficient food supply. With the new wash-down vacuum pumps DV 650 and DV 800 FP-r of the established, dry-running DRYVAC series, Leybold has developed two models for these industrial processes. Their use facilitates production, increases food safety and extends the shelf life of foodstuffs.

### Washable in any Installation Position

The new DRYVAC DV 650 and DV 800 FP-r screw vacuum pumps are characterized not only by their proven functional principle but also by their compact design. In demanding, harsh food applications, they require only a small footprint and little installation space. In addition, they can be washed down inside and outside in any installation position.

### Installation Close to the Machine Possible

In addition, their compact size and low noise level enable uncomplicated, near-machine installation in the immediate vicinity of the production line. The advantage for users: during daily cleaning of the system, the DV 650/800 FP-r pumps can be washed down with the production equipment in one process. This results in fewer system downtimes, better cycle times, less maintenance, a higher standard of hygiene and higher filling and packaging outputs.

This is a real advantage in packaging applications requiring good vacuum level (i.e. low pressure) such as skin pack for example.



### Oil-free Technology Reduces Contamination

Due to their rotor design, Leybold's robust DRYVAC models operate very energy-efficiently and at low lifetime costs. In line with the requirement profile in most applications, their use also guarantees a high pumping speed from atmospheric pressure to low pressure ranges. Thanks to modern, oil-free pump technology, the risk of contamination of pumped media with lubricants is minimal. "This requirement is of great importance across all applications in the food industry," reports Olaf Stahlschmidt, the DRYVAC product manager at Leybold.

### Equipped with Frequency Converter

The DV 650 and DV 800 FP-r models are equipped with a frequency converter for easy monitoring and control. It enables

a variety of functionalities: For example, it provides only the energy required at a time, which leads to lower energy consumption overall.

Furthermore, it offers the possibility of a definable ramp-up of the rotation frequency with which a vacuum chamber can be gently evacuated. This is particularly advantageous when processing foodstuffs that would change their shape if the pressure in the chamber were lowered too quickly, such as bakery products.

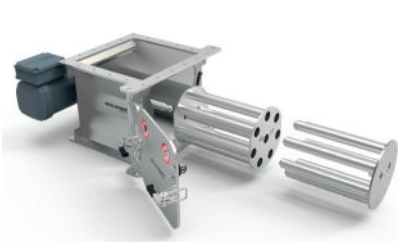
### The Advantages for Users at a Glance:

- Water cooling enables installation directly in the air-conditioned process area
- Suitable for daily wash down and flushable with liquids inside
- High tolerance to vapor, liquid slugs and soft particles thanks dry screw principle
- Easy maintenance, longer maintenance intervals
- Optional integrated, easy-to-clean stainless steel silencer.

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



## GOUDSMIT DEVELOPS 10,000 GAUSS ROTARY MAGNET SEPARATOR



*The 10,000 gauss rotating clean flow magnet filters magnetic and paramagnetic particles out of poorly flowing, greasy powders in the food, pharma and chemical industries.*

The recently developed 10,000 gauss rotating cleanflow magnet from Waalre-based Goudsmit Magnetics filters magnetic and paramagnetic particles out of poorly flowing, greasy powders in the food, pharma and chemical industries. The magnet rotor is composed of 7 strong magnet bars, equipped with Neodymium-iron-boron magnets, each with a diameter of 32 mm. This is 40% thicker than regular magnetic bars and also used by the magnet manufacturer -the only one in the market- in the static version of the cleanflow. The magnetic separator was developed in response to many customer requests. It is suitable for free-fall lines and captures both iron and AISI 304 and AISI

316 particles as small as 30 µm from cocoa or milk powder, for example. An additional advantage is the higher capacity powder that the new cleanflow magnet type can process compared to the 8- or 12-rod magnet separator. The magnetic extractor is designed to be interchangeable one-to-one with existing rotary cleanflow systems.

### Capacities

The powerful magnetic bars in the cleanflow separator filter metal particles and paramagnetic particles from fatty powders and granular products. The separator is available in 3 sizes of which the largest model is suitable for

product flows of up to 45m<sup>3</sup>/hour. The magnetic flux density of 10,000 gauss was measured on the contact surface of the bars. The maximum working and product temperature is 140°C, the minimum and maximum ambient temperature: -20°C to 40°C. The disadvantage of greasy (milk) powder is that this product does not flow well; the reason why the magnetic bars rotate in the product flow. This counteracts bridge formation and material accumulation and ensures optimal magnetic contact to capture metal contamination. The result is a high degree of separation and a clean product.

### Cleaning

During the manual cleaning cycle, the operator removes the rotor from the housing and pulls the magnetic bars out of the extractor, after which the metal particles are loosened and can be disposed of. The company has also developed a special cleaner system, which allows easy and hygienic cleaning of the extractor.

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

Interpack 2023, 04 - 10 May, Düsseldorf, Germany

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## JEROS - WASHERS WITH HIGH HYGIENE STANDARDS

For 60 years, JEROS has ensured high standards of hygiene, consistent wash performance and improved workflow with your environmentally friendly and fully automatic industrial washers. This is fully in evidence at Stryhns Gruppen in Gråsten, Denmark, where job satisfaction shines through.

A demanding environment. That is how Per Stenger, technical manager at Stryhns Gruppen in Gråsten, Denmark, describes the conditions in the washing hall, where the spray water creates high humidity, making demands of the washer:

*“Previously we had a traditional, manual industrial machine, which was nowhere near as efficient or environmentally friendly. I had investigated various suppliers without any luck, so when a colleague showed me their machine from JEROS, I immediately saw that was what we needed,”* says Per Stenger. He continues:

*“Now we get the right chemical dosing and a disinfecting end rinse, so we ensure hygiene and also save on water and time. The quality is consistent, and JEROS’s machines are the only ones on the market that can tolerate the environment in which we work.”*

Stryhns in Gråsten has the electropolished model 8160 in stainless steel, with the operating panel located in a separate IP65 fused box on the wall, so the machine can withstand the damp environment.

### Improved Workflow

From light lids to heavy machine components. Per Stenger explains that there is a lot of variation in the highly complex equipment, but the complexity no longer presents a challenge.

*“The machine can be set according to the weight of the items, which means that small items do not*



*get damaged or stuck during washing. The machine simply does its job, so we don’t really see the technical department.”*

This ensures an optimal working process that can keep up with the production flow, but the improved ergonomic conditions also increase job satisfaction.

*“The specially designed trolleys for each individual line in the washing hall increase efficiency considerably. Previously we put everything in a single box, but now we can systematically put things on the trolley and very quickly see whether we’re missing anything,”* explains Per Stenger. He continues:

*“Every day we clean pipes with bends and components of processing machines. They can now be washed both externally and internally via nozzles in the rack, which automatically connects to the washing and rinsing water when the trolley is pushed in.”*

Among other things, this means that the components do not require a lot of moving, and in this way JEROS has minimised the employees’ manual processes and the risk of items being damaged or lost during cleaning.

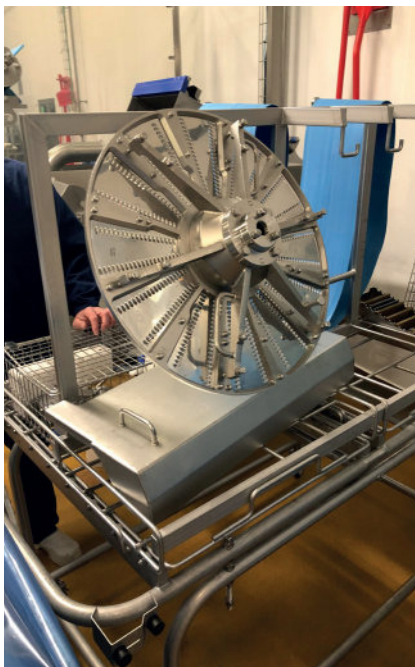


## Minimised Wash Downtime

An automated washing process ensures low consumption of water, chemicals and electricity, but also reduces daily wash downtime. This is vital in a competitive working day with high production levels:

*"The capacity of the old machine was limited, so we weren't able to use it for all equipment. That meant we spent a lot of unnecessary time on manual washing. JEROS's machine has a larger washing compartment with an open front, so we can handle more equipment in a single cycle," explains Per Stenger.*

*"This is unique for JEROS, and combined with a minimal downtime the effect is significant. A wash takes three minutes, while complex components are done in six to eight minutes. You couldn't possibly do it quicker by hand if you wanted to ensure consistent hygiene performance," says Per Stenger.*















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## Fully Automatic Washing Solution

Hygiene and consistent results are vital. That is precisely why Per Stenger is excited about the JEROS, which guarantees high levels of performance with every wash. The washing process is carried out at 52°C, and an end rinse at 85°C ensures that the items are disinfected. This eliminates listeria and salmonella, while the fully automatic washing solution also removes the risk of cross-contamination.

The phasing out of manual washing has also reduced wastewater. The machine uses just 16 litres of water per wash, and the automatic chemical dosing guarantees a correct quantity of soap:

*"Obviously it's important that the machine is environmentally friendly. We want to maintain sustainable production, with minimal consumption of chemicals in the washing process," says Per Stenger.*

## Simple Cleaning

Per Stenger describes the 8160 as "a small, smart machine", and flexible washers that can be installed in awkward spaces without presenting a challenge to daily cleaning is precisely what JEROS is known for:

*"The washer is simple to clean; if you remove the basket, you can get at all the filters. JEROS has given us optimal ergonomic conditions, consistent hygiene and a high level of job satisfaction. I'm delighted," he concludes.*

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

# MEAT PACKAGING SUSTAINABILITY PROBLEMS HAVE FLEXIBLE SOLUTIONS

By Paul McKeown, Group Sales Director at Parkside

**S**ustainability is the key megatrend of the modern era, and it affects every industry. The meat industry is no exception. In fact, it's under a more intense spotlight than many other sectors given the carbon footprint of meat production.

Novel protein products that produce significantly fewer emissions and farming techniques like holistic grazing are growing more sophisticated by the day and are certainly playing their part in guiding the meat industry to a more sustainable future. But the way the industry packs meat as it moves from farm - or, at some point in the future, from lab - to fork also has a significant role to play.

## Balancing Shelf Life and Sustainability

One of the key challenges when developing sustainable packaging for meat and protein products is the balance between product protection and the use of sustainable materials. A paper bag made from recycled plant fibres is sustainable, yes - but hardly a practical solution for protecting and preserving meat as it makes its way onto store shelves.

This is an important topic, as food waste has a devastating impact on climate change. The UNEP Food Waste Index Report<sup>1</sup> found that almost a billion tonnes of food



are globally wasted every year. The carbon footprint of this waste is estimated to make up around 8-10% of all global greenhouse gas emissions. When compared to the carbon footprint of plastics - which contribute to 3.4% of total greenhouse gas emissions - the severity of the food waste crisis becomes clear.

The core function of packaging is to prevent waste by protecting products through the supply chain, rather than just being deemed waste itself. The meat industry must not lose sight of this in its quest to develop more sustainable solutions. While 'plastic-free' claims make for a compelling consumer marketing message, often a minimal plastic film or barrier coating must be used to provide the required level of shelf-life performance through the

supply chain. Well-designed flexible packaging solutions can provide the right balance of sustainability through material reduction ('lightweighting') and layers of polymer, which can include recycled, recyclable, or compostable plastics depending on application and product preservation performance.

Flexible packaging also comes with another benefit that prolongs the shelf life of protein products - it can be easily reclosed once opened. This allows consumers to preserve cooked meats, snacks like sausage rolls, and convenience foods. At Parkside, we have developed the ParkScribe™ laser scoring system to provide the optimal solution for resealing lidding films.

ParkScribe can cut through individual layers of polymer with micron-level precision. This

<sup>1</sup> <https://www.unep.org/resources/report/unep-food-waste-index-report-2021>

<sup>2</sup> <https://www.forbes.com/sites/gregpetro/2022/03/11/consumers-demand-sustainable-products-and-shopping-formats/?sh=156297ee6a06>

enables it to cut resealable, self-adhering openings into lidding films, meaning those films can be reattached to the packaging. This improves recyclability, which in turn improves sustainability without compromising on pack performance.

### Sustainability and Desirability are Key

Implementing flexible packaging into a product range needs to be considered carefully. A recent headline-grabbing example of this point can be seen in Sainsbury's decision to switch its mince packaging from rPET plastic trays and complementary lidding films to vacuum-packed flexible packaging.

In theory, the idea would mean significantly less plastic being consumed (at least 55% less, according to Sainsbury's) with no

impact on product quality. And, given survey after survey shows consumers want more sustainable packaging - with some reporting a majority of consumers are willing to pay more for it<sup>2</sup> - it seemed like the change was a sure-fire success.

In practice, the execution of that change proved divisive at best. The utilitarian clear plastic minced beef pack offered an on-shelf experience that many consumers found unpleasant, with widespread consumer dissatisfaction pushing Sainsbury's laudable sustainability agenda into the headlines, which was then compounded by a reported lack of ability to recycle the pack post-consumer-use, which served to enflame the situation. The story serves to illustrate the importance that packaging must be desirable, as well as practical and sustainable. Unsold food -

no matter how sustainably it is packed - only creates more waste.

Vacuum seal packaging (VSP) is a vital tool in combating food waste, as it considerably extends the shelf life of the product. However, it must be implemented in a considered fashion - while it may work well for convenience food, steaks, and meat slices, it may not be appropriate for every meat packaging application. While the Sainsbury's flexible packs seem an unpopular application, VSP could have been used with an easily recyclable monopolymer lidding film and a fiber-based or rPET tray to achieve more appealing results.

Transitioning towards light weight flexible packaging solutions could make a significant impact on the meat industry's environmental impact as flexible packaging is



## Packaged products using microwave technology solutions

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inherently a lighter weight, more resource-efficient format than traditional trays, allowing for optimised logistics. The Sainsbury's story should not be viewed as a failed experiment; rather, it should prove that meat brands, packers, and producers must consider whether their solution ticks every box in terms of aesthetic appeal, product protection performance, shelf life and all-important sustainability.

For an example of what is possible with flexible packaging when an innovative, considered approach is taken, look at the freezer-ready paper pack we developed at Parkside for our customer Iceland. This pack, designed to contain frozen seafood, overcame several challenges - the primary one being that paper is naturally unsuited to chilled, humid environments. Even if it is lined with a moisture barrier, the formation of ice crystals on the pack can degrade the barrier coating, causing the pack to disintegrate as it thaws and refreezes throughout the supply chain.

To solve this problem, Parkside's innovation team utilised another barrier coating that prevented ice crystals from forming on the pack. This helped preserve the integrity of the barrier coatings without impeding the operational efficiency of the pack, meaning it could cope with a rigorous modern filling and sealing line.

The end result was an aesthetically appealing pack that considered every aspect of the customer's needs, while also being fully recyclable in domestic paper waste streams - every box was ticked.

### Compostable solution to recycling problems

The balancing act between plastic reduction and product performance becomes much easier to execute once recycling is added into the equation. However, the challenge lies in developing solutions that are compatible with today's recycling infrastructure, which is of varying degrees of maturity in different countries and local authorities.

It means food producers and packers must make packaging choices that consider the limitations of the recycling infrastructure in the target market. This may mean utilising single polymer ('monopolymer') plastics in packaging, for example laminating a high-density PE with a low-density PE to achieve different pack performance characteristics. As the construction of the pack is based on the same polymer type, the layers do not need to be separated during recycling making the packs more suitable for single material stream recycling facilities. Alternatively, it can mean using widely-recycled materials like PET and - increasingly - PP.

As a viable further alternative to developing recyclable flexible packaging solutions is to consider the use of compostable materials in the finished pack. Thanks to advances in material technology, these packs can offer a comparable performance to plastic trays for some meat applications. After many years of refining a cellulose-based laminate, we

developed the Park2Nature™ material. It is TÜV-certified as home compostable, meaning it breaks down within 26 weeks in normal composting conditions or within 16 weeks in an industrial composting facility, if available.

Compostable packaging components should not enter the waste or recycling stream at all - instead, they are designed to break down in compost heaps. To be certified as home compostable, a pack needs to break down quickly in regular composting conditions at ambient temperatures. Park2Nature falls into this category, breaking down into nothing but water, carbon dioxide, and biomass when exposed to the microbes present in regular compost heaps.

This enables consumers to bypass muddled recycling infrastructure entirely, disposing of food packaging in the same way they would garden waste. While it requires careful consideration on a case-by-case basis to implement properly, compostable material can provide the foundation for future-proof, high-performance, and sustainable meat packaging solutions.

Whether looking to lower the carbon footprint of packaging through a reduction in material use, utilising innovative plastic monopolymer solutions for recyclability gains or considering the move to compostable packaging, all of these developments represent the kind of innovation required to make a huge impact on the sustainability of the meat industry. By revolutionising its packaging with more sustainable flexible solutions, the meat industry can make a significant difference in both the short- and long-term.

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

## FORGING AHEAD: AMB PACKAGING INNOVATIONS THAT BOOST FOOD SAFETY, RECYCLABILITY AND THE CIRCULAR ECONOMY



Swan Cecatto, Sustainability Manager at AMB

*Food packaging specialist, AMB Spa, headquartered in San Daniele del Friuli, Italy, has established a reputation as one of the leading international suppliers of rigid and flexible films with a firm foothold in sustainability. The company currently has five locations in Europe and is unique in offering an end-to-end process: from packaging design to toolmaking and prototype production to film production, printing and lamination. With its commitment to research*

*and innovation and its all-in-one-place approach, AMB has long been a pioneer of sustainability. At Interpack 2023 from 4-10 May in Duesseldorf, Germany, the company will present its latest innovations in this field.*

*We spoke to Swan Cecatto, Sustainability Manager at AMB, about what makes AMB different, current challenges and the growing importance of innovation to find sustainable solutions.*

Thank you for this interview, Swan Cecatto. Firstly, could you tell us more about AMB's presence at Interpack?

Of course. Interpack is one of the largest and most significant trade shows for us in the packaging sector. We are excited to present our full range eco-friendly mono films AMB TotalMono PET and AMB Mono PE Flowpack, as well as our solution for tray-to-tray recycling AMB Tray Revive. AMB state of the art packaging solutions are found in the dairy and food markets as well as the pharmaceutical industry. This year two of interpack's designated Hot Topics, the circular economy and resource management, are topics that are of utmost importance to us at AMB and to which we have devoted substantial amounts of

our research and development efforts. This is why our company-wide drive for sustainability is making big strides towards closing the loop of the circular economy.

How does AMB approach innovation and sustainability? What systems do you have in place?

As you know, we have an all-in-one-place approach, and this allows us to be very holistic. For AMB, innovation begins by listening to our customers, their clients and the consumer as well as taking into account current and upcoming national and EU legislation. Our in-depth customer relations allow us to shape ideas that have in recent years revolved more and more around concerns for the environment and our planet. After



Eco-friendly water-based printing technology

this, ideas are taken through an internal stage-gate process that guides the development of new products step-by-step and allows us to maximise sustainability at every stage. It is also important to note that during this process we collaborate closely with all our partners from the suppliers to the recyclers. All our solutions are centred around ensuring food safety, reducing food waste, and enhancing sustainability. Our goal

is to drive the recyclability of packaging, stop the continuously growing generation of packaging waste, and minimise food waste.

**One of this year's Hot Topics at Interpack is the circular economy. What is AMB doing in this direction?**

The European Green Deal aims to boost the efficient use of resources by moving to a clean and circular economy. Circularity is in our mind-set: one important step on this path was the development of recyclable packaging. Being proactive in packaging circularity is crucial. With our tray-to-tray recycling initiative, the AMB Tray Revive, develop the PET trays recyclability creating a demand for this value secondary raw material. This project, which we developed as part of our overall sustainability strategy, is very successful. It utilises post-consumer trays to create films which are then used to produce form fill seal packs and new thermoformed trays. It was launched in collaboration with an Italian recycler. The post consumed material is broken down into flakes which are then used to manufacture tray-to-tray products. This means that our customers are able to offer their customers guarantees of recyclability and sustainability - an important factor when appealing to today's eco-conscious consumers and avoid greenwashing claims.

**How does PET reflect AMB's commitment to sustainability?**

According to the EU PPWR proposal, packaging needs to be fully designed for recycling by 2030 and by 2035 recycled at scale, means be converted into recycled raw materials with sufficient quality to replace raw materials of virgin origin. At AMB we have forged ahead to develop mono PET solutions that are compliant with these guidelines as of today. Our AMB Mono PET solutions boost sustainability in many different ways. By downgauging we have developed lower thicknesses that need less plastic in production, which means that more product can be manufactured with the same amount of material. We are not just fully committed to the circular economy but also to minimising the overall use of resources and the production of waste. Our LCA studies and EPD



*AMB TotalMono PET top and bottom film solutions, high barrier, and tear resistance during processing*

communications have highlight that move to mono PET high barrier could led to reduction of GWP fossil up to 20%. Moreover, our PET mono high barrier obtained the PETCORE endorsement will not have a negative influence on current EU trays recyclability stream. Resource management, another Hot Topic at this year's Interpack, has been a driver of our sustainability strategy for many years. We are pioneers in the use of recycled PET and in 2021 thanks the use of recycled inputs materials we avoided more than 103K tonnesCO2eq emission.

**How does RPET impact food safety?**

At AMB we ensure the quality of our rPET products thanks our quality system management and by implementing super-cleaning processes that decontaminate recycled materials and that meets the requirements of the new regulation on recycled plastic for food contact application.

Our products preserve food in an extremely secure and safe manner throughout the food chain. They meet the highest standards in food protection and have qualities that lead to a significant extension of shelf life and, as a result, a reduction in food waste. We have measured our food safety culture among our employees and thanks to continuous training activities, 95% of our employees obtained a great/high level.





## Can you give us more examples of AMB's holistic approach to sustainability?

We are conscious that to develop a sustainable packaging is crucial to have a comprehensive view of the impacts across the industry value chain. Which is why we do not stop our developments in eco-design of our products, but we get act in effectively recycling them and analyse their impacts throughout their entire lifecycle. Climate change is one of the most pervasive and threatening issues of our time. In 2023 we started to evaluate our carbon footprint following ISO 14064 that is a valuable first step towards making quantifiable emission reduction.

Apart from the points I have already mentioned, we strive to boost sustainability in all divisions of our company. Even in the tooling division. Here we encourage the use of materials that have a lower environmental impact to allow for sustainable waste management. Most of the materials used in the tooling processes are reusable. Steel and aluminium can be recycled indefinitely. They are never fully used up and are therefore in line with the principles of circular economy. Any residues are sent to special processing plants where they can be retransformed through recycling processes. A further example is provided

by our printing unit which uses water-based printing instead of solvents good for the environment and good for the safety of our employees. As I mentioned, we make sure that all new projects entering our stage-gate process start with sustainability in mind. Our goal is to have 100% of our innovation projects firmly rooted in sustainability by 2025 and to guarantee at least 30% of recycled content by this time.

## What challenges is AMB facing?

One of our challenges is complying with the European Green Deal which has defined a very clear path for the packaging industry - by 2035 packaging must be recycled at scale. Like all companies in the packaging sector, AMB has been strongly impacted by this target. Due to our own belief in circularity and recyclability we have become pioneers in this field. We will continue to press ahead to establish circularity as well eco-processes and eco-design in all our divisions. I'd like to add that this change is also driven by retailers and consumers who are demanding more sustainable products, and is accompanied by international organisations, policy makers and NGOs, all of whom are striving to reach international sustainability targets. At AMB we consider ourselves to be at the cutting edge of an unstoppable movement.



*AMB sustainability report describes all pillars in environmental, social and governance (ESG) areas*

## How will AMB's philosophy aid you in this process?

Acting ethically and with integrity, respecting people and caring for the planet has always been at the heart of our decisions. We act with sustainability in mind because we believe it is the right thing to do and we want to be not just a viewer but being an advocate for change. We are committed to providing packaging that guarantees food safety and that underlines our commitment to eco-design, circularity, and intelligent resource management. In our sustainability report we describe all our pillars in environmental, social and governance (ESG) areas.

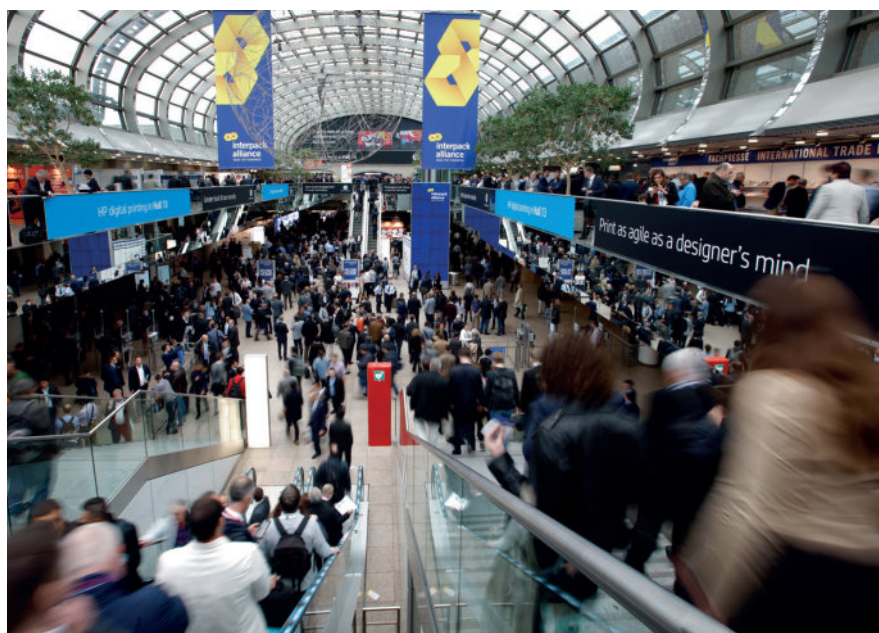
[www.ambpackaging.com](http://www.ambpackaging.com)

# INTERPACK 2023 - THE COUNTDOWN IS ON!

'We are ready', says Thomas Dohse, Director of interpack. 'All our exhibitors and partners are ready to go and we look forward to providing the industry with another great trade fair.' interpack is an important building block in the innovation cycle of the packaging and related process industries. After a six-year break, numerous innovations for all user areas will be on display: Food, beverages, confectionery and bakery products, pharmaceuticals, cosmetics, non-food and industrial goods. Because requirements and framework conditions are constantly changing, the focus is on digital technologies and sustainable products and processes. 'We notice very clearly the great determination of the industry to actively shape this transformation process', Dohse continues. From 4 to 10 May, visitors can therefore expect numerous debuts in the 18 fully booked exhibition halls and fascinating solutions from the world of packaging.

## Companies from all Over the World

From Europe to Asia, from Africa to America to Australia: Exhibitors at interpack 2023 come from all five continents. In total, over 60 countries will be represented. This makes interpack the best place to meet potential partners and customers and to expand international business. The top exhibiting nations are Germany, Italy, China, Turkey, India, the Netherlands, the USA, France, Spain, Switzerland and the United Kingdom. The largest areas are occupied by key players such as IMA Industria Macchine, Coesia



Group, Syntegon Technology, Marchesini Group, Sollich, Duravant, Aasted ApS, MULTIVAC, OPTIMA packaging group and Ishida Europe Limited. A total of over 2,700 exhibitors are taking part.

## Record Number of Exhibitors from the Packaging Sector

With over 1,000 exhibitors, the packaging sector at interpack is a mega trade fair in its own right. Never before have so many companies showcased their products in Halls 7 and 7a, 8a, 9 and 10 with a focus on packaging materials, packaging supplies and packaging aids. All common materials and products of the packaging market will be presented here. As a cross-sectional area for all visitor target groups, these halls and storeys, six in total, are of central importance and reflect the innovative strength of the industry with numerous unveilings of new products. A lot is happening, especially with

sustainable materials and renewable raw materials. For example, bioplastics that are biodegradable or biobased, such as those made from sugar cane, palm leaves or corn, can be seen at the trade fair.

Furthermore, especially in Halls 8a and 9, in addition to solutions made of paper, cardboard and paperboard, there will be new, sustainable materials in numerous variants with a focus on sustainability. Plastic packaging, which has the largest share of the market, is still of great importance, especially for product safety and shelf life. Here, too, there are new approaches towards a circular economy, for example with recyclable films, monomaterial solutions and the use of recyclates or reusable packaging. And the increasing digitalisation of the industry is also leading to new developments in the packaging sector. Some examples for this are digital labels, smart packaging and packaging with QR codes.

## Four Hot Topics Illustrate the Trends

The developments in the packaging sector illustrate which issues are at the forefront for the processing and packaging industry and its customers as a whole. Megatrends such as sustainability and digitalisation, numerous economic and ecological, but also political and social changes and challenges are of concern for companies and provide a boost to innovation at this year's interpack.

The circular economy will be a top issue: It seems to be a simple model, but is also all-encompassing and poses major challenges in many areas. In the age of climate change, the important thing is to produce as little unrecyclable waste as possible. Hand in hand with this goes the need to conserve resources. Therefore, interpack will showcase sustainable processing and packaging solutions as well as

digital services that help to make production processes efficient and sustainable. For example, the focus is on reducing the carbon footprint of packaging throughout the value chain, improving energy efficiency and the increasing importance of reusable materials, which will help the industry to make optimal use of resources.

When it comes to transformation processes, little can be done without digital technologies. Big data, augmented reality and remote machine maintenance have long since found their way into assembly shops and machine fleets. For example, the Fraunhofer Institute for Process Engineering and Packaging will be providing information on digital training systems based on virtual reality in the VDMA Technology Lounge in Hall 4. And technologies such as Holy Grail 2.0, RFID, NFC or augmented reality will also increase in the future.

The fourth hot topic at interpack is product safety, one of the core



tasks of packaging. The industry is already making an important contribution to reducing food waste. Digital technologies are key in this regard.

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

## MODERN PASTEURISATION AND DECONTAMINATION OF PACKAGED FOOD WITH INNOVATIVE MICROWAVE AND RADIO FREQUENCY SOLUTIONS FROM SAIREM

The specialist for industrial high-tech microwave and radio frequency applications SAIREM, based in Lyon, France, will be demonstrating at Interpack 2023 how environmentally friendly and reliable pasteurisation and decontamination of packaged food is possible. Thanks to sophisticated microwave (MW) and radio frequency (RF) technology, highly efficient processes in pasteurisation and decontamination are

guaranteed and food safety is assured. SAIREM's applications stand for particularly gentle and at the same time reliable processes, first-class quality as well as optimally extended shelf life of the products.

### **Pasteurisation: Fast, Gentle, Energy-Saving**

With SAIREM's state-of-the-art modular systems, the required degree of pasteurisation for food

products can be achieved in just a few minutes. For this purpose, a new generation of pasteurisation tunnels was specially developed in cooperation with the French institute CTCPA. In these systems, the pasteurisation process can be carried out at a maximum temperature of 95 to 100 °C, depending on the product selection and the desired pasteurisation stage. The new tunnel systems from SAIREM enable gentle

pasteurisation of ready meals and menu components in a wide variety of packaging materials such as plastic, glass, paper as well as thermoformed packaging or pouches - also in different sizes. All in all, the microwave pasteurisation systems include tunnels for ready meals as well as inline heaters for pumpable products such as different fillings and jams. The compact systems operate 100 % electrically and achieve significant energy savings compared to conventional processes.

**Decontamination: Effective and Gentle Heat Treatment for Packed or Loose Products with Low Water Content**

The decontamination of cereals, grains, plants, powders and ingredients with MW and RF technology reliably inactivates salmonella and drastically reduces mould, ensuring a longer shelf life. SAIREM's systems provide uniform heating that can be precisely controlled. The temperature, the intensity of the MW or RF field and the process duration are individually adjusted to the product and the germs to be eliminated.

Decontamination takes place in a reproducible and fully traceable process that is approved by most international organic certification bodies. Users can choose between different batch or tunnel solutions for SAIREM's systems. The fully automated process can be easily integrated into existing lines, being fully Industry 4.0 compatible.

**Volumetric Heating Technology - Uniform and Effective**

SAIREM's MW and RF technology provides volumetric heating and is therefore particularly gentle: in contrast to conventional processes, which heat a product by conduction from the outside to the inside, here the thermal process takes place homogeneously. Nevertheless, the required degree of pasteurisation or reliable decontamination can be achieved within the shortest treatment time. This protects the food, preserves freshness and quality, and maintains the organoleptic properties. The main difference between MW and RF technology is the wavelength, which affects the energy transferred to the product which is to be treated. RF technology with a

longer wavelength can particularly be used effectively for products with regular size and shape and is well suited for more delicate products due to slower heating. MW technology is excellent for treating products with an irregular shape and is highly efficient for pasteurising liquid products, among other things.



*"SAIREM has extensive experience in MW and RF technologies and uses the advantages of each to tailor the process to the individual product. Both processes equally preserve the colour, texture and taste of the treated food products and thus stand for first-class quality and long shelf life",* explains Christina Frohm Kramer, Business Development Manager - Food, at SAIREM.

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

 **Hall 5, Stand E26**

**SAVING ENERGY WITH SUSTAINABLE VACUUM SOLUTIONS**

The topic of energy saving will be more important than ever in 2023. This also applies to the packaging market. Busch Vacuum Solutions will showcase its latest vacuum solution, COBRA DX. For the first time: energy-efficient vacuum generation for vacuum packaging.

The latest screw vacuum pump from Busch, COBRA DX, scores highly in terms of user-friendliness and cost savings. Thanks to Plug&Pump, the vacuum pumps are ready for immediate use. Settings can be easily controlled via the integrated touchpad. Thanks to

the intelligent variable speed drive (VSD), an optimal vacuum level can always be achieved, reducing energy consumption and operating costs to a minimum.

COBRA DX is a dry vacuum pump with state-of-the-art screw vacuum

technology for excellent running characteristics, high vapor and particle tolerance, and extremely energy-efficient operation.

**Energy-Saving, User-Friendly, Cost-Conscious**

Currently, the new COBRA DX comes in two sizes, and thanks to its VSD, it covers a pumping speed range of up to 950 m<sup>3</sup> per hour and achieves an ultimate pressure of up to 0.01 hPa (mbar).

All operating data is constantly recorded and saved. This makes COBRA DX ideal for a wide range of applications in the packaging industry, such as thermoforming packaging machines, tray sealers, and modified atmosphere packaging (MAP) applications. In addition, COBRA DX can be used as an excellent centerpiece for building a modular central vacuum system.

Busch is showcasing another dry vacuum pump with integrated intelligent control, MINK MV 0040, which has proven itself in particular for tubular bag packaging machines and pick-and-place applications. The MINK MV 0040 is especially suitable for these industries due to its energy efficiency, nearly maintenance-free operation, and demand-driven control. The VSD with PID controller reduces energy consumption and operating costs to a minimum.

Further savings can be achieved with OTTO. OTTO is a digital service innovation from Busch that can reduce downtime in manufacturing and improve process safety by intelligently monitoring vacuum pumps.

In addition to the latest dry COBRA vacuum technology and the tried-and-tested MINK claw vacuum pump, Busch will also showcase

the robust TYR rotary lobe blower. TYR is particularly well-suited for the centralization of entire packaging lines, such as vacuum belts, carton erectors, and handling small packaging, such as blister packs.



In addition to modular solutions, Busch also offers customized vacuum systems. These are precisely designed to meet the needs of customers. Combined with tailor-made service packages complemented by digital services from Busch, an efficient and secure vacuum supply is guaranteed.

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

 **Hall 4, Stand D40**

**Meet us at Interpack 2023**

**Learn more about**

- Our new award-winning multihead weigher for extremely sticky products
- Our efficient multihead weigher renowned for the patented screw feeding system
- Our Multibatcher, an innovative food weighing solution, which reduces giveaway and labour costs when it comes to box packing

Let's meet at Interpack - hall 5, stand D19



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## COMPLETE SOLUTIONS FROM PORTIONING TO LOADING

VEMAG Maschinenbau GmbH, Verden/Aller, is represented at Interpack with complete solutions from portioning to loading in a wide range of packaging formats.

VEMAG Maschinenbau GmbH from Verden/Aller (Germany) is primarily known for perfect portioning technology. However, completely new facets and solutions from portioning to loading into a wide variety of packaging will be presented at interpack, the leading international trade fair for packaging technology from May 4 to 10, 2023 in Düsseldorf (Germany), in Hall 4, Stand C55. True to the motto "Boundless Product Passion", the packaging solutions increase product safety on the one hand and production efficiency on the other.

There are hardly any limits to the range of applications. Minced meat, burgers, sausages, convenience products, baked goods, confectionery, marzipan, plant-based foods, dairy products, pet food, kneading mass, cosmetics or pharmaceutical products can be portioned and perfectly



Whether minced meat, burgers, vegan and vegetarian foods, sausages or convenience products - VEMAG offers total solutions from portioning to loading in a wide range of packaging formats

packaged. VEMAG offers a wide variety of complete solutions for viscous, flowable or chunky products as well as doughs and masses. The focus is always on the end product and its high quality. The fully automated, precise, weight-accurate and gentle loading and filling or dosing of products can take place, for example, in cups, jars, trays, cans, thermoformers, flow wrappers or pouches.

Moreover, fully automatic packaging lines such as tray sealers or thermoforming packaging machines can be loaded. Here, too, VEMAG offers different solutions. For example, the multiloaders and conveyor belts make it possible to discharge single-lane portioned products in multiple lanes in the transport direction of the packaging machine. Different product groupings when depositing in trays/deep-drawing machines - e.g. side by side, shingled or stacked - are possible and ensure an attractive depositing pattern.

### Experience it Live

At the exhibition, VEMAG will show customized solutions such as the optimized tray denester FD316 for the flexible separation and depositing of trays of various formats. The stand-alone denester can be easily integrated into existing lines from a wide range of suppliers. Efficiency and flexibility in production are thus increased. It is possible to reliably separate packaging made of aluminum or plastic in different formats. A quick format change is possible by exchanging the destacking



The VEMAG Customer Center offers space for development of new products and manufacturing processes as well as the possibility of live demonstrations of machines

cassette. A buffer belt is also offered as an option to keep several tray stacks on hand.

Precise weight portioning, steady forming, exact filling and loading of products into the packaging, all from a single source and in a single production process - VEMAG offers safe process and packaging solutions "Made in Verden". In close cooperation with its customers, the company always aims to understand the requirements of the various markets flexibly and quickly, to implement them in functions and machines, and to develop them further for the benefit of the customer.

Those interested can also make use of the VEMAG customer center in Verden (Germany). It provides space for development of new products and manufacturing processes. In exclusive online live sessions, machine demonstrations and acceptance tests (including factory acceptance test) are also carried out in live video chat with experts.

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



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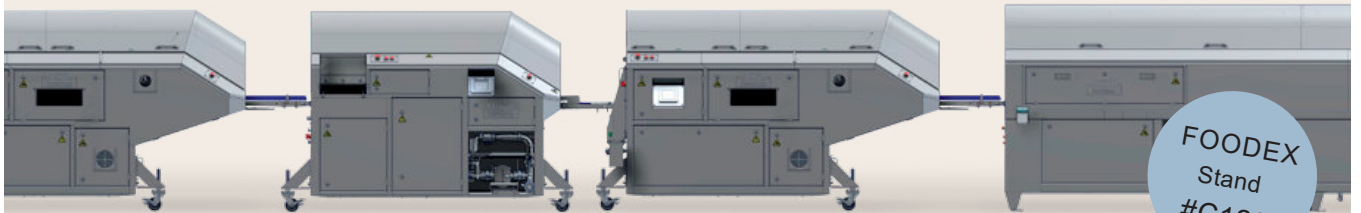
**BatterPro**

BREAD

**SuperFlex**

FRY

**ProTherm**



FOODEX  
Stand  
#C120

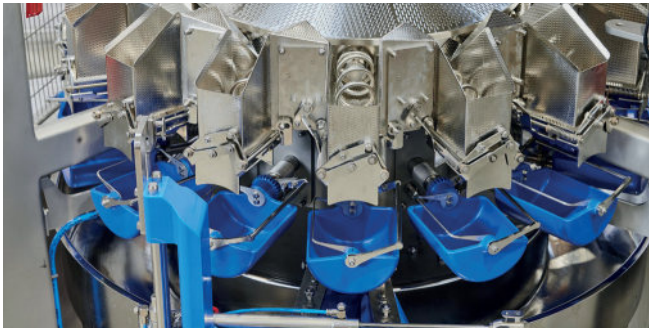
Headquarter Location:  
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+1.417.831.2816

**NOTHUM**  
FOOD PROCESSING SYSTEMS

Secondary Location:  
Oirschot, Netherlands  
+31.85.013.6861

## WEIGHING AND PACKING OF HIGHLY STICKY PRODUCTS IN READY-TO-EAT MEALS

Cabinplant A/S, a pioneer in the food industry, presents award-winning multi-head weighing and packing solutions for ready-to-eat meals with highly sticky ingredients at Interpack 2023. Sticky ingredients are a major challenge for the automatic production of ready-to-eat meals.



*Nothing sticks and stops with Cabinplant's MHW SF Extreme – ideal for portioning fixed-weight ready-to-eat meals and processing of small batches with frequent changes in recipes and portion sizes.*

### Highlights at Interpack 2023

- New award-winning multi-head weigher: The fully automatic MHW Extreme facilitates weighing and packing of highly sticky products, ideal for fixed weight labelling without costly giveaway
- The MHW with screw feeding facilitates multiple weighing of ingredients like sticky poultry meat of uneven weight. The system can be set to work with one, two or multiple weighing targets of products in the packages.
- Multibatcher - innovative food weighing technology reduces giveaway and labour costs when it comes to weighing/batching sizable portions

### Fully Automatic MHW SF Extreme: Weighing and Packing of Highly Sticky Products

The Multihead Weigher SF Extreme solves one of the industry's major challenges in being able to automate the production of ready-to-eat meals containing sticky ingredients. It features an innovative scraper/weighing pan design and a revised processing solution for easy filling and packing of the food into trays.

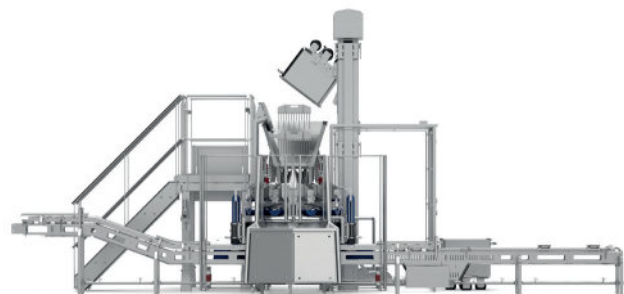
The SF Extreme automates the dosing and packing of fixed-weight portioning of products like pasta salads with sticky ingredients such as diced vegetables, poultry meat, onion rings, rice, pasta, tuna fish, mayonnaise, yoghurt, etc. The solution has remarkably high accuracy, thus minimizing giveaway. The changeover of the SF Extreme is down to 5-10 minutes, allowing the production of small batches with frequent changes in recipes and portion sizes. Further, automatic dosing means that ingredients are placed precisely when packaged. In this way, the product is presented better and more uniformly to the consumer.

Earlier this year, the solution won the prestigious innovation award, Trophées de l'Innovation, at the French CFIA food technology exhibition and is now presented for the first time at Interpack.

### Boosting Productivity, Reducing Labour Costs

The MHW SF Extreme reduces manpower by 60-70 per cent due to the high degree of automation, and thanks to the compact design it fits into most existing production lines.

- The MHW SF Extreme brings a significant productivity boost to automated plants for fixed-weight products containing highly sticky product mixes. It is a breakthrough for fully automated production of ready-to-eat meals with sticky ingredients, eliminating a lot of manual processes, states Michael Falck Schmidt, Global Sales Director at Cabinplant, and he continues:
  - The solution addresses the booming convenience food market and the retail industry's demand for fixed-priced and portioned products. It reduces giveaways and optimises the consumption of basic ingredients that are becoming more and more expensive.







*The Cabinplant MHW with screw feeding handles simultaneous weighing and packaging of ingredients like sticky poultry meat of uneven weight. It can be set to work with one, two or multiple weighing targets of products in the packages.*

## Multiple Target Weighing Adds Flexibility

The Cabinplant MHW with the patented screw feeding functionality facilitates single or multiple weighing and targets problems with ingredients of uneven weight. Cabinplant's multiple target system can be set to work with one, two or multiple weighing targets of products in the finished packages.

For example, the solution simultaneously can weigh 500 grams and 1,5 kg packages. This also helps reduce giveaway dramatically because products that do not fit in the size of small packages are instead used for big portions, offering greater flexibility than before.

## Cabinplant Multibatcher: Box Packing in the Fast Lane

The Multibatcher is an automatic high-speed solution for weighing and packing of sizable portions up to 35 kg. It is the first batcher based on the combinatorial weighing principle and an alternative to conventional batching with high tolerances and manual processes. The Multibatcher has the potential to reduce both giveaway and costs through precision and speed.

The raw materials are weighed into partial portions in pans which are combined into batches with giveaway down to 0.25-0.7%. This is a remarkably prominent level of accuracy compared to solutions like batching based on the top-up principle.

- The Multibatcher provides significant savings. The giveaway can be reduced with up to 900 kg of meat daily for a processing line running two shifts and based on 100 grams or less giveaway per portion, says Michael Falck Schmidt, Global Sales Director at Cabinplant.

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*The Multibatcher is an automatic high-speed weighing and batching solution for large portions up to 35 kg, which reduces giveaway and labour costs significantly.*

The Multibatcher processes up to 15 batches of 0.5-35 kg per minute. The solution is tailor-made and can be fitted into existing packing lines or used as a stand-alone unit. The solution is suitable for large high-value products, including meat, meat by-products, and poultry products where the reduction of giveaway will have a noticeable impact on earnings.

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



**Hall 5, Stand D19**

# SUSTAINABILITY EXPERT AMB TO SHOWCASE ECO-FRIENDLY PACKAGING INNOVATIONS: TRAYREVIVE, TOTALMONO PET AND MONO PE FLOWPACK

AMB Spa, headquartered in north-east Italy, is one of the leading international suppliers of rigid and flexible films, uniquely offering an 'all in one place' approach that includes all aspects of the packaging process: design, tooling, product specification, film production, print design and application. The company will highlight a range of eco-friendly packaging solutions in line with its strong commitment to sustainability.

process of analysis - it is checked for contamination, and the quality of the flakes is evaluated. The material used in the AMB TrayRevive is food grade quality, enabling the company to rightfully claim that the product closes the loop of the circular economy. This combination of sustainability and excellence ensures that AMB customers can deliver environmentally friendly packaging solutions to retailers who are increasingly concerned about safeguarding the planet.

plastic in its production. It is extremely light weight which in turn leads to substantial energy savings - less space is needed for transport, resulting in less trucks on the road and less fuel consumption. AMB TotalMono PET provides high barrier protection for sensitive foods, leading to an extended shelf life and a reduction in food waste. It is fully printable and offers ease of top and bottom printing without changing graphics. Despite downgauging, the material offers robust tear resistance during processing. It is wrinkle-free with maximum transparency. The downgauging of thicknesses leads to a wide range of possible gauges and a significant reduction in weight without compromising performance.



## AMB TrayRevive: Tray-to-Tray Recycling

AMB TrayRevive utilises post-consumer trays to create films to then produce form fill seal packs and new thermoformed trays. The post-consumer material is broken down into flakes which are then used to manufacture a tray-to-tray product. To maximise the quality of the final trays, the raw material undergoes a strict

## AMB TotalMono PET: End-to-End Sustainability

AMB's 100% mono PET solutions for both top and bottom films provide key benefits in terms of performance as well as solving sustainability challenges within packaging production. AMB TotalMono PET has lower thicknesses compared to multilayer products, therefore needing less

## AMB Mono PE Flowpack: High Protection for Sensitive Products

AMB Mono PE Flowpack is an outstanding solution for meat, dairy and other sensitive food products that require high protection. AMB Mono PE Flowpack assures long-lasting food safety, extends shelf life, and prevents food waste. It offers manufacturers plastic savings of up to 70% compared to conventional tray or thermoformed packaging. As with all AMB's solutions, Mono PE Flowpack optimises sustainability by using less plastic and requiring less energy across the manufacturing, storage, and logistic chain. With AMB's expert knowledge on water-based

technology Mono PE Flowpack, solutions are being addressed for the demanding markets with the most sustainable packaging available. In combination with AMB's print design and printing services, the Mono PE Flowpack offers eye-catching optics on supermarket shelves.

Giles Peacock, CEO of AMB explains, "Our all-in-one place approach is matched by our end-to-end sustainability drive.



Giles Peacock CEO AMB Spa.

AMB TrayRevive, AMB TotalMono PET and AMB Mono PE Flowpack are part of a wider AMB strategy that strives to improve sustainability by enhancing collaboration between packaging manufacturers, retailers, and recyclers.

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



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



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## WORLD NOVELTY: THE HB3 HYGIENE PALLET BOX

### Craemer Presents New Product Development at Interpack



Photo: Craemer Group

*HB3: Hygienic and extremely robust: Construction and design of the HB3 pallet box from Craemer ensure stability and maximum hygiene.*

Hygiene is a crucial factor in technical and logistical processes involving meat, poultry and fish products. Craemer, pioneer in plastics processing, has developed the new HB3 from PE: hygienic, robust, ideal for this sector.

With its latest development, the specialist in plastics offers a world first innovation: HB3 is the first and only completely closed pallet box on the market with welded runners. The HB3 box in industrial size,

with a tare weight of approx. 42 kilograms (without reinforcement profiles), can carry a volume of 580 litres, withstand a stacking load of 5000 kilograms and a payload of 900 kilograms. The box is extremely rigid thanks to the welding of top and bottom part. Three optional metal reinforcement profiles permit a further increase of bending stiffness.

The smooth inner walls allow easy emptying, cleaning and drying. The almost invisible contour-milled welding seam, the clean and clear lines, the minimal ribbing and the rounded shape also contribute to this. The double-walled design of the side walls provides increased impact protection against forklift tines, while the reduced entry height ensures smooth processes in automated high-rack systems. The HB3 runs smoothly on all

standard conveyor elements, chain and roller conveyors - thanks to the robust, welded runners with high dimensional stability.

The new HB3 box is optionally available with two closed or open drain port holes. The circumferential stacking step in the top and bottom rim (Euro stacking system) make it compatible with a wide range of other boxes. A custom-fit end lid is available as an optional feature as well as the equipment with RFID transponders.

Craemer Group, founded in 1912 with headquarters in Germany and three other production sites in Europe, is a global leader in logistics solutions made of plastic.

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



## SUSTAINABILITY IS THE GUIDING THEME FOR SÜDPACK AND ULMA PACKAGING AT INTERPACK



SÜDPACK and ULMA Packaging will present two sustainable packaging concepts at this year's interpack trade fair - in Hall 5, Stand C23. The flow pack and the thermoformed packaging are based entirely on mono-materials - and are therefore fully recyclable. Visitors will be able to watch the production of flow packs live on the FM 500 horizontal flow pack machine as well as the production of thermoformed packaging on the TFS 600.

### With This Flow Pack Concept

... the focus is on Flow Pack mono material solutions as sustainable alternatives to conventional flow pack films. These mono-structures are designed to ensure efficient processing with a high output on standard flow pack machines. They can be equipped with different barrier properties and together with a wide sealing range, results in high process and packaging reliability.

At the same time, the structure of the sealing layer allows the simple and efficient in-line application of common zipper systems.

Despite their reduced material thickness, the attractive flow packs based on Pure-Line films offer a level of product protection that is comparable to conventional packaging systems and thus prevent food from premature spoilage. They also contribute to a significant reduction in packaging weight - for example, material savings of up to 60% can be achieved by substituting rigid tray packaging with flow pack solutions.

At ULMA's stand in Düsseldorf, Landjäger salami will be packaged in a modified atmosphere on the FM 500 horizontal flow pack machine. This robust and reliable high-speed machine can

output up to 200 packs per minute and is equipped with an LD (Long Dwell) cross-sealing head, which ensures the packages are airtight even at high production rates thanks to a long sealing time combined with a rotary motion.

**This Recyclable Flexible Film Concept for the Production of Thermoformed Packaging**

... is based on SÜDPACK's PurePP film and is processed on ULMA's hygiene-certified TFS 600, a thermoform packaging machine designed for the production of both modified-atmosphere and vacuum packaging for a wide variety of food products. This machine combines maximum flexibility and efficiency in the packaging process - and impresses with fast format changes, easy operation and cleaning, as well as a high level of

packaging and process reliability even in high-performance mode.

Thanks to its excellent thermoforming properties and good machinability, the Multifol PurePP bottom film can be processed on standard machines such as the TFS 600 with only minor adjustments - even at high cycle rates in continuous operation. The top web, an Ecolol PurePP Peel, ensures good sealability. These perfectly matched films are a guarantee for high process and packaging reliability. This flexible film concept is suitable for a wide range of applications, such as stackable packaging, large-volume gastronomy applications and even fresh pasta.

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## COMPACT PACKAGING SOLUTIONS FOR MAXIMUM FLEXIBILITY AND COST-EFFECTIVENESS

At interpack 2023 MULTIVAC will be showing practical and needs-based solutions for packing small and medium-sized batches, as well as complete processing and packaging lines for the food industry. These small-batch solutions enable hand-craft businesses and smaller processors to make the entry into automatic packaging - with the aim of achieving maximum flexibility and cost-effectiveness. In addition to chamber machines of different sizes, the exhibits will also include compact thermoforming packaging machines and traysealers.



“This year we are very consciously putting our smaller and more compact models centre stage as well. They are very versatile in their use, as well as being cost-effective, efficient, very sustainable, and a resilient link in virtually every production process,” emphasizes Dr Tobias Richter, Director and CSO of the MULTIVAC Group.

### Line Solution for Thermoforming Packaging

The heart of the line for applications in the Food service sector is the R 085 e-concept thermoforming packaging machine, which is designed for packing small batches very efficiently. This proven entry-level model can run sustainable materials as well as

conventional flexible and rigid films. Another benefit: This compact allrounder requires only a small footprint, and it operates with electricity only, and does not need compressed air or cooling water. This means that it can be used very flexibly within the production area. In Düsseldorf the R 085 e-concept will be shown in conjunction with a Handtmann dosing system, which is used to dose food directly into the thermoformed packs.

### Stand-Alone Machine for Thermoforming Packaging

The R 105 MF thermoforming packaging machine is an entry-level model for packing a wide range of food products, such as for example steaks or salmon cuts, in attractive MultiFresh™ vacuum skin packs. This enables maximum shelf life and perfect product presentation to be achieved even in small batches. The quality, freshness, colour and texture of the product are presented in a natural way, and the content is held without any tension within the pack. The special packaging materials, which are optimised for the MultiFresh™ process, are also available from MULTIVAC.

### Semi-Automatic and Fully Automatic Tray Packing in the Smallest Space

Sealing only, vacuum or skin packing, modified atmosphere packaging, or even trays with high product protrusion? The T 255 traysealer is a space-saving, free-standing unit, which enables many different types of tray packing to be produced

on the one machine in small and medium-sized batches. The visitors to the MULTIVAC stand will be able to convince themselves during regular demonstrations of the die change, how highly flexible this efficient traysealer is, and how it offers maximum machine availability. The machine can be converted in a very short period of time and with just a few hand movements from producing MultiFresh™ packs to MAP packs.

The T 305 is the smallest fully automatic traysealer from MULTIVAC, which can be fully integrated into lines. It is way ahead in its class as regards output performance, and it can accommodate formats from one to four tracks. Thanks to its range of available loading areas, this allrounder can be perfectly matched to the individual production environment, and it can run trays up to a depth of 110 mm. Recently it has also become possible to have PaperBoard applications and MultiFresh trays with 50 mm product protrusion.

An optional DP 115 direct web printer from MULTIVAC Marking & Inspection is available for marking the packs. The film is printed by means of the thermal transfer process, and the printer is situated at the film infeed on the packaging machine.

### Packaging in Film Pouches

With its B 425 compact chamber belt machine, MULTIVAC is showing a model, which offers a very high output, particularly when packing smaller products such as ham, cheese, poultry and fish. The main

features of the machine are its durability, very easy operation and the highest level of hygiene. The new B 425 will also be appreciated by cost-conscious companies, who are looking for a higher product throughput when packing small products, since the 1,300 mm long sealing bar makes it possible to load many products. Another benefit of its compact design is the small space requirement of the machine, and this means that it can even be used in small production environments. When packing products on chamber belt machines, the filling of the film pouches and the loading of the machine are often a bottleneck in the process. By using the new MULTIVAC Pouch Loader (MPL) and MULTIVAC Pouch Rack (MPR), the loading of the chamber belt machine is performed semi-automatically, enabling a significant efficiency increase and cost reduction to be achieved. In Düsseldorf the chamber belt machine will be combined with a SE 320 shrink unit, which thanks to precisely controlled heat exposure produces shrink packs in a way that is particularly reliable and gentle on the product.



MULTIVAC tabletop machines are an ideal solution for the quick and easy packaging of smaller products. They can be used very flexibly due to their compact dimensions. They provide the highest output and also offer outstanding pack quality, even when operated in commercial non-stop mode. With its C 200 tabletop chamber machine, MULTIVAC is

showing at interpack a proven model, which is also suitable for larger products, such as for example cheese portions, ham or fresh meat, thanks to its chamber size of 465 x 355 x 150/220 mm.

### Flexible Flowpacker for Food Products

The W 500 being shown by MULTIVAC is a universal flowpacking solution, which offers a high level of flexibility for packing a wide range of food products, and it supports the use of sustainable films and paper-based materials. The robust machine, which is built to MULTIVAC's Hygienic Design™, is characterised by its high level of efficiency and precision, as well as its user-friendliness, reliability, cost-effectiveness and high output. Precise servo drive technology ensures that maximum output and optimum process control are achieved. Products with a maximum width of 200 mm and a height of up to 120 mm can easily be packed

- with or without a tray. The other features include the independent speed setting of the rollers for crease-free longitudinal sealing, the extremely reliable cross sealing thanks to precise and recipe-based control of sealing temperature and pressure, as well as an integrated gas analysis system for MAP packing with modified atmosphere.

When it comes to labelling or marking the packs on a flowpacker, MULTIVAC offers a wide choice of solutions. These range from inline labellers to direct web printers and even combined systems. All these solutions are characterised by their extremely compact construction and optimum hygiene features. They are perfectly matched to the MULTIVAC flowpacker in terms of their control technology and mechanical functions. A DP 207 printing solution will be shown at interpack on the W 500.

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# NEW GENERATIONS OF TRAYSEALERS AND THERMOFORMERS, EACH PRODUCING SMART, RESOURCE-SAVING PACKAGING CONCEPTS

By Marcel Veenstra, Marketing & Communications Manager at Sealpac International BV

SEALPAC invites you to Interpack in Düsseldorf! As a leading manufacturer of high-tech traysealers and thermoformers, we have used the event break caused by the Corona pandemic to present exciting innovations in all of our machine segments at the upcoming edition of the world's largest trade fair for the packaging industry, which will take place from 4th - 10th May, 2023. Under our motto "GO sustainable!", we will be presenting a flexible, semi-automatic traysealer that can package a large variety of products in small quantities, as well as our high-output traysealers and thermoformers that are fully prepared for Industry 4.0. Whether it concerns our entry-level model or performance class, each of these energy-efficient machines produce attractive packs that combine maximum product safety with particularly economical use of materials.

## World Premiere: SEALPAC's All-Round, Semi-Automatic M-Flex Traysealer

Highly flexible, extremely compact and suitable for our entire range of packaging solutions: with the innovative, semi-automatic M-Flex traysealer, SEALPAC's renowned tray-sealing technology is now also available for smaller production processes. Craft workshops, small



Impression of the SEALPAC stand at Interpack 2023.

business startups, laboratories, test kitchens and catering suppliers can use it to produce the entire spectrum of packaging solutions in an extremely small space and with only short set-up times. The high-performance, versatile M-Flex traysealer processes all prefabricated packaging materials, such as plastic, foil and cardboard, with the highest degree of precision to produce secure and attractive packaging, ranging from standard solutions to innovative SEALPAC packaging concepts like FlatSkin®, FlatMap®, TraySkin®, EasyLid® and more.

## SEALPAC Amax Traysealer: State of the Art

The SEALPAC Amax-series sets new standards in high-performance tray-sealing. Depending on the application, these intuitively operated machines are up to

50 percent faster than previous generations. They are characterized by their particularly low-wear, low-maintenance design and are driven by high-quality servomotors that allow for extremely smooth production runs, unrivalled in the market until today. The integrated EnergyManager ensures optimal use of energy. Furthermore, the air consumption of the Amax traysealer has been reduced by up to 90 percent.

In addition to conventional modified atmosphere or TraySkin® packaging, these flexible traysealers produce particularly resource-saving solutions. For example, they process ultra-light trays, the weight of which has been reduced by 20 percent compared to conventional MAP trays. Hybrid packaging concepts with a reduced plastic and high cardboard content, such as eTray®, FlatSkin® or



FlatMap®, can also be handled by the SEALPAC Amax traysealers. At request, we offer you an all-in-one solution, which allows you to run all these concepts on the same base machine.

The intelligent drive management of the SEALPAC Amax traysealer reduces the maintenance effort and thus ensures optimal availability at all times. All in all, the new series succeeds in optimally combining product safety, performance and efficient operation with more resource conservation.

**SEALPAC PRO and RE Thermoformer: All Performance classes, all Materials**

Also within SEALPAC’s portfolio of high-quality thermoformers,

the focus is on combining flexibility and performance with improved sustainability and less usage of resources. Next to the compact PRO thermoformer, outstanding in its flexibility, we will be demonstrating our high-output RE thermoformer by producing striking packs made from demanding mono-PP film. As such, this machine supports our customers in meeting the latest sustainability requirements in the packaging industry. The pack is equipped with SEALPAC’s unique EasyPeelPoint opening system, which is less subjective to cold sealing, common in existing thermoformer applications.

All SEALPAC thermoformers reliably process a wide range of materials, including recyclable films made from mono-PP,

mono-APET or mono-PE, as well as innovations like paper-based film. Each thermoformer stands for first-class quality in packaging design, hermetic sealing and user-friendly opening behaviour, especially when applying our EasyPeelPoint system.



**From Machine Monitoring to Packaging Inspiration**

There will be numerous other highlights at the SEALPAC stand at Interpack, such as machine monitoring. We will show you that, for example by using OPC/UA, our equipment is easily integrated into line control software. This allows our customers to see in real time if the machine is running, in stop, in error, or waiting for up- or downstream equipment. As such, it simplifies operational planning and increases efficiency in every detail. In addition, it supports maintenance, service and error diagnosis, therefore optimally meeting the needs of Industry 4.0.

Anyone looking for new ideas from the world of packaging will also find answers at the SEALPAC stand. In our Supermarket of Innovations, we will present an exciting selection of new, creative packaging concepts from all over the world, which will inspire any packaging expert.

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



Sustainable SEALPAC packaging concepts in tray-sealing and thermoforming.

## GEA SHOWCASES ENGINEERING EXCELLENCE WITH FUTURE POTENTIAL

From May 4 to 10, the technology group GEA will be exhibiting in hall 3 / booth E46-E54 a wide range of innovations and demonstrating its engineering expertise in the fields of meat, meat alternatives, cheese, bakery, confectionery, and pastry products. The focus will be on the benefits of GEA's line expertise, numerous technological innovations, and new solutions in automation and digitalization for efficient and energy-saving production processes. All solutions create new opportunities to produce more sustainably.

The food industry is undergoing a transformation process. The current challenges in energy management, the ambition to conserve resources and optimize the circular economy, on the one hand, and the increasing demand for packaged food and higher food safety, on the other, require intelligent solutions in the processing and packaging process. "The challenges of sustainability, efficiency, and digitalization are increasingly intertwined," says Rebecca Cullinan, CEO Food & Healthcare Technologies at GEA. "We have made it our mission to enable our customers to achieve long-term success and sustainable value creation with future-proof technologies and solutions - be it with individual plants, specialized production lines for entire processes, or the establishment of completely new production sites (greenfield projects) of customers. Our modern systems make a major contribution to achieving the sustainability goals of the food processing industry."



Source: GEA

*GEA's new portfolio program and line concept for portion-precise slicing and loading of slices into the thermoformer. The focus is on maximum line efficiency with a small footprint and lower energy consumption.*

### GEA Increases Overall Plant Efficiency Through Automation and Line Expertise

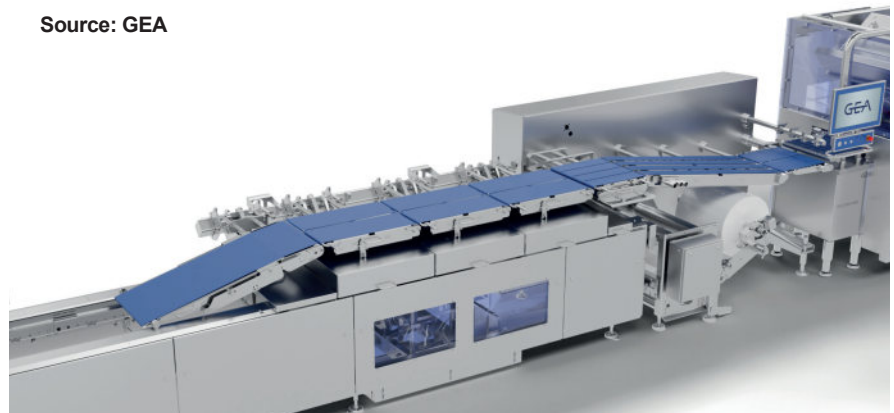
GEA's food processing & packaging range is currently one of the most comprehensive on the market. At Interpack, the new portfolio program will now be partly presented on a 25-meter-long production line for portion-precise slicing and loading into the thermoformer. GEA's aspiration for forward-looking line concepts is to ensure maximum plant effectiveness (OEE = Overall Equipment Effectiveness) through the best possible interaction of all line components. "Our lines are designed for the smallest possible footprint on the production area. This focus allows us to ensure

more capacity per square meter with our future solutions, thereby minimizing energy consumption per production area. A consistent modularity concept, which runs through the complete and innovative automation program, allows us to design individual solutions according to exact customer requirements," explains Steffen Bamberger, Head of Product Management Automation at GEA.

Many new technology highlights will be on display in the exhibited slicing and packaging line for consistently calibrated products, such as sausage and cheese slices.

In the area of belt loading systems, the new OptiLoader family is being presented to the market

Source: GEA



*The new GEA OptiLoader 6000 is integrated into the thermoformer and shows the newly developed line concept of integrating individual components into the line in the best possible way.*

for the first time. The OptiLoader stands for the best possible line integration and has the highest degree of modularity to ensure maximum output quantities while at the same time minimizing the footprint of a complete GEA slicer line. For example, the OptiLoader 6000 is placed integrated in the thermoformer concept.

GEA's new robotics solution GEA OptiRobot 6000 is in demand when it comes to the highest degree of automation combined with super-low labor costs and ample flexibility. The new robot enables differently shaped portions (stacked, shingled, overlapped, etc.) to be loaded into a packaging machine with any kind of laying pattern fully automatically.

Another world premiere is the unveiling of GEA OptiBuffer. To ensure high line efficiency, it is imperative to avoid waiting times caused by components. In a slicing line, the reloading times of the slicer cause gaps in the product flow. However, a robot should run smoothly and continuously. "GEA solves this problem with a newly integrated, dynamic, and intelligent high-performance buffering system, with the help of which picking capacities of a robot system are effectively and exclusively used

for inserting good portions into a packaging machine. This is currently unique on the market," explains Steffen Bamberger.

The presentation of the new automation program at Interpack is rounded off by the innovative GEA PowerSort 6000 separating and sorting system, which can be configured exactly to customer requirements from the same modular system.

### More Sustainable Packaging Solutions

Sustainability is one of the most important issues in the packaging market today, and one that all companies in the value chain must address. At Interpack, GEA will showcase:

- The new GEA PowerHeat zone heating system for energy-efficient processing of mono-materials in the GEA thermoformer, which enables energy savings of 25-30 percent.
- With the new GEA PowerJet longitudinal nozzle, it is possible to introduce the protective gas more uniformly into the packaging and keep the residual oxygen content at a constant 0.1 percent, which significantly counteracts product spoilage.
- The GEA V-Packer IM-IV, a new

vertical packaging solution for particularly fragile products in the pastry and bakery sector.

- Technological updates for the proven GEA Aquarius TwistWrapper for lollipops.
- The GEA SmartPacker TwinTube for the production of larger pillow bags with a width of 160 mm.

### GEA Accelerates the Digitization Process of its Customers

Digitalization and automation are decisive factors for more sustainable and energy-saving production. GEA is strongly focused on increasing customer value by increasing the transparency and efficiency of its equipment. For this purpose, the company is expanding the number of machines for which the new GEA SmartControl HMI operating panel, as well as GEA PerformancePlus digital services and the GEA Machine Data Interface (OPC UA) are available.

- GEA SmartControl HMI (Human-Machine Interface) GEA SmartControl HMI has been developed with a consistent user-centric approach that ensures maximum ease of use, transparency and safety.
- GEA PerformancePlus provides key indicators and analysis of machine health and performance at the touch of a button to ensure high performance throughout the entire machine life.
- GEA Machine Data Interface (OPC UA) allows customers to connect their machines easily and efficiently to internal control or monitoring systems and thus drive Industry 4.0 forward in real terms.

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



Source: GEA

*GEA's new solution in robotics, GEA OptiRobot 6000, combines highest level of automation, lowest labor costs and high flexibility.*



# DIGITAL QUALITY CONTROL FOR THE MEAT INDUSTRY - 100% CONTROL SAVES MONEY AND ENSURES MARKET ACCESS

By Niels T. Madsen, Business Manager at Danish Technological Institute

In God we trust - All others must bring data. You need data to improve and manage processes. Those are well-known statements, however, often a well-known pain and challenge in the meat industry dealing with expensive raw materials that can easily become compromised by poor manufacturing practice, human errors or production equipment failures. The market is asking for flawless products with a minimum risk of product recalls, while at the same time demanding high production volume and speed, making operator inspection difficult. Furthermore, availability and staffing cost for operators are a hassle.

Vision technology and the accompanying software has matured, and the number of applications is growing offering affordable practical solutions to automate uniform and consistent quality inspection. Some examples are described below for raw materials and final product inspection as well as control of critical transport production media.

## Checking Raw Materials and Final Products for Plastic Contamination

Plastic in many forms is used as transport media, machine parts, product storage or personal protective apparel as a necessity in the manufacturing of meat products.

Previously, manufacturers were of the assumption that plastic fragments by accident only seldomly ended in the products, but this perception has changed. To a higher degree, consumers and purchasers demand processes ensuring the absence of foreign objects. Plastic in any form is unacceptable and unfit for human consumption. Its presence should be minimized.

The experience obtained from many sites with the DMRI DynaCQ plastic detection solutions for in-line surface detection [Plastic detection made easy - Services - Danish Technological Institute \(www.dti.dk/digital-solutions\)](http://www.dti.dk/digital-solutions) shows that plastic contamination is a daily issue. Often the fragments are very small and only a few square millimetres in size and virtually impossible to spot for operators in a fast-moving production line.

The use of high-end vision technology in combination with advanced image analysis facilitates high speed detection of unwanted plastic in the product stream and ability to stop the belt before the product leaves the factory and reaches the consumer. The principles of measuring, analysing and stopping unwanted objects are the same as applied for many metal detectors and X-ray measuring systems. However, these measuring principles are not able to detect the small and low-density plastic items, often only a few millimetres in size.

Vision cameras inspect the visible surface, as an operator would do, however, consistent and at a possibly higher speed. The way to improve inspection is to display more product surface for the camera(s). A way to maximise the visible product surface screening with the DynaCQ plastic detection camera(s) is to increase the belt speed as necessary up to 1 m/sec or more, facilitating ideally a single layer of product on the belt. Another way is to inspect the product surface from two sides.



## Two-Side Screening "Waterfall" Solution

To improve the surface screening further, a two-sided screening can be implemented in a waterfall setup where measurements are also made from "behind the waterfall" when products drop in free fall from one belt to a following next belt. When plastic is found, the factory can choose to either stop and manually remove the plastic with minimal product loss or to use an automatic diversion/sorting mechanism to another belt or bin as preferred. The DynaCQ solutions have been running

for years at many locations in various international side-stream, raw meat, and processed food operations. The general experience is that more plastic is found than the companies expected before installing the solution, and the reaction from their customers has been positive with a reduction in plastic related product complaints.

The food manufacturing lines are often quite different in layout, and the lines often handle more than one type of raw material. Therefore, when projecting the plastic detection solution, the local conditions and the product variation are always considered. As part of the implementation, the detection algorithms must be optimised to match the local needs, after the equipment has been installed, ensuring optimal performance.

There appears to be a general challenge when screening mainly incoming raw material for the possible presence of plastic originating from, e.g.:

- Parts broken off from machines, seals or belt fragments.
- Bins, grates broken off by mechanical transport and hard handling.
- Liners and covers - torn.
- Gloves, aprons, arm sleeves - torn while processing.
- Bags and cover on especially frozen block materials, where plastic is trapped and stuck inside the block.

Installing any measuring solution is costly and should be seen as an insurance and a way of keeping customers showing the willingness to use best practice. The potential cost of recalling a full batch production volume and the associated negative effects handling the recall and negative impact in the marketplace can, however, very

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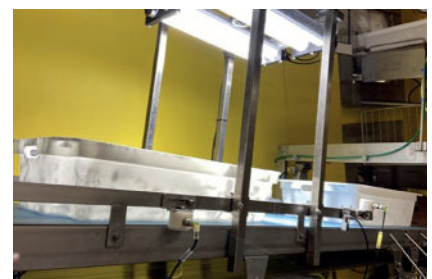
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quickly turn the investment into a very good business case. If the processor is currently using operators for inspection, the result is often both saving operator time and finding more plastic.

### Checking Internal Transport Boxes After Cleaning

Thousands of boxes are circulating in a modern deboning operation. After use, they are washed and returned to the boning floor. It is essential that they are

clean and without defects. If no visual inspection is carried out, a percentage of boxes are circulated with the risk of being used unclean, or with defects that can lead to product loss



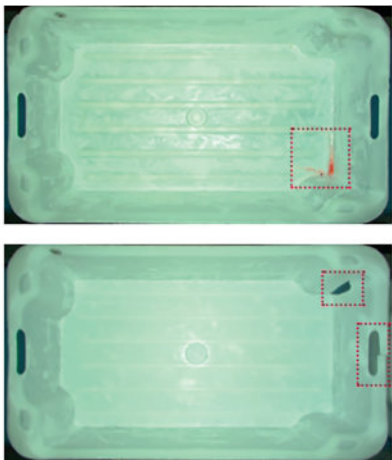
Camera inspection of boxes after washing

or damage to the operators. A new digital monitoring solution is now available where a camera in combination with advanced AI algorithms checks if every box is fit for use or should be pushed off the line for repair/scrapping or rewashing.

When using the Clean and Intact Box control vision system (CIB), every box is checked on the fly. Unclean boxes, or boxes with holes or broken handles, can be flagged for automatic removal before they are returned to the production. Considering that large meat processors have thousands of boxes in circulation, then use of manual inspection, or having to send unfit boxes back from the production floor is not optimal use of resources and production capacity.

Boxes are handled in mechanical conveyors as well as lifting systems and will over time become broken and fragile with cracks and holes, with the risk of personal injury, work absence, contamination of products with plastic, product loss from the box, and downtime in the line.

If systematic errors occur in the unmanned automatic washing process, it may take long before it is noticed, with large numbers of



Automatic CIB control prevents circulation of boxes unfit for production

boxes going to the production floor before action is taken. With the CIB, the technicians can be alerted quickly to remedy the situation.

Manual inspection of the boxes after washing is an option, but often too costly in most countries compared to a vision solution. The operators handling and filling the boxes serve as a final check point today, however, it is very inefficient to circulate unfit boxes to the production room and having to send them back, also reducing capacity in the system. Fortunately, washing machines work effectively and generally remove meat, meat juice or other contaminations, however, when machine errors occur, or when very sticky material cannot be removed, the automatic CIB offers a solution that is seen as a welcome aid in a quality focused production environment.

### Checking Gambrels with Pig Carcasses

In the pig slaughter process, thousands of gambrels are used for transporting the carcasses on the slaughter line, through chilling and until deboning. These transport gambrels are generally robust, and the carcasses are hung nicely by the tendons positioned correctly for manual or automatic slaughter processes. Both manual operations and sometimes the automatic conveying and processing steps may result in incorrect placement of the pig legs on the gambrel. If this happens, and it is not noticed and corrected, it can cause serious issues in the subsequent processing steps.

A solution is now available to make sure the leg positioning on the gambrel is correct and that



Normally Hung Carcass



Incorrect feet and reverse position of carcass

the carcass hangs correctly. This means that the risks of further processing errors especially in automatic bunging, evisceration and splitting machines or robots on the lines can be avoided, and issues are thus dealt with before leading to serious product, machine and tool damage as well as expensive rework. In some cases, the carcass may also drop to the floor resulting in with significant rework and cost as a consequence.

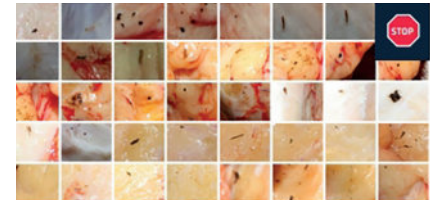
The automatic vision check also includes verification of the general conditions of the gambrel to check if it seems fit for purpose, needs repair or replacement. Over the years, gambrels will wear, may bend and become slack and risky to use. By the repetitive automatic gambrel monitoring check at every circulation on the line based on the individual gambrel ID, any deviations may be spotted, and systematic change in dimensions or hanging angles can be used to flag gambrels that must be sorted out for repair or replacement. There is also an important safety aspect to this automatic check in addition to the reduced product loss, machine repair, downtime and rework, as dropped product

or gambrel in the worst case may cause injury to operators.

### Checking Beef Carcass Surface for Contaminations

A beef carcass has a large surface, which is challenging to inspect 100% consistently by the operators on the slaughter line. Contamination of the carcass surface will often occur, and the contaminations must be removed on the slaughter line. The new Beef AI Surface Checker solution is designed to assist the inspection task by detecting and pinpointing contaminations on the carcass surface to be removed.

The AI Surface Checker records images of the carcass surface, e.g., the hind legs, as the beef carcass passes by the installed cameras. An algorithm based on Artificial Intelligence (AI) analyses the images identifying and locating contaminations. When the carcass enters the workstation, information regarding possible contaminations is shown for the operator on a monitor. Thereby the operator is supported in the task of removing contaminations from the carcass surface whether these may originate from the hide, the slaughter process, or the conveyor.



AI Surface Checker detects contaminations on the varying carcass background

There is a huge variation in the beef surface colour and appearance of a beef carcass, and contaminations may appear in many forms from very small spots to larger spots or even smear on small or large areas. With this complexity, AI models analysing the images have proven well suited to perform robust detection dealing with even huge product variations.

The AI Surface Checker can also be installed at the end of the slaughter line, performing the final inspection before sending the carcasses into the chilling room.

### More to Come

The process of installing digital solutions combining vision and advanced image processing in the meat sector, both for slaughtering and further processing, is gaining momentum, and the solutions have also found a home in side-stream processing with applications for

pet food processing and other side stream materials.

With the ability to outperform costly manual inspection, which is also difficult to staff, being tedious repetitive work, these solutions are welcomed. DMRI has invested in the ability to master camera technology in combination with advanced AI image processing and is bringing even more solutions to the market that can create value within a short payback time.

### Next in Line to be Released is:

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  - Pig carcass inspection for contamination and other quality defects
  - Optimal primal cutting of pigs
  - Automatic reading of pig tattoo farm number
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K+G WETTER

# FROM PROPELLER BLITZ TO THE CUTMASTER - A FASCINATING INSIGHT INTO THE EVOLUTION OF MEAT AND ALT-MEAT PROCESSING

Food processing is undoubtedly one of the fastest moving sectors across the world as consumer tastes evolve. There's not much closer to human hearts than the food we consume - and eating is not just essential to life but intrinsically linked to human emotion and enjoyment. It's easy to ignore that the delicious burger on our plates started life in a field or a laboratory - but do we ever stop to wonder, not about the origins, but about the technology behind the food product and the entrepreneurial geniuses who originally invented it?

For over eight decades GEA Food Solutions has been supplying cutting edge solutions for customers. From cutting and emulsifying meat for sausages in the mid-20th Century to today's highly innovative solutions such as the CutMaster, GEA has always taken great pride in responding rapidly to market changes and staying ahead of that evolutionary curve. Thorsten Balzer, Director of Sales Steering, gives us a guided tour to how 80 years of R&D have helped shape the future of the meat and alt-meat market. Wonder no more!

## A recipe for Growth and Efficiency

It all started 80 years ago. The original "Propeller Blitz" machine was designed to both cut and blend the meat, fat, herbs, salt and other spices to the desired granularity prior to it being stuffed into a skin.



## The word 'sausage' is from the Latin Salsus, which means Salted

As production forged ahead, so too did developments to increase speed and improve the final product. The vacuum design meant that the blended meat would have reduced air content, a better consistency and appearance and thus consumer appeal.

To cater for growing global demand much larger bowl cutters were introduced and the CutMaster DUO was launched - a revolutionary machine with two independently driven knife heads especially designed for the production of dry fermented sausage (salami). Manufacturing capacity in the 1950s increased (in the same location as it still is today) and significant investment was made in automation.

In the 1970s bowl cutter sales expanded to new parts of the

world - great news for this German company still known at that time as Kramer & Grebe. The machine became more complex, automating some of the previously human tasks including loading and discharging. It became known as the Cutmix.

## Technology at the Cutting Edge

Factories were becoming increasingly automated and the Cutmix was extremely easy to use, recording and running recipes and effectively guiding the operator through the process. With the advent of the internet, it was easier to sell machinery all over the world. Cutmix evolved into CutMaster as these labor-reducing machines immediately made factories more efficient, with a short-term investment bringing long-term financial gain.

The CutMaster generation gradually advanced from a few buttons to an internet-connected,



recipe-controlled panel that also measures performance, manages speed and temperature and warns of any imminent service issues. The speed of the knife heads has also improved: the blades now reach circumferential speeds of up to 162 meters per second. Knife head configurations can be tailored to the recipe, and the magnetic design enables speedy changeover and minimal downtime.

### Fabulous Flexibility


The real genius of the CutMaster is the flexibility, where the recipe can be altered in a matter of minutes. The design means it can be very quickly cleaned and changed over to the next product. Such are its variety of uses, it has been described as just like a great big Thermomix/KitchenAid!

In today's market, where consumers are increasingly health-conscious and eating less meat and trying more plant-based alternatives the CutMaster is ideal for rehydration, mixing, cutting and using vacuum to improve formability and appearance. Today, the CutMaster is used by a number of blue chip food companies producing vegetarian or vegan meat alternatives, such as burgers, sausages or sliced products.

### What's in the crystal ball?

There is always scope for improvement, and the CutMaster is under the spotlight for enhanced sustainability, with a team examining how to improve energy consumption, water usage and setting targets for the next developments. Working on the roadmap for the future, we are convinced that water reduction and even elimination targets in the cooking and cooling

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processes can be met. Noise reduction is also a target, though this is clearly dependent on the products that are run through the machine, and the speed it is run at. The current version is highly reliable, technically advanced. Not to mention the advantage of being manufactured by a global

technology specialist that can support nearly all stages of the production process, from freezers to driers, to blenders, to packaging.

What's not to love about a dive into history to put impressive modern achievements in perspective?

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## HANDTMANN TECHNOLOGY FOR VEGAN AND VEGETARIAN PRODUCTS



*Meat substitute products produced with Handtmann technology*

New food trends such as snacking, convenience, health, flexitarianism, animal welfare, climate protection and more provide the perfect opportunity for creating new products in vegetarian and vegan food production. From vegetables, tofu and soy to other source materials - Handtmann provides solutions for meat analogues and plant-based meat substitute products but also for classic and new convenience and snack products with a vegan/vegetarian base.

The modular Handtmann system solutions are suitable for processing a wide range of products of soft to firm consistencies as well as very cold to hot filled products. This includes plant-based meat substitutes made from, for example, soya or pea protein for meat analogues and meat alternatives. Meat substitute products produced using Handtmann technology offer meat flavour, sensory experience and texture as well as protein supply on a vegetarian or vegan base. Their preparation by the consumer does not differ from that of conventional meat products. These meat substitute products include mince portions, sausage products and formed products

such as burger patties, nuggets and balls or mince products.

Handtmann forming systems ensure the production of a wide variety of formed meat substitute products. Production is multi-lane onto downstream belts to water/oil bath or laminating systems. The filling product is fed to the flow divider by the vacuum filler. The servo-driven flow divider ensures precise rotor speed in the flow divider. The result is a continuous product flow without pressure fluctuations, and thus highly accurate final weights. The flow divider ejects the filling product in multi-lane filling flows via mould components. The vacuum filler's control system allows easy visualisation of the product shape and calculation of the process parameters. The shape can be changed quickly by exchanging a few mould components. A wide variety of product shapes, such as sticks, loaves, burgers, balls and more, is possible. One product example from the field would be meat substitute balls with a product weight of 13 g and a diameter of 28 mm. The vegetarian meat substitute is portioned and formed, coated with seeds and spices and then deep-fried. It is a meat-free, ball-shaped and bite-sized snack with meat flavour and texture. With the Handtmann system solution VF 838 S3 vacuum filler and the FS 522 forming system, a 2-lane production output of 390 kg/h is possible.

The Handtmann ConPro technology is an innovative method for the production of meatless

sausage products with edible, vegan alginate sausage casings. Product examples include vegetarian rice-based mushroom sausage, vegetarian fried sausages or soy-based sausages. The conventional ConPro system is used to produce cut sausages. After alginate crosslinking in the fixing bath, the co-extruded sausage strand is cut into individual portions by a separating device. The ends of the products can either be cut straight or also be shaped during the cutting process, thus creating rounded sausage ends. In both cases, the ends of the produced sausages are open, i.e. not completely enclosed by the alginate casing. Depending on the viscosity of the filling product, the sausages can be further processed horizontally or hanging. The ConProLink system, patented by Handtmann, is used to produce linked sausages. The co-extruded sausage strand is linked into individual portions during alginate crosslinking. The sausage string produced in this way can then be cut at defined linking positions. A wide variety of product variants can thus be



*FS 525 forming system for vegan or vegetarian products*

produced, from individual sausages processed in horizontal position, through to endless strands of hung sausages. A practical example from the field would be vegetarian

soy-based sausages with a portion size of 25 g, a calibre of 21 mm and a portion length of 80 mm. With the ConProLink system comprising two Handtmann VF 830

vacuum fillers and a KVLSH 162, a production capacity of 225 kg/h in continuous endless production in alginate casing is possible  
[www.handtmann.de](http://www.handtmann.de)

## VEGAN PROTEIN YEASTIN® SHOWS EXCELLENT SUSTAINABILITY IN LIFE CYCLE ASSESSMENT



*According to a recent life cycle assessment study, Yeastin® as a protein source for burger patties causes 81% less environmental impact compared to pea protein.*

Protein from BSY is significantly more resource-efficient as a basis for burger patties than pea or beef protein.

A study at the University of Applied Sciences Northwestern Switzerland (FHNW) recently aimed to evaluate the environmental impact of burger patty production. A patty made with proteins sourced from brewer's spent yeast (BSY) was compared with conventional beef and a vegan one as benchmarks. The ISO 14040 ff Life Cycle Assessment (LCA) showed that Yeastin® can reduce the environmental footprint of a 113g burger patty by 74-81% depending on the indicator examined.

The research results of the Institute for Ecopreneurship at the FHNW are impressive: a vegan burger patty made from Yeastin® protein by Yeastup has an even smaller ecological footprint than one made from pea protein. The production

of pea protein had the greatest environmental impact on the conventional vegan patty (19-45%), with the meat in the beef patty producing a figure of 84-98%. Compared with the beef patty, the environmental ramifications of the Yeastup alternative were significantly lower across all impact assessment methods – possibly because of the elevated global warming potential (GWP) of beef production.

However, Daniel Gnos, founder of Yeastup AG, sees another huge advantage: "Thanks to the use of an industrial by-product, Yeastin® requires no arable land, no cultivation, no irrigation and no pesticides. This is a clear ecological benefit over animal and plant sources."

### Ecologically and Nutritionally Valuable Alternative

Of the environmental footprint of Yeastin®, 56% was attributable to the animal feed substitution that replaces the brewer's spent yeast in its previous use, which must be taken into account in accordance with the requirements of the general guidelines for the preparation of an ecological footprint (PEF). Compared with the benchmark pea protein, Yeastup protein has an approximately 81% lower environmental impact, 74%

fewer greenhouse gas emissions and an 80% lower cumulative energy demand. Yeastin® has the potential to become a promising alternative to animal and vegetable proteins due to its significantly lower environmental footprint and excellent nutritional properties.

It is a high-quality protein powder that convinces in terms of purity and quality and, importantly, has a neutral taste. Furthermore, its excellent nutritional profile matches that of animal proteins. Protein formulations containing Yeastin® also showed promising functional properties in initial laboratory scale trials. There are numerous application possibilities, too, from meat substitutes and cheese alternatives to sports nutrition products.

Gnos believes his team is offering the food industry a trail-blazing sustainable and vegan alternative protein: "In our LCA study, we investigated the environmental impact of producing protein from BSY and using it as an ingredient in burger patties," he explains. "With these results, we aim to demonstrate the potential environmental benefits of using proteins derived from a high-quality brewery residue to our current and future project partners in the food industry using a global benchmark."  
[www.yeastup.com](http://www.yeastup.com)

# THE WORLD IN TRANSITION: CLEANER CONSUMPTION

By Henk Hoogenkamp, Protein Applications Expert

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

Around 33 percent of all the CO<sub>2</sub> released is absorbed by forests. By removing valuable forests, one of the world's most effective "carbon sinks" are lost. Despite all good intentions of the major agri-companies, their commitment of pledging to net-zero has little or no chance of meeting the objectives by 2025.

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

Transformative pathways of behavioral and structural changes will be needed to embark on a diversified agroecological production system which aims to increase access to healthy and sustainable diets. Increasingly, younger affluent consumers prefer food products that care about sustainable agricultural practices and are minimally processed while

maintaining a natural status. Decoding these preferences translate in health, convenience, and TASTE. In other words, if the taste does not meet the expectations, consumers tend to think less about the health of the planet.

Whatever transformative pathway is chosen; it is important to remember that the most crucial factor influencing the enjoyment of consumers is still their sensory appeal in spite of all the green messaging. In affluent societies, 1 in 3 consumers will not consider buying 100 percent plant-based foods because of poor taste and texture. The technological reasons are clear: besides the lack of flavor and color of most plant ingredients, the proteins neither perform in the same way nor provide the same favorable organoleptics like taste and texture.

## Democratization

The plant-forward movement has clearly captured mainstream and continues expanding in new territories and applications in multiple product offerings. Driven by a combination of more health, environmental, and ethical awareness, consumer demand for plant protein formulated foods continues to grow, albeit not as fast as projected. The looks of plant-based meat, bakery, snacks, and dairy-like products are set to become an enduring part of the food landscape. In most developed countries, the market for plant-based proteins as well as

alternative meat and milk continues to grow. For both milk- and meat alternatives, it is important to place these in the same supermarket aisles as the traditional products. This branding and positioning strategy significantly increases the likelihood that consumers are tempted to choose these foods.

## Many Angles to Consider

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

## Harvest Variables, Globalization & Climate Change

Globalization is partly responsible for the increase in the volume of

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

Although plant protein can play a key role in reducing the ecological and environmental footprints of global food production, there is still a risk that the over-reliance on a few

by 2050. To be compliant, food companies need to develop a vision of an economic system that prioritizes the biodiversity of nature's assets. Preferably, these objectives need to be accomplished in such a manner that capital, health, and affordability are harmonized on a platform of corporate sustainable environmentalism.

The overall amount of protein available for human consumption may decline with rising atmospheric carbon dioxide (CO<sub>2</sub>) levels. Elevated levels of carbon dioxide

active farms to forcefully achieve deep cuts in emissions by adopting circular economy strategies that reduce demand or limit export. Much to the chagrin of farmers, these government strategies are already being implemented in the Netherlands and even creating social unrest, as well as major political parliament voting upsets.

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

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

### Zero Deforestation Global Economy



crops can lead to further reduction of biodiversity. Therefore, care should be taken so that the drive for more plant protein consumption does not cause harm or issues like deforestation and loss of wildlife and biodiversity.

The global ecosystems need a reimagining of food systems to operate within nature's boundaries. Conventional agriculture is strained to a point that it is unsustainable, especially that the world might possibly run out of farmable land to feed the fast-rising population

can block plants' absorption (=assimilation) of nitrates, resulting to foods and crops with reduced nutritional quality. Studies have indicated that protein and nitrogen concentrations in plants decline under elevated levels of carbon dioxide -indicating that the nutritional quality of food crops is at risk as climate change intensifies.

### Clean Disruption?

There is real change when a levy or tax will be enforced on foods such as beef and dairy or shutting down

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

Soy agriculture requires large amounts of water and is increasingly associated with driving deforestation leading to catastrophic environmental

damage, including eradication of wildlife habitat. With demand for soy protein and soy oil increasing as well as land and water issues of the crop becoming unsustainable, the global population needs finding alternative protein sources. These alternatives are now being developed using sources like micro algae and cellular agriculture, including molecular farming.

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

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

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

affordable, healthy, and ecologically sustainable foods.

### Challenging Times Prompt New Solutions

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

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

### Consumer Demands

An increasing number of consumers living in affluent societies believe that vegetarian or vegan food choices are more sustainable than slaughtered food options such as beef, pork, and chicken. To keep up with the plant-based phenomenon and the shifting consumer attitudes from trend



to food (r)evolution status, the legacy brands are now forced to closely monitor market changes. This is especially the case as more consumers adapt to increased plant-based eating, though for diverse reasons, with more plant protein or fiber in their diets and eating more healthfully while feeling good about their proactive attitude for helping the environment.

Clearly, consumers in affluent countries are giving more support to the plant-based dietary choices that not only help manage weight but also address underlying conditions like wellbeing and reduce the risk of degenerative diseases such as cancer, diabetes type 2, and cardiovascular disease.

It is evident that the younger consumers under the age of 30 are the early adopters of a vegetarian dietary preference. In contrast, the consumers under the age of 50 are most likely to adopt a flexitarian-style diet as a meaningful compromise. These trends do seem to transcend both demographic and generational groups. For these groups of consumers, clean label and transparency is not a passing trend but movement that is here to stay.



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

### Plant Equivalency

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

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

these differences, there is growing evidence that the increase in living costs does indeed challenge the ethical and ecologically-driven buying decisions.

### Environmental & Human Health Degradation

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

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

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

"great-tasting, empty-calorie" foods. This is good for marketing and sales, but bad for the nutritive status of a human body.

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

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

### Transformative Changes

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

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