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Issue 1 • Volume 31 • 2023

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Key Business Outlooks  
for This Year

### Process

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# Innovation is Where Trends and Needs Meet

**Tudor Vintiloiu - Editor in chief**  
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**P**otato-based snacks are versatile, satisfying, and can be enjoyed in a variety of ways. From potato chips to French fries to tater tots, these snacks have something for everyone. One of the main consumer trends driving the demand for potato-based snacks is the desire for convenience. People are busier than ever and are looking for quick and easy snacks that they can grab on the go. Potato-based snacks fit this bill perfectly, as they can be found in most convenience stores and vending machines. This trend has led manufacturers to focus on producing snacks that are easy to transport and can be enjoyed anywhere, such as snack-sized bags of chips or single-serve packets of French fries. Changes in the market have driven an increase in demand for equipment that can produce potato-based snacks with healthier options. This includes equipment that can produce baked or air-fried potato chips, French fries made from sweet potatoes or other alternative potato varieties. Producers are increasingly looking for equipment that can produce snacks with reduced fat and calories, while maintaining the same satisfying taste and texture as traditional potato-based snacks. However, these ever-changing consumer trends are overlapping with the increasing need for sustainable

*There's a quiet race to innovate on this front, with equipment producers trying to find new ways to process raw material using more sustainable and environmentally friendly methods.*

production and energy-saving machinery, so processors are looking for equipment that can also produce snacks using less energy, water, oil and packaging. There's a quiet race to innovate on this front, with equipment producers trying to find new ways to process raw material using more sustainable and environmentally friendly methods, such as using renewable energy sources, recycling and reusing water,

and reducing emissions of greenhouse gases. Additionally, recent technological advancements have created an opportunity to build new-generation equipment that can be operated at lower energy consumption levels through energy-efficient motors, and smart control systems. Recent innovations in food processing equipment include the use of automation and robotics, precision temperature control, and improved sanitation and safety features. For example, automated packaging and sorting systems can increase efficiency and reduce labor costs, while precision temperature control allows for better preservation of food quality. Additionally, the use of advanced materials and coatings in equipment can improve sanitation and reduce the risk of cross-contamination. ●

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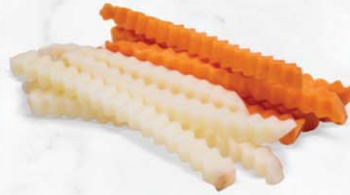
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## TOMRA's First Global Category Director for Vegetables and Fruit

The Processed Food business unit of TOMRA Food has recruited its first Global Category Director for Fruit and Vegetables. Jacob Hobbel, a Belgian, has taken on the new position, which was developed as part of TOMRA's continuous aim to more precisely customize solutions to particular food categories. "The new role of Global Category



Director for Vegetables and Fruit will establish TOMRA as a thought leader in this area, making this category a solid pillar of our core food business. Jacob brings to this task an extensive, in-depth understanding of the frozen fruits and vegetable industry, as well as insight into consumers' quality expectations in these markets," Karel Strubbe, VP Head of Global Sales at TOMRA Processed Food, commented.

### New Corporate Offices for FPS Food Process Solutions

FPS Food Process Solutions relocates to its new corporate offices in a high-tech business park in Richmond, British Columbia, Canada, in response to its ongoing expansion. FPS takes up the whole ground floor of the 23,000-square-foot building at 13911 Wireless Way. Along with its current neighboring manufacturing and office locations, all within a 10 km radius, the new corporate headquarters is the fifth location to open in the Richmond area. "Growth has been accelerating year on year. We have been able to keep on track forecasting additional space needed for global business expansion. We bring the best of minds and manufacturing by investing in our people and the environment they work in. With more than 300 employees across our facilities in the Greater Vancouver area, we are here to stay," Jeffrey Chang, President, of FPS Food Process Solutions Corp. said.



## Lamb Weston Holdings Increases Quarterly Dividend

The Board of Directors of Lamb Weston Holdings, Inc. recently approved a 14% annualized increase to the quarterly dividend. The Board declared a quarterly dividend of USD0.28 per share of Lamb Weston common stock. "This increase is a clear demonstration of our capital allocation priority of returning cash to shareholders. This priority, along with investing in our business through capacity expansions and acquisitions to support long-term growth, and maintaining a strong balance sheet, consistently drive our capital allocation decisions," said Tom Werner, President and Chief Executive Officer said. The dividend is payable on March 3, 2023, to stockholders of record as of the close of business on Feb. 3, 2023.



## Dubrulle Group Acquires Saalto



For a complete tracking of the potato supply chain, the Dubrulle group acquired Saalto, a French business that specializes in the automatic management of boxes. After completing the transaction, the Saalto team joined the Dubrulle group. Thanks to a proprietary, creative,

and effective method, Saalto is a pioneer in controlling, monitoring, and automatically tracking potato boxes. The box detection is automatic and doesn't need the operator to manually intervene because it is based on several algorithms. All box movements are managed, recorded, and analyzed by the Saalto solution. The buying of Saalto continues the Dubrulle group growth strategy while bringing in new skills and technologies. "The combination of the technological and human know-how of Downs and Saalto will lead to new developments and new integrations to offer always more innovative and efficient solutions to our customers," a press release states.



# French Fry & Potato Co-product Solutions designed for your business



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## Installation Services Added by Vanmark to its Menu of Assistance

**M**anufacturer of commercial equipment for processing potatoes and other food, Vanmark, said recently that installation services had been added to its menu of offerings. As a result, customers now can buy Vanmark equipment and have the company install it in their facilities. PFI, a sibling company of Vanmark, provides installation services. “Now you can rely on one team to provide best-in-class equipment and

install it. Vanmark now installs our peelers, hydrocutters, and all supporting transferring and storage equipment. We



work seamlessly with our sister company PFI to get your operation up and running fast,” Jack Grote, sales manager of, Vanmark said, cited in a recent press release. Vanmark can now handle any rigging, assembly, welding, and field fabrication required to finish the installation. These characteristics also apply to other installation-related devices, irrespective of the manufacturer. When making a purchase, customers can request a price for the services.

## Revamped Air Cleaner From Key Technology

**T**he #16 Air Cleaner from Key Technology was recently unveiled. This system cleans product of debris to enhance product quality and line effectiveness by removing dirt, extraneous vegetable matter (EVM), and other light materials. The revamped air cleaner from Key has a new fan, motor, screen, and chamber structure that improves sanitation, lowers maintenance, and more evenly distributes air velocity across the product screen.

“At Key, we partner closely with customers to develop new solutions to their production problems. Our new air cleaner was driven by one customer’s desire to remove even more debris for a cleaner product. While we designed this system primarily to improve performance, we looked for opportunities to maximize sanitation and maintenance, too. Predictive modeling software was crucial in the development of this air cleaner. Computational fluid dynamics enabled us to model the airflow to create a revolutionary design backed by real data,” Jack Lee, President of Key Technology Americas said.



## New Standards of Sorting with the Novel Sherlock Separator 4.0

**D**uring Interpom 2022, Insort GmbH presented their novel potato sorting machinery at their stand. According to the company, Sherlock Separator 4.0 represents the next generation of the most reliable three-way sorting solution on the market, specifically designed for whole potatoes.

“The novel machinery comes with further enhanced performance in terms of detection reliability and yield savings, latest Chemical Imaging Technology CIT® 3rd Gen, highest defect detection reliability employing high-resolution true color RGB cameras, real-time artificial intelligence, newest generation lighting system, enhanced software for most precise sorting results and improved usability, and optimized design for an even better product flow and increased yield,” a recent company brief states. These developments, along with tried-and-true technologies like the Separator Rejection System and Automatic Peeler Control, guarantee the best foreign body identification, effective data management, and reduction of operational costs through increased energy efficiency and yield.



## Potato Contract Prices Have Risen by 20%-30% Across the EU

**H**igher production expenses, primarily from energy, fertilizer, and transportation, affected potato farmers throughout 2022. The cost of production and storage is rising at an unsustainable rate, which is putting pressure on growers’ profit margins. According to a recent Mintec expert analysis, due to greater year-over-year (y-o-y) electricity rates, potato storage and drying expenses also increased dramatically. To battle rising drying and storage expenses, several producers sold up their inventory earlier in the season.

“In the 2022/23 season, demand for free-buy packing supplies was muted as many supermarkets contracted a higher proportion of their requirements to limit exposure to volatile potato prices. Therefore, significant driving factors, including higher input costs, have not been fully reflected in higher retail pricing. According to market sources, contract prices, largely finalized in Q4 2022, have risen by 20%-30% across the EU for the 2023/24 marketing year (MY) to account for this. This could potentially result in higher retail prices when the 2023 crop is harvested,” the analysis reveals.





## Novel Pathogenic Fungus Attacks Potatoes

Researchers from RUDN University have identified a novel pathogenic fungus that attacks potatoes and causes significant crop loss. *Alternaria alternariacida* was previously thought to be safe, despite the genus's previously established reputation for harming potatoes and other plants. Young and mature plants are both impacted by *Alternaria*. The most affected leaves have patches that are both brown and bright in color. Growth is slowed down by variations in photosynthesis and the poisons produced by fungi. Tubers are impacted by harvesting. Although not all fungi in this genus are harmful, several *Alternaria* species have been linked to the development of this illness.

Scientists from RUDN University discovered an unexpected method of sporulation in one of the strains. The conidia were thinner and smaller. It was discovered through molecular and genetic investigation that this is a separate species of fungus called *Alternaria alternariacida*.

## USDA Funds Four-year Research on Harmful Nematodes in Potato Fields

A research team led by the University of Idaho has been given a USD6.8m USDA grant to create novel diagnostic tools, management techniques, and technologies for potato cyst nematode control. The project's objectives include generating "smart chemicals" for nematode-specific control, constructing support models to direct growers' management choices, finding molecular tests to distinguish nematode pathotypes, and developing resistant potato varieties. The pale cyst nematode, which is only known to exist in a limited area of eastern Idaho in the U.S., and the golden nematode, which is located in New York, are the two kinds of potato cyst nematodes that the researchers will focus on. Keeping potato cyst nematodes from spreading is essential for commerce because they create cysts containing eggs that can survive for decades without a host. This poses a particular threat to the sector.

In addition, the group will assess additional nematodes crucial to the sector, including the Columbia and northern root-knot worms.



## Advanced cutting solutions for processed potatoes and potato snacks



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# Key Business OUTLOOKS for 2023

**T**he year 2022 has been a hard one for the entire potato industry. In addition to the great uncertainty surrounding the availability of potato raw material, concerns about the cost of energy, transport capacity, fertilizer, personnel and purchasing power have troubled the industry. Through all the woes, the business environment refined its defenses and growth mechanisms in a difficult market context. In the end, the balance was a positive one, with the industry registering, in some places, spectacular growth. For 2023, representatives of some of the most important equipment manufacturing companies talk in unison about reinvention, adaptability, differentiation, and care for the needs of their customers. A new year that, on top of the ongoing geopolitical crisis, presents a series of fresh challenges - from supply chain disruptions to increased

utility costs and labor force shortages. But what none of the viewpoints shared with us are missing is hope, an essential attribute for a long-term winning business. Regardless of the current challenges, the global potato processing market is expected to grow from USD28.82bn in 2022 to reach USD35.37bn in 2026 at a CAGR of 5.25%. Conventional food production systems have enjoyed uninterrupted growth over the last few decades. While this trend is expected to continue in the short term, resource constraints may dampen expansion in the long term. Furthermore, the sector is increasingly ripe for disruption. It is up to the growers, transporters and processors to find the right way to stay profitable and capitalize on the market opportunities that await them in 2023.

**By Tudor Vintiloiu**



**Guy Baeten,**

Strategic & Market Development  
Director, FAM STUMABO



**Stefan Toepfl,**

Managing Director,  
ELEA Technology



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Vice President - Sales & Marketing,  
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**Matthias Jeindl,**

CEO and Founder, Insort GmbH



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Managing Director,  
Rosenqvists Food Technologies



**Marco Colombo,**

Global Category Director  
Potatoes, TOMRA Food



**Alan Major,**

Chief Sales Officer, Urschel



## Guy Baeten,

Strategic & Market Development Director, FAM STUMABO



### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

Despite the very challenging economic and political climate, FAM Stumabo had a positive year. Of course, like many we had to be agile, flexible and reinvent ourselves to make sure we could answer our customers' requests and concerns. Our Procurement department sourced additional suppliers ensuring that the supply chain remained stable. Next to that we build up stock, which means a considerable investment, again to guarantee that all orders and deliveries to customers were made according to the deadlines.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

Last year was very challenging, still we are starting 2023 with a well-filled order book. Whatever the turbulences we had to face; these will still be around, at least for a while. New investments are taken under extreme consideration before being deployed, raw materials are hard to source and become more and more expensive. Being a global player and offering solutions for a broad range of food segments, we were able to offset certain decreases by growth in other segments and regions.

### How do you estimate the market will evolve and what is your priority list for 2023?

No one has a crystal ball. . . Our goal is to continue to provide the best machines and precision blades to food processors worldwide. What will be the result of the various price increases – labor, energy, raw materials – and how will customers react to it? FAM Stumabo want to make sure that we can continue to serve and support our customers, in a timely manner, in these very volatile times.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

Potato processors keep on investing in new processing lines, especially in Asia. Westernization of foodstuffs and shifting eating habits means that the demand for French Fries for example, remains high. There is enough demand for that segment. For the snacks segment, it's still wait & see how consumers will react to new potato snacks.

We believe that the food processing sector as a whole, and the potato segment especially, will continue to be very resilient and eventually continue its pace of growth. The scarcity of the workforce (i.e. skilled operators) has an impact on the design of new cutting machines. The latter need to be easy to use, to maintain and have a higher level of automation.

### What do you consider to be the most valuable asset you have in 2023 as a company?

The most valuable assets are our expertise and the people who make it happen – from the engineers designing the machines and blades, the bio engineers who have an in-depth knowledge of the customers' produces, the sales teams based around the world to answer customers' needs, our service teams who help customers maintain machines in the most efficient way.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

Continuous investments in technology and staff are essential to stay ahead of the game. Optimization of yield and efficiency is at the top of all potato and food processors' agendas. Potato processing plants, whether it's potato snacks, French fries, or other processed potatoes, are among the most sophisticated in the food industry, with many of the large processors even striving for 'lights-out' processing with minimum operator intervention. Innovation is the inevitable result of specialists, combining passion with years of expertise and problem-solving. FAM Stumabo have built profound customer relationships over many years; these resulted in new applications and products related to either cutting technology or the shape of the final product.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

The drivers have been the same for the past couple of years: sustainability, energy-efficient machines, automation, preventive maintenance, less food waste. Designing machines that use high performance motors to minimize energy waste and thus increase the overall efficiency of the motor using quality components, which require low maintenance or can be repaired easily (rather than thrown away). FAM Stumabo have a broad product portfolio such as mechanical cutters (e.g. Tridis 204HD, SureSet cutting heads) and hydrocutting solutions. This allows us to answer any request from potato processors around the world. We take many parameters into consideration to produce the best-in-class slicers, dicers and shredders. The choice of the ideal blade avoids starch loss and makes cuts extremely precise, providing product uniformity and reducing waste.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

We'd like to see a stabilization of the markets and in some way getting 'back to normal'. For FAM Stumabo, it is important to have the freedom to travel the world, to be even closer to our customers. Cutting trials and testing are best done face-to-face. Our commitment to potato snacks, French fries, and other potato product processors is more than ever: 'Together, we cut your potato product to perfection!' •



## Stefan Toepfl,

Managing Director, ELEA Technology

### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

2022 has been a year full of surprises. With reduced COVID case numbers and government measures we have seen a return of the out-of-home market and French fries' production and return of demand for our Elea PEF technology for that sector. Elea PEF systems help to reduce energy consumption and frying oil uptake – which has led to a number of new projects and installations. As a supplier of high tech equipment, we have always been used to work with a forecasting system for long lead time components, which has been really useful to cope with current supply chain issues.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

We are looking forward to another year of exciting opportunities and further growth in PEF use in fruit and vegetable processing. The technique has turned into a standard process in French fries industry. We have recently launched a new system design for large scale potato processing ranging up to 100 t/h. Several units are in build for commissioning early 2023. And here is more to come in snacks and vegetable processing as well as efficiency improvement for plant-based oil extraction where dedicated systems will be presented during upcoming trade fairs later this year.

### How do you estimate the market will evolve and what is your priority list for 2023?

We expect a number of new PEF applications in vegetable processing and texture management, e.g. to enhance blanching, drying and freezing of produce. We are currently finalizing a design to supply versatile, multi-use small and medium sized processing lines for that sector based on our proven technology pulse B1 platform with a processing capacity of up to 8 t/h.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

Main growth areas in 2022 have been the markets Asia as well as South America. Main lesson learned is that in addition to equipment and process know-how reliable business partnerships making use of a regional network of partners for installation and service as well as customer support are key to success. That's what our activities are based on.

### What do you consider to be the most valuable asset you have in 2023 as a company?

PEF expertise as well as an agile and motivated team of application experts and service engineers- that's what I would see most valuable. Since Elea has been established in 2012 we have put our efforts into creating a team dedicated to PEF use in food industry and a network of technology partners in various world regions.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

Our R&D efforts are focused on screening market needs to identify potential new application fields. Our main investment focus is put into continuous improvement and development of new systems to further improve process performance and efficiency. In cooperation with our R&D partner DIL (German Institute of Food Technologies) as well as universities and research centers around the globe we are involved in public and industry funded research projects. E.g. at present we are running R&D projects for larger scale processing systems up to 200 t/h for sugar cane or beet processing, processing of alternative proteins as well as in-line process monitoring tools for process optimization. Processing more with less resource use is what we aim for.

### What was unexpected in 2022 and how did it impact your business?

2022 several very well visited and fruitful trade shows and exhibitions have taken place. I have been positively surprised how fast travel and exchange opportunities have resumed. The direct exchange with existing and potential clients has led to numerous application ideas and new projects. We have enjoyed that a lot.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

I would expect 2023 to be driven by some continuing market uncertainties. Energy costs as well as potential supply chain issues will still impact on market and business opportunities. I am convinced providing best technical solutions and client support is key for a successful cooperation. Hence, we will continue our equipment design and application development project in cooperation with key stakeholders of food processing as well as equipment manufacturing industry.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

I would hope for increasing market stability based on a reliable energy and raw material costs and supply chain situation. Solving current political conflicts will be key to achieve that. •



## Justin Lai,

Vice President - Sales & Marketing, FPS Food Process Solutions

### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

Despite various challenges that hit global economies, FPS had a successful 2022. We were able to mitigate some of the issues by having global representation and manufacturing capabilities. We were able to shift our capacities to accommodate the volatile geopolitical situation.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

We see a slowdown from last year as 2022 was a record year.

### How do you estimate the market will evolve and what is your priority list for 2023?

We are growing globally – in Asia, South America, and Middle East/Africa. We are focusing on India and China as growth markets for FPS on a grand scale. In addition, we are developing new technologies to help diversify our product offering including our Global Remote Monitoring Control Centre (RMCC) which offers remote monitoring service anywhere in the world and hygienically designed potato tunnel dryers, one of our research-driven projects developed at our newly opened Innovation Hub.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

Growth came from China, India, and North America. There was a lot of rejuvenation of existing facilities and expansions. The most important lesson for us has been taking control of material costs and deliveries.

### What do you consider to be the most valuable asset you have in 2023 as a company?

You cannot put a price on it but our most invaluable asset are our employees.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

We believe that innovation drives growth. We have set up an Innovation Hub in PEI at our subsidiary CMP. We are also investing in new facilities with our US Michigan operation coming online in Q1 and in China in Q4 2023/Q1 2024.



### What was unexpected in 2022 and how did it impact your business?

The COVID situation in China continued to be extended for the better part of 2022 which gravely impacted our ability to grow normally in that market. We were also impacted by the Russia-Ukraine War, effectively ending potential projects that we had already started preparing for. There are some circumstances that are out of our control.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

As we have seen, being onsite at a customer location anywhere around the world to provide expert service is not always feasible. Thus, one of the key drivers is to focus on our Global remote monitoring service to support our customers, anytime, anywhere. Not only is it more economically sound but no one at the manufacturing level is able to do this, at this capacity, anywhere in the world. We are in the process of building our Global Remote Monitoring Control Centre (RMCC) at our Canadian facility with over 20 control technicians able to tackle various equipment challenges 24/7.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

We would like to drive the need for more hygienic requirements. This is our focus and we believe it should be the highest standard. •



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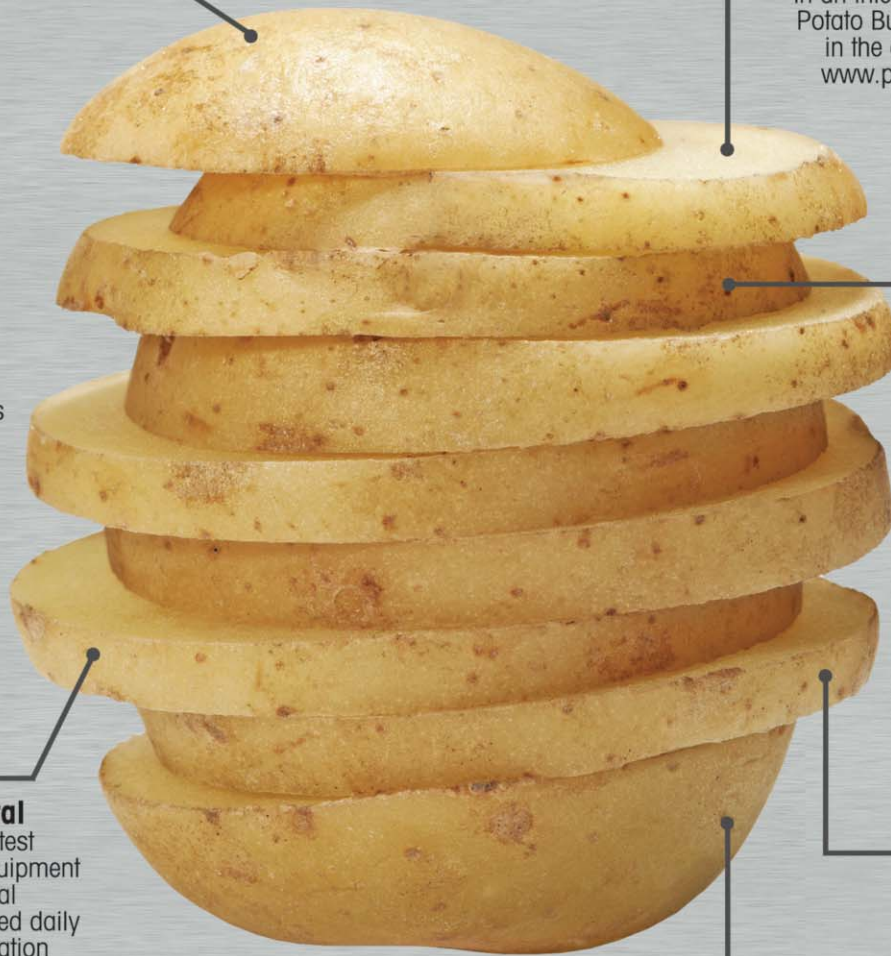
## **POTATO PROCESSING INTERNATIONAL**

Potato Processing International has been serving the global potato processing industry for 25 years and is regarded as a must-have information source for potato processors, equipments and ingredients manufacturers, as well as players in storage, retail and foodservice. This business-to-business magazine is published six times per year and continuously strives to be the most comprehensive publication, containing in-depth articles, expert views from some of the most respected companies in the industry, exclusive interviews, as well as news and trends.



## **POTATO BUSINESS Portal**

From breaking news to the latest innovations in processing equipment and potato products, the portal [potatobusiness.com](http://potatobusiness.com) is updated daily with the most relevant information for all players in the potato processing and storage industries. Regarded as a trusted source of information, the website also contains exclusive blog articles and white papers on various current topics that concern the potato universe.



## **POTATO BUSINESS DIGITAL**

Tailored specifically to meet the needs of the busy professionals in the potato industry, Potato Business Digital is the first industry standardized digital magazine for tablets and mobile phones. This quarterly online publication presents exclusive articles on various processing topics, as well as information on ingredients, food safety and storage innovation, in an interactive and dynamic form. Potato Business Digital is available in the click-to-read format on the [www.potatobusiness.com](http://www.potatobusiness.com) portal.



## **POTATO BUSINESS Weekly Newsletter**

The latest news, exclusive articles and interviews are delivered directly to your inbox with our weekly newsletter service, containing pertinent information from trusted sources, as well as industry insights and updates.



## **E-BLAST**

- Custom e-blasts using specific segments of our e-database, depending on the client's needs, with measured results.
- Special e-blast covering major worldwide trade fairs.



## **SPECIAL PROJECTS**

- May - Potato Business Dossier 1
- November - Potato Business Dossier 2



# A COMPLETE COMMUNICATION PLATFORM

## Matthias Jeindl,

CEO and Founder, Insort GmbH

### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

Despite the many different challenges that the past year presented, we can look back on 2022 in a very positive light. This is mainly thanks to our very committed team and also the good relationship to our customers.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

A slight stabilisation of the market. Some of the problems that occurred in 2022, such as a shortage of raw materials or electricity costs, will improve as alternatives have to be found.

### How do you estimate the market will evolve and what is your priority list for 2023?

After 2 very strong years of growth we expect still further growth but maybe more moderate than the last 2 years.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

We are listening closely to the need of the customers and try to react on their demand. The most important lesson was to stay calm, watch the market closely and make the most of the opportunities that arise.

### What do you consider to be the most valuable asset you have in 2023 as a company?

On the one hand, to listen carefully to the wishes and needs of our customers and to respond to them in the best possible way; on the other hand, to always remain innovative and to drive forward our developments. Last year we released the Sherlock Hypernova as a high end performer for the nut and dried fruit industry and many other applications and our Sherlock Separator 4.0, the next generation of the most reliable 3- way sorter on the market, specifically designed for whole potatoes.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

R&D is an extremely important aspect of our business. We enjoy a significant market advantage thanks to our third-generation Chemical Imaging Technology (CIT) and other technologies, which we not only want to maintain but also permanently expand, which is why we are investing heavily in the R&D area.



### What was unexpected in 2022 and how did it impact your business?

Of course, the Ukraine war and the resulting shortages in raw materials and high energy costs hit our customers, especially in Europe. It was noticeable that in the meantime this completely new situation forced companies to reconsider and rethink in some areas.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

The most important driver is innovation. We hope for your understanding, that we will not share details.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

Of course everybody would like to see an end of the war in Ukraine and also no further escalation in Taiwan. Within EU we would like to see faster permissions for industries to realise planned investments. •





## Jack Lee,

President of Key Technology - Americas

### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

2022 was a challenging year navigating market issues while continuing to offer our customers the superior solutions and service they expect from Key Technology. Though a time of difficulty, I believe the past year has positioned us to be more capable in continuing to address market issues in the future; we've worked hard with our supply chain partners to improve communication and overall supply stability, and we have improved understanding of dependencies and then driven process efficiencies with our customer-partners. The end result is I believe we are a more capable partner to the industry as result of our progress over the past year.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

Costs inflation, supply chain complexities and difficulties in satisfying labor requirements are all themes that I believe will continue for most of 2023. And, I believe Key Technology will continue to drive improvements across our entire business to benefit our customers.

### How do you estimate the market will evolve and what is your priority list for 2023?

The macroeconomic trends that have impacted our industry will continue, pushing the frontier of operational excellence and increased automation. Specifically, I expect potato processors will apply increased pressure on technology suppliers to provide even more value through smarter automation, both in terms of additional yield capture and operational savings from labor reductions. Our priorities as an industry partner are linked directly to those market demands.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

Our growth opportunities relate to our ability to supply our customers with integrated solutions in the form of turnkey line modules. Our customers increasingly value the ability to deal in those terms with Key Technology,

realizing efficiencies gained by outsourcing line design and project engineering tasks they were previously forced to manage directly.

### What do you consider to be the most valuable asset you have in 2023 as a company?

Our most valuable asset as a company is the level of potato processing application expertise we have developed over many years and nurture throughout our organization. This is what sets us apart and what is most valued by our customers who know they can count on Key Technology as a true partner of choice who intimately understands their business needs.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

Innovation is at the heart of our success. R&D activities that generate innovative solutions, which in turn unlock more value for our potato processing customers, is the fundamental reason for our business success. It should come as no surprise that investing in technology research and product development remains at the top of our priority list.

### What was unexpected in 2022 and how did it impact your business?

We expected input costs increases, particularly on materials, to decline in 2022 in comparison to what we experienced in the 2020 – 2021 period. Instead, we saw only a moderate decline in steel cost increases, offset by continued high inflation in most other cost categories, including labor and electronic components. This forced us to take actions in other areas, like identifying alternative supply sources and redesigning certain components, to manage impact on our total cost position.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

We are positioned to provide the processed potato industry with an even broader spectrum of integrated line solutions by working with our strategic partners; and we have invested in strengthening sales and service channels to follow our customer partners in new geographic regions, where their business growth requires expanded production capacity, to ensure a consistently high level of capabilities and services.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

Geopolitical uncertainty and trade restrictions continue to complicate market dynamics, driving inefficiencies and unnecessary costs. The industry would benefit from a clearer outlook on both fronts, although the prospect of this seems unlikely. •

## Ton Hendrickx,

General Sales Manager, Kiremko B.V.



### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

It was especially a tough year for our customers. That is why we see a greater demand for sustainability, total cost of ownership and upgrading of existing capacities. Of course we, like all other market parties, have supply chain disruptions but we also see that our customers recognize this. After all, 2022 was a successful year despite macroeconomic developments such as covid, Ukraine, inflation, etc.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

Regions outside Europe in particular (China India South America) are becoming more active in our market. This means that existing parties are expanding to these regions or new parties are emerging in those regions. In both cases, Kiremko will also be able to further expand its market leadership in 2023.

### How do you estimate the market will evolve and what is your priority list for 2023?

Our priority list is actually the same every year. Our number 1 priority: is to make our customers successful. This means that we must respond to the challenges they face. Such as: consumer behaviour, energy and raw material prices and product quality.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

The growth will come from Europe as well as from emerging markets such as South East Asia and South America. Africa is currently still lagging behind but depending on investment opportunities, it will soon follow due to the consumer demand that has arisen there. "We see the classic potato processing regions of Europe and North America mainly focusing on upgrading and modernizing existing processing locations.

### What do you consider to be the most valuable asset you have in 2023 as a company?

On the one hand, our product leadership in peeling, cutting, drying and baking. On the other hand our unique integration solutions for complete production lines that we can design together with our strategic partners. Added to this is our increasing degree of digitization. With the help of our Guard products with which we can further improve our customers' processes.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

Our R&D efforts are our priority because we know Kiremko's customers expect us to deliver state of the art technology. Our strategy is mainly focused on product development and innovation with the associated investments required for this.

### What was unexpected in 2022 and how did it impact your business?

No one could have foreseen that the global pandemic and a war on the edge of Europe would mean that travel would be severely hampered. (In covid time we successfully started 3 production lines with our Kiremko remote service). These developments have taught us that Kiremko is not only solid, but also flexible when the market demands it.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

Firstly, we foresee that data collection will play an increasingly important role in optimizing potato processing lines. The challenge we see is the successful translation of data from our measurements (Knifeguard, Peelguard Oilguard Dryguard) into the most efficient process for our customers. In addition, we will reduce our carbon food print by further expanding and perfecting our Kiremko remote service.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

This question implies that we as Kiremko would influence global business environments politics regulations and markets. We see that differently. We are not interested in returning to peacefulness or structure. We focus on successfully responding to the ultra-fast changes that our customers try to find an answer for, preferably a Kiremko answer. •

## Stefan Björk,

Managing Director, Rosenqvists Food Technologies



### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

This past year has been eventful for us at Rosenqvists Food Technologies. When I think about the projects, we have been supporting in 2022, I am especially satisfied of how much we have learned together with you, our clients and partners. The important improvement in our solutions is realized thanks to relevant interaction with you and thanks to committed team members in our company. I am thankful for this important collaboration. We continue our work to increase efficiency in your production. It is important for everyone to adjust to an uncertain energy situation and high-cost situation for raw materials. We are pleased with the important design choices we have done over the years, choices focusing on low oil volumes, preserving oil quality, saving water, and minimizing use of energy.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

I don't know exactly what the coming year has to offer us, but my expectations are high. The discussions we currently have for future projects tells me that the food industry has a positive view of the future. We are in for an exciting year. We look forward to dive in deeper into new heat supply sources for potato chips, to develop and prepare new solutions for French fries and for a re-design of the biggest star wheel fryer for pellets offering even better oil turn-over rate. We have a lot going on in development. Still, the most rewarding satisfaction I experience is when I see some of our equipment in action in your production site, doing its job, hour after hour, day after day.

### How do you estimate the market will evolve and what is your priority list for 2023?

I expect a continued focus on optimizing the production process in the snacks industry along with a number of interesting new ideas for product development. For frozen potato product industry, I believe focus will be for best performance, efficiency, maintainability and hygiene. I think producers will chase more uninterrupted production hours.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

We learn new things every day. For example, how much energy can be saved by insulating the fryer hood for potato chips or energy savings when removing one

percentage more of the surface water of chips slices or French fries before frying.

### What do you consider to be the most valuable asset you have in 2023 as a company?

The progress and development we are proud of at Rosenqvists Food Technologies is the result of hard work from dedicated team members and the fruitful cooperations we have with our clients. A lot of the best ideas comes from experienced and skilled customers, and we are happy to get the opportunity to realize some of them.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

We continue to focus on thermal treatment in the processing of potato chips, snacks, French fries and potato specialities. There are a number of challenges and opportunities for the industry in general. To support our change drivers, we have R&D initiatives ongoing in three focus areas: advanced thermal treatment solutions, process know-how and integration, energy and water sustainability.

### What was unexpected in 2022 and how did it impact your business?

It is obvious that the cost and availability of energy forces the snacks industry to significant changes. For us, this has led to a focus on process optimization. I expect a series of improvements to be tested and implemented over the coming years. Furthermore, the political and security conflicts globally have, in some cases, limited our chances of conducting business globally.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

The solutions from Rosenqvists Food Technologies always aim to solve a process challenge for our clients. Therefore, the driver for change follows the technical and economical challenge our customers experience. Energy recovery, water usage, handling by-products, introducing new technology, process consistency, uptime and ease of use, cost of ownership, food safety and quality analysis are some of the change drivers our team works with.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

On the top of my wish list is a peaceful resolution to the security conflicts we face around the world. Thinking back to my meetings at Snackex and Interpom during 2022, I am still filled with enthusiasm. The potato industry has a positive belief in the future, and rightly so, consumers continue to love these products.

For us, at Rosenqvists Food Technologies, it feels great to be part of this forward-thinking industry. We remain humble for the important challenges and opportunities that awaits us. •



## Marco Colombo,

Global Category Director Potatoes, TOMRA Food



### Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?

All the factors you mention have accelerated our customers' intentions to invest in automated solutions. Potatoes are fundamentally a commodity, a staple crop, and all players in this market have the same objectives: to optimize efficiencies; minimize unnecessary waste of precious resources; achieve a consistent product quality that meets ever-more advanced expectations; and cope with the increasing scarcity of manual labor. These needs, combined with the post-Covid return to a new normality in many areas of the world, led many customers to invest in more advanced equipment during 2022.

### What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?

We enter 2023 energized and with the ambition to be our customers' partner of choice in our strategic food categories. One of those specialized categories is potatoes. In recent years we have learned to become more resilient, given the unique external factors (such as the pandemic, supply chain problems, and disruptions caused by the war in Ukraine) affecting our business and others. Despite these challenges, we are well-positioned to meet our company's expectations.

### How do you estimate the market will evolve and what is your priority list for 2023?

Trends are reshaping the market, and TOMRA is well-equipped to provide the solutions needed. Firstly, our customers require turnkey solutions for the whole plant or major modules of their plants. Secondly, they need automated solutions to minimize mistakes arising from continuous manual machine interactions. Thirdly, they require equipment that can communicate with other machines in the plant to reach specifications and maximize yield proactively. All these needs are on TOMRA's priority list, and in addition to the solutions we already provide, we also have major innovations in the pipeline.

### Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?

Properly segmenting our business has uncovered our most relevant opportunities. This has allowed us to start acting on must-wins, such as transitioning from offering single machines to providing integrated and increasingly automated solutions to our customers to guarantee consistent quality and increase yield. Opportunities came from different sub-segments. Frozen potato products completed the post-Covid rebound, going back to solid growth. Potato farmers have shown a willingness to invest in optical sorting, driven by the increasing difficulty to hire, train, and retain manual labor. Fresh packers have similar issues, needing a 'one-stop shop' solution to sort and grade their potatoes. Chips manufacturers are investigating complex problems, such as moisture detection.

### What do you consider to be the most valuable asset you have in 2023 as a company?

Everything at TOMRA starts with the ability to understand our customers' needs and provide meaningful solutions, wherever they are located. Consequently, we see as major assets our unique global footprint combined with our regional- and local-level presence; our innovation capabilities, and our expertise in core areas of the plants.

### As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?

At TOMRA, we have identified the core categories or market segments, including potatoes, where we aim to be the market leader. Our strategy prioritizes investment and resources to develop unique solutions that will contribute to the improved efficiency and commercial competitiveness of our customers' businesses. Of course, this includes businesses processing tubers. TOMRA commits 8% of its annual global revenues to R&D. At a company as big as TOMRA, that's serious firepower – and it results in technical solutions that keep our customers ahead of the game.

### What was unexpected in 2022 and how did it impact your business?

Russia's invasion of Ukraine had consequences in the potato value chain. Many global players decided to step out of Russia, and at TOMRA, we have halted all activity there. Business in Ukraine and adjacent countries have also suffered. This led to some projects in the pipeline being put on hold, which we are now managing with our partners and customers.

### Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?

TOMRA wants to stand out for its ability to deliver and service integrated solutions all over the world, even in emerging geographies. Another area where TOMRA can make a difference, thanks to our unique global procurement and sales and operation planning capabilities, is navigating through supply chain uncertainty and volatility.

### What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?

At TOMRA, our mission is "Every Resource Counts," which also means "Every Potato Counts." Sustainability and Social Corporate Responsibility are already high on our agenda, and continuing to optimize policies and legislation with those in mind would be a great way to maximize the potato value chain and contribute to a healthier environment. •



## Alan Major,

Chief Sales Officer, Urschel

proper business adjustments within our organization. Growth does not come without change, and our business culture continues to grow to effectively meet the everchanging needs of the marketplace.

### **Considering the market volatility, supply chain disruptions, energy costs, and workforce scarcity, what does this past year look like for your company when you draw the line?**

Related to the past year's general market volatility, supply chain issues, and workforce shortages, Urschel's global business, this year exceeded expectations, considering the economic climate globally and the effects of supply chain disruptions, unanticipated military conflict, and impact from inflation and currency devaluation, we still had a record year, and our workforce has remained strong – even adding a significant number of employees through hiring and the acquisition of JIFCO CNC Machining Company, now called Urschel South. New Urschel employees from Urschel South will join the rest of the Urschel team after completion of the current plant expansion.

### **What are your expectations for next year, keeping in mind the legacy of 2022, but also the current challenges?**

Expectations for 2023 and challenges are based on my past experience. Urschel is a capital-intensive company, so we typically lag in the effects of economic downturns as we primarily sell to the food industry. Previous economic declines have had little impact which leads me to be cautiously optimistic.

### **How do you estimate the market will evolve and what is your priority list for 2023?**

While inflation has impacted food processing sectors, including potato producers, on margins I think the market will continue to evolve. Some of those same conditions will drive consumers to increased consumption and processors to increase capacity to keep up with demand. Consumers will evaluate cost comparison of grocery store products and still realize the value in purchasing such products as frozen French fries. In comparison, the cost per pound/per serving will remain economical which will lead to positive market growth in the potato sector.

### **Where did the growth opportunities come from and what is the most important lesson you have learned in recent times?**

Our most recent growth opportunities have derived from listening to our customers and addressing those needs in the marketplace. The lesson we have learned is to admit our weaknesses and to address them with

### **What do you consider to be the most valuable asset you have in 2023 as a company?**

Our most valuable asset as a company is our in-house manufacturing of our Urschel products, dedication to our unrivaled quality, and our culture which is driven to excellence.

### **As part of your growth strategy, how do you prioritize your investments versus your R&D efforts?**

Urschel recognizes that R&D is critical for continual growth and maintaining our dominance as the market leader. We have recently separated R&D from engineering creating the Innovation & Development Department. This will reduce our time for development and ensure our continued growth.

### **What was unexpected in 2022 and how did it impact your business?**

When forecasting for 2022, a war in Eastern Europe was not on my radar, nor was runaway global inflation, or currency devaluation. This had significant impact on the business climate globally.

### **Which are the most important drivers of change for your business in 2023? How do you plan to prepare for them?**

One of the most important drivers of change for Urschel in 2023 is our plant expansion currently underway to significantly increase capacity to our manufacturing. This will hopefully reduce pressure and provide relief for the growing demand for Urschel machinery and parts as we continue to invest in newer technology and manufacturing methods.

### **What would you like to see happening in 2023 for your stakeholders and business environment (in terms of policy, regulations, and market) in order for your business to thrive more?**

For 2023 for Urschel and for all other businesses, I would hope overall that pricing would stabilize globally and that there would be an easing of supply chain issues. This stabilization will hopefully lead to another record-breaking, profitable year. •





# Sorters: Looking at Potatoes From All Sides

Optical sorting systems are becoming increasingly important in the potato processing industry, as they offer a cost-effective and efficient way to sort and grade potatoes based on their size, shape, color, and other physical characteristics. These systems use advanced camera technology and algorithms to identify and separate potatoes that meet specific quality standards from those that do not.

## By Tudor Vintiloiu

One of the key features of optical sorting systems is the ability to achieve a high good-to-bad ratio, which is a measure of the proportion of good potatoes that are correctly identified and separated from bad potatoes. This ratio is typically measured as a percentage, and can be improved by using more advanced cameras and algorithms that are better able to identify subtle differences in potato quality.

Another important feature of optical sorting systems is the ability to sort to spec, which refers to the ability to sort potatoes according to specific quality criteria set by the processor. For example, a processor may want to sort potatoes based on their size, shape, color, or other physical characteristics, and a good optical sorting system will be able to do this with high accuracy and efficiency. As the industry becomes more demanding, and as some

customers request even higher product quality, knowledge is power. Gathering more information - such as the color of good product, dry matter measurements, and detection of green potatoes - can show how to adjust the process to optimize yield.

### OPTIMIZING YIELD

Thankfully, technologies are available to help processors meet these multiple requirements. One of the industry's leading solutions

provider for processors and packhouses, TOMRA Food, offers optical sorting machines, application-specific modules, multi-lane sorters, and the TOMRA Insight data platform. These solutions improve processing yields for a wide variety of potato products. For wet and IQF products - French fries or chips - the best solution is the **TOMRA 5B**. Equipped with the latest camera and laser technology, with an on-belt inspection zone and 360° view, this machine analyzes color and shape defects with unequaled precision. And with software incorporating advanced algorithms, it can also sort by size and length-to-width ratio, meeting specifications whilst also maximizing the good-in-bad ratio and the recovery of saleable raw materials.

For potato flakes, the **TOMRA 3C** is most suitable. Combining high-resolution RGB cameras with LED lighting, plus laser or near infra-red units, ensures exceptionally high sorting accuracy. This delivers high-performance color sorting to remove dark spots, discolorations and foreign materials. What surprises many potato processors is how sorters can do so much more than sort. These highly reliable technologies also accurately grade to specification, minimize false rejects, increase recovery rates, handle high throughputs, manage peaks in demand, reduce the need for manual interventions on the line, solve labor-scarcity problems, reduce downtime, and reduce the line's total cost of ownership. Optical sorters play an increasingly important role in potatoes processing as a tool to sort and a source of knowledge.

### CAMERAS AND SENSORS

**Key Technology's** VERYX family of sorters for processed potato products are another available option, coming in different widths to meet the specific capacity requirements of each processor's production line, satisfying the low throughputs needed on smaller production lines, all the way up to 25 metric tons of potato strips per

hour with a single sorter. With Key's VERYX, the ability to achieve all-sided surface inspection on a potato processing line was central to its development. As the only belt-fed sorter that can inspect product entirely in-air with top- and bottom-mounted sensors, VERYX can see every facet of each object. VERYX is designed to sustain a 360-degree view of each object throughout the longest production cycles, because we position its sensors, light sources and backgrounds away from product splatter.

Depending on application's requirements, VERYX can be configured with up to eight individual inspection sensors on the same sorter. Sensor technology includes next-generation 4-channel cameras, hyperspectral imagers and high-resolution laser sensors that can recognize the color, size, shape and structural properties of every object. According to the company, their proprietary Pixel Fusion detection technology combines pixel-level input from multiple sensor types to produce higher contrasts between objects, which enables VERYX to identify the most-difficult-to-

detect FM and product defects without false rejects.

### TAKEAWAYS

Recent advancements in machine learning and artificial intelligence (AI) are also transforming optical sorting systems, making them even more accurate and efficient. For example, machine learning algorithms can be trained to recognize specific patterns in potato images, allowing the system to identify and sort potatoes based on more subtle differences in quality. Additionally, AI-powered systems can also learn and adapt to new patterns over time, making them more flexible and responsive to changing quality standards. Optical sorting systems are steadily becoming the star of any processing line, as they offer a cost-effective and efficient way to sort and grade potatoes based on their size, shape, color, and other physical characteristics. Recent advancements in machine learning and AI are also transforming these systems, making them even more accurate and efficient, and allowing processors to sort potatoes according to specific quality criteria with high accuracy and efficiency. •



# FRUIT LOGISTICA

## Sets the Tone for 2023

**T**here is something for everyone at the world's biggest trade event for the worldwide fresh produce industry. It brings together major and small businesses from all around the world's fruit and vegetable industry. However, at a show of the magnitude of FRUIT LOGISTICA 2023, it's critical to know where to seek the next business opportunity.

**By Tudor Vintiloiu**

"Which companies will you visit? Search the full exhibitor list or head to FRUIT LOGISTICA Online to contact exhibitor representatives before the show begins. And be sure to download a copy of the event map, which makes it simple to navigate around the site," Kai Mangelberger, Director of FRUIT LOGISTICA, recommends.

More will be on show during FRUIT LOGISTICA 2023. The event will feature an expanded Hall 26, which will house global suppliers and logistical companies. In addition, enterprises from the Middle East, North Africa, and Turkey will be represented in CityCube Hall B.

In Hall 3.1, innovative companies will present a range of digital solutions in the Smart Agri area, which made its debut at last year's FRUIT LOGISTICA. These include AI-enabled robotic harvesters, precision spray drones, advanced watering concepts, and autonomous field vehicles.

And on 10 February, under the theme Disrupt Agriculture, FRUIT LOGISTICA's fourth Start-up Day turns Hall 2.1 into a networking hub for groundbreaking innovations. Twenty of the most innovative tech start-ups from around the world will show their products, projects and ideas in the Start-up Area. Hall 2.1 is also home to the Start-up Stage, where start-ups and smart agri companies will present their forward-looking business ideas, technologies, and visions for the future on the third day of the show.

During the exhibition itself, the latest industry trends will be at the center of FRUIT LOGISTICA's extensive event program across its Fresh Produce Forum, Future Lab, Logistics Hub, Tech Stage and Start-up Stage. The program overview with all details can be found online. •



**FRUIT  
LOGISTICA**

Berlin  
8|9|10 Feb 2023



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**FRUITNET**

 Messe Berlin

## Elea PEF Technology

Hall 2.1 - Booth A-40

[www.elea-technology.com](http://www.elea-technology.com)

With over 200 installed systems worldwide, Elea is the leading supplier of Pulsed Electric Field (PEF) systems to the food, beverage, and scientific sectors. PEF is able to restructure raw materials such as tubers, providing new product opportunities and enhancing process optimization for snack processing such as chips and French fry manufacturing. Benefits: water and energy savings, higher yield, smoother cut, less breakage, reduced oil uptake, better colour and improved quality. Elea provides a range of PEF Advantage Belt systems up to 70 t/h, but also a flexible solution for businesses looking for an output up to 7,5 t/h.



## FAM STUMABO

Hall 1.1 - Stand A41

[www.fam.be](http://www.fam.be) | [www.stumabo.com](http://www.stumabo.com)

FAM focuses on developing industrial cutting machines for the food industry, by providing customers with the solutions they need for the cutting, slicing, and dicing of vegetables, fruits, potato chips and French fries. Over the past 60 years, we established long-lasting close cooperation with highly influential companies, customers, and partners. We are present in all continents, with customer experience centers, stocks, and service. A big contributing factor to our quality is the close partnership with our sister company Stumabo International, manufacturer of precision knives for the food industry.



## Key Technology

Hall 6.1 - Booth A-60

[www.key.net](http://www.key.net)

Key Technology is a global leader in the design and manufacture of automation systems including digital sorters, conveyors and other processing equipment. Applying processing knowledge and application expertise, Key helps customers in the food processing and other industries improve quality, increase yield and reduce cost. Key manufactures its products in Walla Walla, Washington, Redmond, Oregon, USA, and in Beusichem, the Netherlands. Key offers customer demonstration and testing services at five locations including Walla Walla and Beusichem as well as Hasselt, Belgium; Sacramento, California and Melbourne, Australia. Key is a Duravant Company.



## Raytec Vision SpA

Hall 1.1 - Booth B- 50

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

Raytec Vision is a leading expert in optical sorting technology for food as well as X-Ray inspection for packaged products, providing a wide range of machines for safety and quality control. Raytec Vision SpA was founded in 2001 in Parma, considered the main center of the Italian food valley. The company's mission is aimed at achieving the highest quality standards in the food sector with the support of innovative machines, such as optical sorters for raw materials and for processed products, as well as x-ray inspection machines for packaged and unpackaged products.



*Innovation in Sorting Equipment*

## Tolsma-Grisnich

Hall 2.1 - Stand C21

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

Tolsma-Grisnich has been a pioneer for more than 75 years and leading specialist in the efficient storage and primary processing of potatoes, onions, and carrots. From the international potato capital Emmeloord, Tolsma-Grisnich serves its customers with smart, innovative, and concept-oriented solutions with which they demonstrably distinguish themselves. With high-quality customized solutions and intensive process supervision, Tolsma-Grisnich relieves its clients of all their worries and guarantees them the highest return.



## TOMRA Food

Hall 4.1 - Stand B41

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

TOMRA Food designs and manufactures sensor-based sorting machines and integrated post-harvest solutions transforming global food production to maximize food safety and minimize food loss, by making sure Every Resource Counts. The company has more than 12,800 units installed at food growers, packers and processors around the world for Confectionery, Fruit, Dried fruit, Grains and Seeds, Potatoes, Proteins, Nuts, and Vegetables. These solutions include advanced grading, sorting, peeling and analytical technology to help businesses improve returns, gain operational efficiencies, and ensure a safe food supply.

TOMRA Food operates centers of excellence, regional offices and manufacturing locations within the United States, Europe, South America, Asia, Africa and Australasia.



## Tummers Food Processing Solutions

Hall 6.1 - Booth B-51

[www.tummers.nl](http://www.tummers.nl)

Tummers Food Processing Solutions organizes innovative solutions around the world for processing potatoes and tubers from land to customer. We can do everything from A to Z for you as our customer, thanks to our extensive range of machines, our wide-ranging service provision, but most of all due to the way in which we work together with you. The company has become a leading manufacturer of machines, machine parts and complete production lines for potato and vegetable processing. The Tummers Group currently consists of four companies with more than 100 employees and it operates all over the world.



## Urschel Cutting Technology

Hall 1.1 - Booth C-30

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

Visit Urschel to see the latest in food cutting technology. Explore the new laser cut Model CC Slicer frame. This bold, improved design offers increased sanitation and flexibility. See the E TranSlicer® Cutter and the Sprint 2® Dicer both with built-in conveyors - ideal for complete discharge of product into totes. Learn more about the Affinity® Integra CD-L Dicer and the processing of sticky fruits. Also on display, the Comitrol® Processor Model 1700 for optimal milling of pastes and purees. Successful processors partner with Urschel to deliver intelligent cutting solutions.





# Leading Knife Technology

Urschel machines and critical parts are manufactured under one roof to make sure strict quality standards are enforced. The form and function of every Urschel cutting machine is the sum of components and craftsmanship.

## Expert Contributors: Mike Jacko, Vice President of Applications & Product Development and Anthony Young, Assistant Plant Manager

**T**his article focuses on the precise form and function dedicated to the explicit production of Urschel knives. As the #1 Global Leader in Food Cutting Technology, Urschel has manufactured thousands of cutting machines while the number of knives manufactured per year is well **into the millions**. The expertise in designing and manufacturing precision knives throughout the company's history and remaining at the forefront of knife technology cannot be underscored enough. Goals in knife making are to craft knives of the highest performance level with the most efficient use.

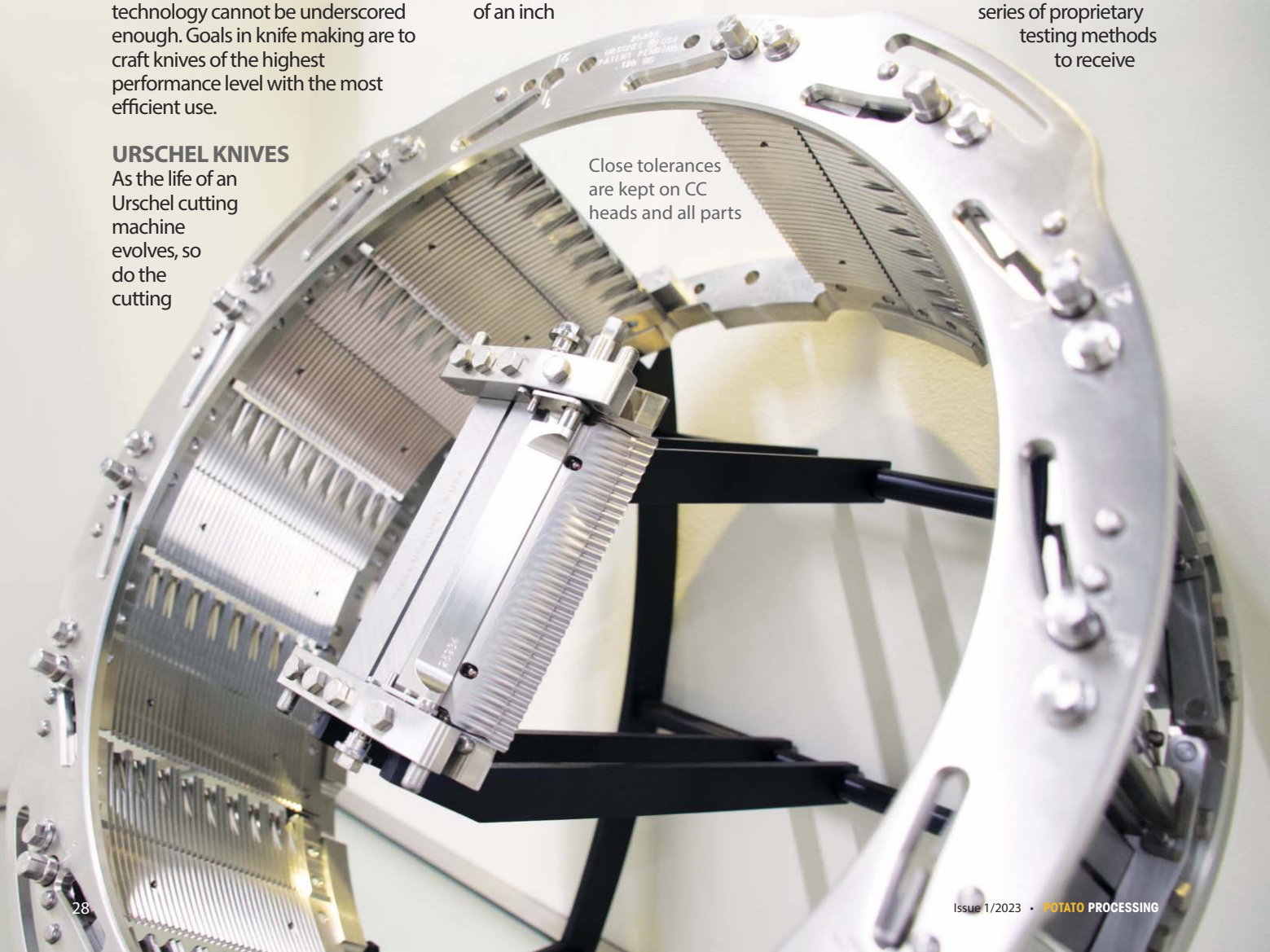
### URSCHEL KNIVES

As the life of an Urschel cutting machine evolves, so do the cutting

applications. Fulfilling customer needs to process certain products is evident. Knives need to be constructed to stand-up to the characteristics of the product being processed. These factors include rigidity, temperature, moisture level, fat content, softness, etc. and also include incidental rocks, soil, or sand which may interact with the cutting process. With advanced manufacturing methods, knife accuracy is controlled to less than one ten-thousandth of an inch

(0.000010" = 0.000254 mm) holding traditionally aerospace engineering technology standards throughout the millions of knives that are produced. This accuracy is also seen in the spacers and feed discs commonly employed side-by-side of circular knives on a knife spindle. Urschel metallurgy plays an important role. Supplied coils of stainless steel must meet specific predetermined metallurgical standards. Coils are received and put through a series of proprietary testing methods to receive

Close tolerances are kept on CC heads and all parts





Crosscut and circular knives and spacers fit and function are key to precision, high capacity cuts



Waterknife heads built upon customer order

certification and verification before any other processes commence. The coil is then put through a number of conditioning steps before the actual knife making begins.

Urschel's in-house heat treatment facility incorporates three different styles (atmospheric, vacuum, and induction) to create the ultimate in precision, durable knives, and other Urschel parts. High tensile knife alloys used are second to none. Urschel metallurgic team maintains strict standards. Due to this in-house manufacturing, Urschel dials-in the exact conditions to optimize and stabilize the production of Urschel parts. Annealing and stress relieving, additional steps such as cryogenic tempering, and heat treat methods are precisely adhered to and work together with engineering, metallurgy, and quality-control to go above and beyond the industry standard.

### CC SLICER

At first glance, the CC flat slicing knife appears simple in design. The craftsmanship and amount of research and development has mirrored the success of the rise of this potato chip/crisp industry icon. Thousands of hours of testing, different styles of potatoes grown in different areas, plus the ability to deliver a precise slice while venturing through potential sand, soil, and the occasional rock. The bevel is crucial in the successful design. A very narrow hardness range is specially engineered. If a knife is too soft, the edge will bend over. If a knife is too hard, it will tend to shatter. The knife is designed to maintain the proper edge location and degree angle imperative to long-time, precision throughout production runs. Precision slices maintain proper level of oil absorption and fryer times directly affecting the bottom line. Dull

knives lead to increased waste. Dull knives may lead to surface fractures, as they 'plow' through the potato, instead of cleaning cutting, resulting in excessive breakage and increased oil consumption.

Initial CC flat knives were originally manufactured on Urschel-built production equipment and measured on an optical measuring instrument (also Urschel-built). Today, Urschel employs newer technology in a cell-driven manufacturing environment while maintaining strict quality controls. The slicing and shredding knives available on the CC have grown

along with the market applications including a variety of crinkle, v, z, julienne, and corrugated options.

### DIVERSACUT® DICER SERIES

While the Model CC delivers different styles of slices, the DiversaCut series produces 3-D cuts employing slicing, circular, and crosscut knife stations. The first cut is the slice. Slicing knives are available handled, as an easily replaceable, lower cost option, standard, with or without shaped edge, and special heavy duty. Most slicing knives are specially notched to work directly with dedicated circular knife spindle set-ups. Specially crafted



CC Series



DiversaCut® Series



TranSlicer® Series

bevels, heavy duty slots, some widely and some narrowly slotted. It all centers around precision cutting at high speeds and keeping tolerances. The second cut takes place within the circular knife spindle. The blades are crucial to cut cleanly, accurately through the product. The spindle may be made up of all circular knives, or a combination of spacers, feed discs, and circular knives depending on characteristics. Circulars, spacers, and feed discs come in thin or thick profile. Circulars may be finished with different beveled edges depending on product. Holding tolerances of all parts on the spindle is crucial, as well as the balance and geometry of the spindle component itself in order to achieve optimal cutting and avoid any part-to-part negative movement or potential crash. Tolerances of these parts are maintained at less than one ten-thousandth of an inch. The spindle and spindle shaft are designed to work with certain circular knife styles.

The third and final cut takes place at the crosscut spindle station. The crosscut knife spindle incorporates knives at an angled bend placed in parallel that horizontally cross the vertical axis of the second circular knife cut. Urschel has developed diverse styles suitable for different products including standard, light duty, blunt edge, narrow width, and different beveled edges – just to name a few. The edge of each, thickness, and thinness areas of each style takes hundreds, if not thousands of hours of R&D to determine every production step and refine this process to ensure quality and efficiency. With engineering and all manufacturing under one roof, heat treat and anneal procedures have been refined for each style and each corresponding spindle. All parts are manufactured to work together in proper geometry and balance to deliver uniform cuts.

### TRANSLICER® CUTTER SERIES

The machines in the Translicer series are cutters containing a large cutting wheel (20" (508 mm) or 25" (635 mm) in diameter) made up of knives. The Translicer knives are held in place under tension.

0.000010" (0.000254 mm)  
Urschel Level of Tolerance

0.002" (0.0508 mm)  
Household Dust

0.004" (0.1016 mm)  
Average Human Hair

Flat, julienne, scalloped and crinkle knives are available. With such a large wheel and lengthy knives, manufacturing them initially had many challenges when Urschel first developed the Model OV, precursor to the now Translicer series, the knives tended to twist or warp, instead of remaining flat for proper cutting action. After some analysis, proper metallurgy, heat treat methods, and annealing were determined combined with additional steps to resist compression of the knives and ensure knives remained under equal tension maintain balance on the cutting wheel. Proper knives, wheel rotation, and balance are imperative to delivering consistent, accurate cuts. Today's customers benefit from Urschel's expertise throughout the company's longstanding history.

### WATERGUN KNIVES

As Urschel developed the Model VSC, Velocicut®, and watergun-style heads, the company continued to develop knives for universal watergun systems. The quality and longevity of the watergun knives manufactured at Urschel has been recognized in the food processing industry.

Watergun blanks are routinely stocked, and inventory replenished to expedite knife finishing and custom builds upon customer demand. Urschel custom tapers each row of blades to ensure product accurately transitions and is cut as it traverses through the head. Notched proper geometries are configured to prevent potential tapering or fracturing of product. A symbiotic balance between hardness of individual blade material and blade sharpness is crucial. Certain set-ups may or may not require tensioning of the blades depending on custom order to meet precise customer needs.

### COST-SAVINGS

Urschel has specifically designed many knives with the added value of

being able to resharpen the blade edge via Urschel-manufactured honing equipment. Operating any cutting machine with dull or not properly maintained knives may prove costly. Lost time and increased product waste far exceeds the cost of knife replacement. Use of dull knives increases the potential of cell rupturing, miscuts, and decreases yield and profit.

Customers are encouraged to learn more about the many knives and set-ups available to ascertain the most optimal for their product and line requirements. Urschel routinely develops and introduces new knives and cutting set-ups to improve individual cutting machine performance. Free-of-charge test cutting services are available to assist customers with R&D.

Urschel offers complete support over-the-phone, in-person plant visits, or live remotely. Urschel's significant ongoing investment in the global infrastructure of the company give clients peace of mind knowing their local office is there for complete support in terms of maintenance and training for the long life of their cutting equipment. Urschel speaks the language of food processing AND the local language, so important details in customer expectations are met. As the Global Leader in Food Cutting Technology, Urschel global personnel possess the highest degree of knowledgeable food cutting expertise. Urschel is the number one best-selling provider of industrial food cutting machinery because the company partners with customers to increase their productivity and profitability. Customers embrace Urschel advantages. Urschel designs new patented cutting methods and discovers new shape cuts to assist processors. Urschel continues to develop new knives, parts, components, and machinery to expand and grow with the everchanging demands of the food industry. •



# POTATOBUSINESS

2020 | ISSUE 1

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DESTONING  
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Contributes to  
Less Maintenance** >

CUTTING, PEELING, SLICING  
**Finding the Best  
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# POTATOBUSINESS DIGITAL



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Christophe  
Vermeulen:  
"I Hope for  
a Calm Year  
But I Don't  
Expect It"



Present in Kortrijk during the 2022 edition of Interpom, Christophe Vermeulen, Belgapom's CEO talked to Potato Processing International about the challenges of 2022 and the organization's future strategy. Increasing pressure from European regulations, rising costs and a general sense of uncertainty are driving farmers to cut back on their acreage and even switch to other crops, at a time when growing demand from consumers should be pushing things the other way around.

## By Tudor Vintiloiu

### What does this past year look like for your organization when you draw the line?

It has been a difficult year and a half and it started with the wet season in the summer of 2021. And then of course came the backlash of COVID and the crisis in costs and transport and things only worsened when the war in Ukraine started. For the potato sector one of the biggest impacts came from the sudden

shortage in sunflower oil.

That was the first big crisis of this of this year, and it was something that we had to act on very swiftly and we needed the government as well because we needed to change the composition of our product at very short notice and we could not really ask for permission from the consumer, we just had to do it because

there was no available oil.

Of course if you change from sunflower to, let's say, palm oil - which happened quite a lot - we had

*“There are more and more crises in the potato sector and the resentment that was once between farmers' organizations and the industry is dissolving because we need each other more than ever.”*

to communicate it in a clear way to the consumer but it was challenging because you cannot change the packaging overnight - it takes six months to change - so we had posters in shops and there was an official website by the government where people could find more information on the attributes of the oil that was used. It was a quick and good solution for the problem and in the end it worked exceptionally well. Companies found alternatives quite quickly but, of course, at a big cost, because when demand rises, the price rises as well.

### What are your expectations for 2023, keeping in mind the legacy of last year, but also the current challenges?

Many of the government officials here that I talked to are concerned that farmers are complaining about new regulations coming into effect and as a result they might be

forced to reduce their acreage. Farmers will react because there will be a flood of new European regulations as a result of the 'farm to fork' strategy and the 'green deal' whose target is 2030. We're in 2023 - that's almost one third of the decade already gone, so many things have to be changed - like the use of pesticides, for example. Another current issue in Belgium, especially on the Flemish side, has to do with fertilization and the new regulations around that. A leaked plan of the ministry of environment surfaced and it was actually quite surprising. There were a few very important things mentioned in the plan - no more fertilization after the first of August, which meant you could not harvest anymore after the first of September. This alone would have meant that in certain areas where the water quality is poor - and that means the whole province of West Flanders and East Flanders where all the potatoes and all the vegetables are grown - would see a reduction of 80% of their acreage. This essentially means no more potatoes and vegetables like cauliflower or spinach could be grown in this country, in the heartland of it. The aim of the plan was to increase the quality

*“We all need to grow healthy, to have a healthy product and healthy businesses, and you can only have that if you have certainty.”*

of water, which is fantastic and we are very much in favor of that, but the solutions were so generic and so radical that it would have meant the end for the industry. But the plan is off table now and we reacted quite swiftly and quite hard in the press and now the industry is part of the negotiations for the first time. There are now talks between the administration, nature organizations, environmental organizations, farm organizations and, for the first time in 25 years, the industry, because we are clearly a stakeholder in this process.

### **How do you estimate the industry will evolve and what is your priority list for 2023?**

I hope for a calm year but I don't expect it because it starts with new regulations on pesticides and PPPs in January so the year will start fantastically but I hope we can find some common ground during all the negotiations we're in that we can find our way in the flood of regulations. What I want, really, is to have a clear vision as an industry. And I want a clear vision from the political side of the story as well. A clear vision on what we are going to do with our agriculture in this country, and what the plan is. Are they glad we have the richest soil in Western Europe, are they glad we have a world dominating industry, or do they want something else? And if they want something else, please be clear about it, because we need certainty for investments. We all need to grow healthy, to have a healthy product and healthy businesses, and you can only have that if you have certainty. If you constantly change the rules

and if everything is becoming more and more insecure, that is an environment where no one can thrive in. So that's what I want for 2023.

When it comes to the relation between farmers and processors, we, as an organization, cannot interfere, we can stimulate, make suggestions but that's the only thing we can do and sometimes it helps when there are big problems. This year, for instance, was a very dry year, luckily we had a good month of September and a good month of October which was fantastic because otherwise it would have been a very bad harvest. In the beginning of September, however, there was a real concern that the yield was below 25 tons per hectare and that would have made it very hard for some farmers to fulfill their contracts, because farmers need to deliver according to their contracts - let's say 200 tons at fixed dates. And we observed that all the processors were very understanding, and more and more we see that, because there are more and more crises in the potato sector and the resentment that was once between farmers' organizations and the industry is dissolving because we need each other more than ever, so when there's a problem it gets resolved really quick and much easier than it was five-ten years ago.

We need the farmers to want to plant potatoes instead of other crops and that's why we have to pay the price for the potatoes, literally pay a good price. Some voices are saying that the farmers are the weakest link in

the chain, but I disagree.

Farmers are getting stronger and stronger. It's true they have to respect a lot of regulations and it's not easy being a farmer but when it comes to demand, they're getting a stronger position because the industry needs their potatoes. The demand is still increasing so heavily, we are building factories as fast as we can, but we need more and more potatoes and it's getting harder and harder to source them.

There are many challenges - from the regulations, fertilization, PPPs, the war, climate change, etc. If we're going to have the next ten years like we had the last five, that means six dry ones, two very wet ones, and two normal ones. That's eight abnormal summers. Eight abnormal growing seasons. So maybe in 20 years Denmark is the best place to grow potatoes. It's perfectly possible with the climate change but still for now and for the next couple of years we're still the center of the potato-growing region and I hope it stays like this for a long time. But we have to be prepared for next year that's one of my goals as well - to make more money available for research and development towards new kinds of potatoes that are more resilient.

Another objective is to establish good relations with the farmers and getting a good deal on the new fertilizing scheme for the next four years. If I have a deal that is good for the industry, that would pay my salary for 10 years, and that would be fantastic. Other objectives include everything that has to do with PPP and invest more in Belpotato.be because that's an organization that's in desperate need of financing, so we need to put that on track as well. My main goal, however, is to have a calm year, actually. I would really love that and to get to know even more people, visit companies, and members. ●

*“We need the farmers to want to plant potatoes instead of other crops and that's why we have to pay the price for the potatoes, literally pay a good price.”*

8–10 February

# Belgian potatoes present at Fruit Logistica Berlin

6 Belgian suppliers of potatoes and processed potato products will be present at Fruit Logistica Berlin. From 8 to 10 February 2023, this delegation will be at the joint pavilion of Fresh From Belgium, Hall 27 booth A22. In addition to the processed potato exporters, the Fresh From Belgium pavilion will also host exporters of fresh produce and floricultural products, totalling 32 participating companies.

Visitors to the Fresh From Belgium pavilion can discover both the classic and the new range of products during this edition. In addition, the highly topical theme of 'sustainability' is a common thread throughout Belgian participation in the fair.

For buyers looking for (processed) potato products, the following 4 producers can be of particular interest.



De aardappelhoeve

## De Aardappelhoeve

De Aardappelhoeve is specialized in growing, storing, washing and packaging table potatoes. They strive for full transparency throughout their operations and remain a trendsetter in the development of new organic cultivars. A reliable partner for retail and producers of potato products. No matter how you spin it, potatoes remain an essential, tasty and healthy part of a balanced diet. That's why De Aardappelhoeve provides refined products in healthy portions for every potato lover, on a daily basis.



## Remo

Remo, a family business founded in 1989, is the leading Belgian producer of fresh, peeled potato products. Their customers are the food industry, food service companies, caterers, fruit and vegetable wholesalers, fish and chips shops and restaurants. Their product range includes fresh fries, blanched potato products, fully cooked (pasteurised) potato products and potato flakes.



## Viafrites

ViaFrites has been the leading company for raw and fresh potato products for more than 30 years. They are an established family business that sells quality products at competitive prices, taking into account the customer's ever-changing consumer pattern. Daily fresh production enables them to supply their customers in the food service, retail or industry with products of excellent quality, with great attention being paid to flexibility, service and customer-friendliness.



## Pomuni

Pomuni supplies high-quality private-label fresh potatoes and frozen mashed potato products to retailers, wholesalers and food services. They are passionate and experienced specialists who have ploughed the stretch between field and shop shelf for generations.



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# Staying Competitive and Sustainable

While ringing in the New Year typically calls for optimism, there's no denying 2022 was a tough year for potato processing. The industry continues to deal with flow on effects of the pandemic, and global geopolitical conflict continues to cause economic instability, leading to increased inflation for processors and consumers alike.

## By HEAT AND CONTROL

**O**ur soaring global population and demand for food continues to grow - while at the same time our industry struggles to adapt to climate change and mitigating the environmental impacts of processing - while still trying to remain profitable. There's no denying the industry is in a state of transformation and while the New Year can't erase the pain of 2022, there still are many reasons for us to remain positive and look forward to the future. Technology and automation is giving us the opportunity to address costs, and adoption (and integration) of the right equipment

is helping us achieve greater production efficiency and reduce our environmental footprint during this time.

To ensure future growth and sustainability - potato processors must continue finding innovative ways to remain competitive and manage the industry's key sustainability challenges. Managing the high cost of energy and increased commodity prices will be critical to maintaining profitability and a competitive edge in the industry.

Research and development is driving an evolution of energy efficient food processing equipment and multiple technologies are

already available which reduce fuel costs, energy waste, air pollution, and water consumption. Optimizing water use during processing is an area that is critical for sustainability - and cost savings. This area is also a key focal point of research and development at Heat and Control, and we are committed to helping potato processors understand the existing and emerging technology in these areas.

## OPTIMIZING WATER USE DURING PROCESSING - WATER RECOVERY

As a natural product, potatoes require a significant amount of water to process. Subsequently water use is

a significant cost for potato processors and in some regions, sufficient water supply for processing can also be a concern. The huge amount of water needed to peel, slice, destone and wash potatoes prior to processing contributes to significant water consumption, organic waste, and wastewater volumes globally. But sustainable improvements, which benefit the environment, and your bottom line, are possible - through water recovery.

Processing areas of cleaning, starch management, and in some cases blanching, consume significant amounts of water. A potato chip processing line may use around 20 to 50 m<sup>3</sup>/hr of water and the corresponding amount of wastewater this generates must be disposed of and often after treatment of some kind. French fry processes also consume large amounts of water for washing, blanching, pumping and cutting of potatoes.

Optimization of water use in the potato processing industry is a key environmental performance indicator and is based on water use ratio. For example, European potato processors use on average 3-8 liters of (fresh) water per kg of finished potato product. This ratio varies based on the type of final potato product, packaging material used, processing requirements for specific products, efficiency of the operation and water volume reused for processing after purification.

Members of the European Potato Processors Association (EUPPA) are currently leading the industry with their serious efforts to significantly reduce direct water use. All members are harnessing technology to conserve and reuse water by re-using and recycling water (to some extent) in their own processing facilities where possible.

Water recovery is an excellent solution for processors globally, and particularly for those in areas of the world where water supply is a problem. However, even where water is plentiful - it can be expensive to buy and dispose of, so there are always benefits to reducing water use.

Water for processing is typically recycled and reused to wash soil from incoming lots of raw potatoes, while complying with legal requirements. Re-using and recycling water does not impact any food safety and product quality and complies with all applicable regulations.

Heat and Control's approach to water reduction uses two primary methods:

- Clean-up and re-use (including cascading)
- Recovering water from potatoes.

#### **WATER CLEANUP AND RE-USE**

Water minimization begins with the selection of the appropriate equipment for each stage of the process. This should include some dry dirt removal before a Submerged Barrel Washer, which is an efficient final wash for raw potatoes. Heat and Control Batch Peelers (BP) are designed to stay clean, with minimum water sprays during operation. Smart features such as their waste collection chute, are easily rinsed periodically by built in sprays (rather than a flood of water). The Heat and Control Potato Slice Washing System uses two stages to manage the removal of free starch (from the sliced product) while maintaining a clean fryer that can run longer between boil-outs. The

first stage (flume - PSPW) accepts the product from the slicers and removes the bulk of free starch and debris. The second stage (Speed-Washer - PSSW) provides a rinse with the cleanest water to ensure the product does not carry starch and debris into the fryer.

We can then reduce the fresh water use of each of these already efficient machines - even further by providing a Water Clean-up Systems (WCS) to remove starch and dirt from the circulating water in the equipment. With this system, less fresh water is needed to dilute the wash water, which saves fresh AND wastewater volumes. Some fresh water (or highly treated wastewater) is still needed to turn over the water in the system - for microbial control - and to make up for carry-over on the product. As the product gets cleaner as it progresses towards the fryer, we are able to cascade the water back from the "cleaner" equipment to the upstream processes. Noting that it is common to use the overflow from the Speed Washer (PSSW) to help turn over the water in the flume (PSPW). We can go further and use the overflow from the PSSW and PSPW in the peelers, as long as we clean the water up with WCS to reduce the amount of starch present in the water. With some more clean-up, we are also able to use the same



Inside the Batch Peeler



Batch Peelers by Heat and Control

product, and the energy remains in the steam that is discharged to atmosphere. To recover the water from the steam, this energy must be removed which allows the steam to condense. To recover the full amount of water almost 6000 kW needs to be removed or dissipated. In theory this could be done with a cooling tower of the kind used in HVAC systems, however this is expensive equipment and does not contribute any benefit beyond the recovery of the water.

Since recovering or re-using energy is also a desirable goal, a great benefit can be obtained by recovering both the energy and water in a Stack Heat Recovery System (SHRS). This technology is particularly useful in colder climates where the factory or associated buildings require

water in the Submerged Barrel Washer (SBW). Using this strategy of “clean-up and cascade” allows us to reduce the overall water use on a large PC line from 50 m<sup>3</sup>/hr down to 5-10m<sup>3</sup>/hr, up to 90% reduction!

## RECOVERING WATER FROM POTATOES

Potatoes are made up of 80% water, and much of it is lost during processing. When one considers the composition of their potato products potatoes (80% water) and fried potato chips (around 1.5% water), it becomes clear a lot of water is coming into the factory within the product itself – where does it go? It is evaporated in the fryer and dispersed out of the fryer exhaust stack. Recovering this water could

Fryer stack exhaust 7000 kg/hr steam

Potato slices in 9000 kg/hr

Vegetable oil in 1000 kg/hr



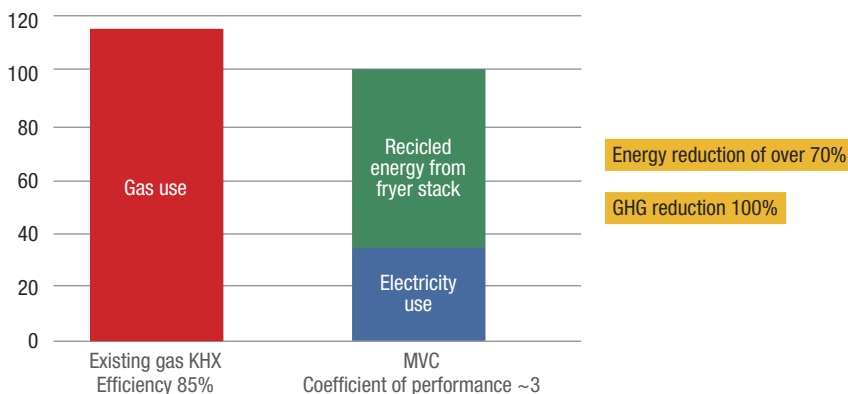
Cooked crisps out 3000 kg/hr

provide the bulk of the water usage for a PC line. For example, a 3000 kg/hr crisp line discharges 7 m<sup>3</sup>/hr of water as steam from the fryer. Most of the energy that goes into cooking potato crisps is used to evaporate this water from the

heating during much of the year. The recovered energy (up to 4MW is practical) can largely or completely offset gas or electric heating in the complex. About 3 m<sup>3</sup>/hr of water is also recovered as condensate from the SHRS.

The recovered condensate will need treatment before it can be re-used. Some of the contaminants are oil from the fryer, phosphates from the potato and chlorine from the wash water. Positive results from these technologies have gained the attention of potato processors globally - and will continue to do so in 2023. Working with a turnkey supplier is the quickest and easiest way to access the industry expertise and process knowledge required - to understand these technologies - and what gains might be achieved for your organization specifically. ●

## Energy input (% of fryer heat load)





# Complete Potato Chip Solutions designed for your business

- Potato Handling & Storage
- Peeling, Grading, Washing
- Electroporation
- Frying & Oil Management
- Salt & Seasoning Application
- Conveying, Sizing & Accumulation
- Energy & Pollution Control



Across industries and applications, we design specialised solutions.

Bringing together leading brands in processing and packaging equipment for the potato chip industry. Our solutions set the standard for yield, efficiency, and safety while producing the highest quality potato chips. Whatever your product needs, we can meet it with precision and passion.



# Measuring the Components of Food for Consistency

Measuring the world around us is a fascinating endeavor that has been pursued by humans for centuries. Nowadays not only curiosity but also the will to improve product quality is an important factor.

**O**ne area where measuring has become particularly important is in the world of food. The taste and ingredients of food are critical factors in its quality and enjoyment and being able to measure these properties accurately can help us to improve the quality of the processed food we eat. Furthermore, accurate measurement helps to make the production process as efficient as possible, which is becoming increasingly important in times of sustainability and ever-higher production costs.

To measure the various components of food, Insort has specially developed the Sherlock Food Analyzer, a compact monitor and process control device that uses spatially resolved infrared spectroscopy. This technique uses infrared light to identify the chemical composition of a substance, allowing it to determine the precise makeup of the food being processed. One example of using infrared spectroscopy to measure food is in the analysis of the moisture content of French fries. By emitting infrared light on a sample of fries and analyzing the light that is absorbed,

it is possible to determine the precise moisture content of the fries in real-time.

This technique can be particularly useful for ensuring the quality and consistency of French fries in a commercial setting. By continuously monitoring the moisture content of the fries as they are being cooked, it is possible to ensure that they are being prepared to the desired level of crispness and moisture. This results in a higher level of yield, product quality, and efficiency for processors.

## LABORATORY PROCESS

Up till now to monitor a continuous flow of products such as French fries, samples are repeatedly taken and analyzed in the laboratory. Due to the often complex and destructive process, only a few samples can be taken per tie per hour. Since these are natural products, they are subject to natural fluctuations. Experience shows that, for example, the dry matter value is subject to a standard deviation of 2.4%. The average dry matter value is about 20.5%. The comparatively small sample is taken from the product flow at random. Figure 1 shows an example of the distribution of 7 samples within one

hour. The samples badly represent the true distribution and the mean value. In addition, the information is passed on with a time delay, which means that an error in the production process can only be recognized after some time. To overcome this time-consuming and expensive process, Insort introduced the Sherlock Food Analyzer.

## CIT® TECHNOLOGY

The Sherlock Food Analyzer uses well-proven Chemical Imaging Technology (CIT®). Spatial Infrared Spectroscopy is used to measure every single French fry passing the line of sight. In the process of setup, the device is calibrated exactly to the circumstances and the product measures. By doing so, high measurement accuracy can be assured. Furthermore, the Sherlock Food Analyzer measures the product flow continuously and non-destructively. Meaning 100,000 readings per hour can be recorded. The status of a client's production can be analyzed in real-time in terms of mean value and deviation and represented with high precision. In addition, no laboratory resources are tied up.

## GAIN AND PROFIT

The measurement device possesses the ability to implement optimal process control. This leads to a perfect product taste while the usage of resources like raw potatoes, oil, and energy can be optimized. The foregoing means a perfect customer experience, satisfaction, and a more profitable process calculations made by Insort process



*“The status of a client's production can be analyzed in real-time in terms of mean value and deviation and represented with high precision. In addition, no laboratory resources are tied up.”*

engineers show that one SFA can save the processor up to EUR1.7m per year just by stabilizing the production process.

## PRESENT AND FUTURE

The Sherlock Food Analyzer using Chemical Imaging Technology (CIT®) is a powerful tool that allows us to measure the taste and ingredients of food, including the moisture content of French fries inline in real-time. The collected information can be used to improve the quality and consistency of food, gaining higher yields and raise raising efficiency. For the

producer, it helps to improve and streamline the production process in the sense of industry 4.0. For the engineers of Insort, it is not the end of the road to just know the moisture content. Using infrared spectroscopy also opens up other measurements such as sugar or starch content, which helps to forecast the degree of browning and crispiness to offer the optimal taste experience. The Sherlock Food Analyzer – the first choice when it comes to analyzing dry matter and other quality parameters, non-destructively, in real-time. •

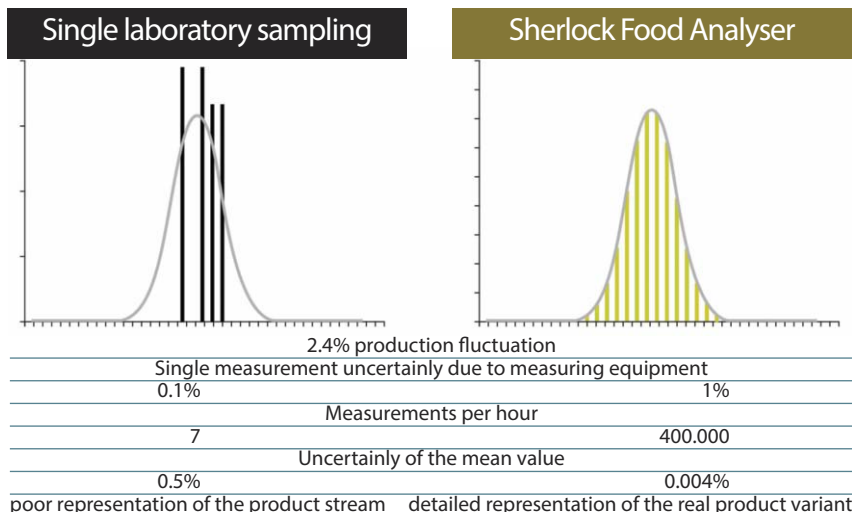


The standard deviation of the mean value of a measurement series S is represented by the standard deviation of a single measurements s and the number of measurements n carried out as follows:

$$S = s/\sqrt{(n+1)}$$

This reduction method of measurement uncertainty is scientifically proven by the 'Student t-distribution under the null hypothesis'. This means the overall measurements can be reduced by the number of measurements carried out. The SFA carries out 100.000 measurements per hour, therefore the standard deviation which is a quantification for the measurement's uncertainty can be reduced by a factor of 300.

Probability function of a view laboratory samples in comparison to the representation by the sherlock food analyzer.



# Sanitation Guidelines in Potato Processing Plants



Cleaning and sanitation are critical components of potato processing operations. Potatoes are a staple food in many countries and are used to produce a wide range of products, including chips, fries, and mash. To ensure the safety and quality of these products, it is essential to maintain high standards of cleanliness and hygiene throughout the processing plant.

By Tudor Vintiloiu

**E**ffective cleaning and sanitation in potato processing plants involve several key steps. The first step is to identify the areas and equipment that need to be cleaned. This typically includes all surfaces, floors, walls, and equipment that come into contact with the potatoes or finished products. Once the areas to be cleaned have been identified, the next step is to develop a cleaning schedule. This should outline the specific tasks that need to be performed, the frequency at which they should be carried out, and the personnel responsible for completing them. It is important to follow the cleaning schedule consistently to ensure that all areas of the plant are kept clean and free of contaminants. Cleaning solutions and methods should be chosen carefully to ensure that they are effective at removing dirt and contaminants while also being safe for use in the food processing environment. Many potato processing plants use



a combination of physical cleaning methods, such as scrubbing and scraping, and chemical cleaning agents to remove dirt and contaminants. One of the key considerations when selecting cleaning agents is their impact on the environment. Many potato processing plants are located in rural areas, and the use of harsh

chemicals can have negative impacts on local ecosystems. For this reason, many plants are now using eco-friendly cleaning agents that are safe for use in food processing environments and do not harm the environment. In addition to regular cleaning, potato processing plants also need to have effective sanitation protocols in place. Sanitation refers to the process of preventing the spread of disease and illness by eliminating pathogens from the environment. This is especially important in potato processing plants, as potatoes can be a source of foodborne illness if they are not handled properly. It is also important to have proper training in place for all personnel working in potato processing plants. This should include training on the importance of cleaning and sanitation, as well as the proper techniques for cleaning and sanitizing equipment and surfaces. In addition to training, potato processing plants should also have a system in place for monitoring and

documenting the cleaning and sanitation process. This can include using checklists to ensure that all tasks are completed, as well as conducting regular inspections to verify that the plant is being kept clean and free of contaminants. Effective cleaning and sanitation in potato processing plants is essential for producing safe and high-quality products. By following a consistent cleaning and sanitation schedule, using appropriate cleaning and sanitizing agents, and providing proper training to personnel, potato processing plants can maintain high standards of cleanliness and hygiene and ensure the safety of their products.

**HYGIENIC EQUIPMENT DESIGN**

Hygienic equipment design is another essential aspect of food processing that aims to prevent contamination and reduce the risk of foodborne illness. This can be

achieved through the use of cleanable equipment that is easy to disassemble and reassemble, as well as through the use of materials that are resistant to the growth of bacteria and other microorganisms. In the food processing industry, hygienic equipment design is critical for maintaining the safety and quality of the final product. This is especially important in the handling of perishable foods, such as meats, dairy products, and vegetables, which can easily become contaminated if proper precautions are not taken. One way to ensure hygienic equipment design is through the use of smooth, non-porous surfaces. Porous materials, such as wood or certain plastics, can harbor bacteria and other microorganisms, making them difficult to clean and sanitize. By contrast, smooth, non-porous surfaces, such as stainless steel or glass, are easier to clean and disinfect, and are less likely to

harbor harmful contaminants. Another important aspect of hygienic equipment design is the use of materials that are resistant to corrosion and wear. In the food processing industry, equipment is subjected to a wide range of conditions, including high temperatures, humidity, and exposure to cleaning agents and other chemicals. Using materials that are resistant to these conditions helps to ensure the longevity and reliability of the equipment, as well as reducing the risk of contamination. In addition to the design of the equipment itself, the layout and design of the facility can also play a role in maintaining hygienic conditions. This includes the separation of raw and cooked foods, the use of separate equipment for handling different types of foods, and the proper storage and handling of food products. Overall, hygienic equipment design is essential for ensuring the safety



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and quality of food products in the processing industry. By using cleanable, non-porous materials and designing equipment that is easy to disassemble and reassemble, food processors can help to reduce the risk of contamination and protect the health of consumers.

### WHAT IS HACCP?

HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the

finished product. HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. For successful implementation of a HACCP plan, management must be strongly committed to the HACCP concept. A firm commitment to HACCP by top management provides company employees with a sense of the importance of producing safe food. HACCP is designed for use in all

segments of the food industry from growing, harvesting, processing, manufacturing, distributing, and merchandising to preparing food for consumption. Prerequisite programs such as current Good Manufacturing Practices (cGMPs) are an essential foundation for the development and implementation of successful HACCP plans. Food safety systems based on the HACCP principles have been successfully applied in food processing plants, retail food stores, and food service operations.

### TRAINING AND IMPLEMENTATION

The success of a HACCP system depends on educating and training management and employees in the importance of their role in producing safe foods. This should also include information the control of foodborne hazards related to all stages of the food chain. It is important to recognize that employees must first understand what HACCP is and then learn the skills necessary to make it function properly. Specific training activities should include working instructions and procedures that outline the tasks of employees monitoring each CCP. Management must provide adequate time for thorough education and training. Personnel must be given the materials and equipment necessary to perform these tasks. Effective training is an important prerequisite to successful implementation of a HACCP plan. •



### THE SEVEN HACCP PRINCIPLES

HACCP is a systematic approach to the identification, evaluation, and control of food safety hazards based on the following seven principles:

- 1: Conduct a hazard analysis.
- 2: Determine the critical control points (CCPs).
- 3: Establish critical limits.
- 4: Establish monitoring procedures.
- 5: Establish corrective actions.
- 6: Establish verification procedures.
- 7: Establish record-keeping and documentation procedures.



PROCESSES



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INGREDIENTS



MARKETS



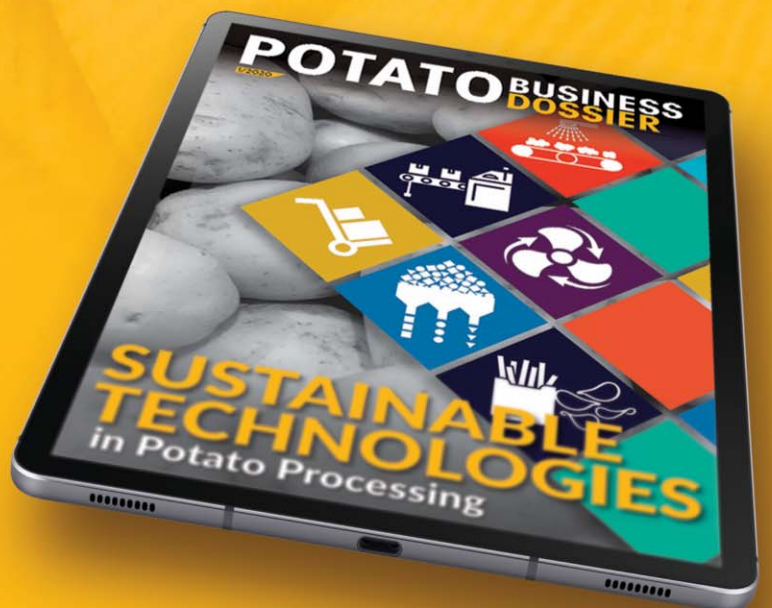
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# GEA's Tunnel Vision Offers Sustainable Freezing Solutions for French Fries

Global sales of French fries are being driven by the rising number of online food delivery service companies. According to projections published by Fact.MR, French fries are forecast to register a whopping 5.8% value CAGR over the next 10 years. This skyrocketing demand for the fast-food favorite means manufacturers require sustainable freezing systems perfectly integrated into the production process.

The humble potato is the third most important food crop globally after rice and wheat in terms of human consumption. However, less than 50% of potatoes grown globally are likely to be consumed fresh (source: Mordor Intelligence). The majority of consumption is processed and frozen products in the form of French fries, cut chips, wedges, slices and dices served by limited-service restaurants and fast-food chains. Globally, the frozen potato market is forecast to hit a staggering 127m metric tons per year by 2025.

A significant amount of energy is required to freeze potato products. For a 30,000kg/hr French fry freezing tunnel, about 6MW of refrigeration capacity at different temperature levels is needed to gradually reduce the product to frozen. The current challenge for frozen potato processors is to lower energy use and meet sustainability targets in an effective way.

Freezer equipment design is vital for food safety, optimum performance throughout production, and energy savings, especially when handling massive quantities of French fries. Additionally, the right equipment can significantly reduce downtimes with fast, efficient cleaning factored in. GEA, a leading technology provider to the food sector has more than 160 of its French fry freezer tunnels operating worldwide and recently conducted extensive research and development into significantly improving the sustainability and energy consumption in industrial freezing equipment.

A typical IQF (Individual Quick Freezing) tunnel, as supplied by technology specialists such as GEA, is composed of different temperature zones to successively decrease the product temperature from +95°C to +50°C in precool sections, +50°C to +10°C in refrigerated

sections and finally +10°C to -15°C in freezing sections. For each step, a specific solution was designed and implemented to reduce energy consumption:

For the initial precool step, the compression refrigeration system is replaced by free cooling, utilizing a thermosyphon system to cool the air.

The water precool step is also free-cooling and circulates plant water through heat exchangers to provide cooling capacity and save energy in the plant water heating system.

The freezing section temperature set point is controlled with the Callifreeze® system which continuously measures the product's frozen quality and adjusts freezer parameters according to set targets with minimum energy consumption.

GEA recently obtained a certification of CO<sub>2</sub> emission reduction for its French fry IQF tunnel freezer with Water Precool as a result of a proven 22% to 57% drop in CO<sub>2</sub> emissions depending on the country and conditions therein. Results were certified by Ramboll, a EU Taxonomy evaluation body.

As we know, any type of food can be frozen but the quality of the end product is what really counts. The key criterion is the ability to continuously monitor the product's frozen state at freezer exit and automatically adjust freezer conditions when needed. This ensures that the products leave the freezer at the expected frozen quality. In addition to the CO<sub>2</sub> emission reduction, when applied to the French fry tunnel freezer, the Callifreeze® control

*“For those processors aiming for high throughput with reduced downtime, GEA IQF tunnel freezers can run comfortably for 21 consecutive days.”*



system leads to a minimum 9% energy saving on refrigeration system consumption.

For those processors aiming for high throughput with reduced downtime, GEA IQF tunnel freezers can run comfortably for 21 consecutive days. The freezers are designed with high performance frost management systems including sequential defrost and unmatched automated controlled air balance system, reducing the need for frequent stops for defrost and cleaning.

Proven CO<sub>2</sub> emission reductions and energy-saving consumption are part of the sustainable actions to contribute to, and reach GEA Group's target to align with its Mission 2026 program.

GEA promoted its range of equipment for the potato sector at the Interpom22 exhibition in Belgium. Its state-of-the-art freezing technology fulfills customers' needs for highly flexible and dynamically designed solutions. GEA's experience in the food industry offers customers optimal performance coupled with energy-efficient freezing and cooling systems. Considering the significant growth predicted for the French fry sector, food manufacturers are well placed to meet the increasing demand for these products with innovative processing and freezing solutions that really make a difference in the battle to prevent climate change. •

# Batters and Coatings: The Crispy Secret of Crisps

Potatoes are a versatile crop that can be consumed boiled, fried, mashed, roasted, or used in soups and stews. One of the keys to achieving the desired texture and taste in many potato-based foods is the use of various batters and coatings.

**By Tudor Vintiloiu**

**B**atter is a mixture of flour, liquid, and other ingredients that is used to coat food before it is fried or baked. Batters are used to create a crispy, golden-brown crust on food and to protect the food from the hot oil or the high heat of the oven. There are many different types of batters that can be used to coat potatoes, depending on the final product desired. For example, a light and crispy batter can be used to make French fries, while a thicker and more substantial batter can be used to make potato cakes or rosti. One popular batter used in potato processing is a tempura batter. This type of batter is made with a

combination of flour, corn starch, and baking powder, and it is often used to coat vegetables, such as sweet potatoes or zucchini, as well as potatoes. The batter is typically mixed with ice-cold water or carbonated water, which helps to create a light and crispy coating. The result is a dish that is crispy and airy, with a delicate and slightly sweet flavor. Another batter that is used in potato processing is a beer batter. Beer batter is made by incorporating beer into the flour and liquid mixture. The beer provides a subtle flavor and also adds a little extra carbonation, which helps to create a light and airy texture. Beer batter is particularly popular in the UK and it

can be used to make fish and chips. Using the beer in the batter will give the dish a unique taste profile that people will enjoy.

Coatings, on the other hand, are thicker than batters and they are used to give potatoes an extra crunch or texture. They are also used to keep the potatoes from sticking together, which can be a problem when making French fries or potato chips. One example of a common coating used in potato processing is breadcrumbs.

Breadcrumbs can be used to coat potato pancakes or croquettes, giving them a crisp and golden-brown crust. Cornmeal is also a popular coating for potatoes. Another coating that is commonly used in potato processing is flour. Flour can be used to dust potatoes before they are fried or baked, which helps to create a crisp crust and prevent sticking. Some people also like to use a mixture of flour and seasonings, such as salt, pepper, and herbs, to add extra flavor to the potatoes.

Different types of batters and coatings can be used to achieve different results, and they can also be used in combination to achieve the perfect texture and flavor. Whether producing French fries, potato cakes, or rosti, the right batter or coating can make all the difference.

## OIL UPTAKE AND ACRYLAMIDE

Batter coatings are commonly used in the production of par-fried and frozen French fries to provide their staple texture and color. However, the use of these coatings also influences the oil uptake and the buildup of acrylamide, which is a chemical compound that can form during high-temperature cooking of certain foods.

Oil uptake is an important consideration in the production of French fries because it directly affects the overall quality and taste of the final product. When fries are cooked in oil, the starch in the potatoes absorbs the oil, leading to an increase in their overall fat content. Batter coatings can play a role in reducing the oil uptake of fries by providing a barrier that slows

down the absorption of oil. The use of certain types of starches, such as pre-gelatinized starches, can also be effective in reducing oil uptake.

Additionally, using a two-stage frying process, where the fries are first par-fried at a lower temperature and then finished at a higher temperature, can also help to reduce oil uptake.

Acrylamide is a chemical compound that can form during the high-temperature cooking of certain foods, including French fries. It is formed when the amino acid asparagine and the reducing sugar fructose react at high temperatures. Batter coatings can play a role in the formation of acrylamide by providing a higher initial moisture content, which increases the asparagine content. Additionally, the use of reducing sugars in the batter coating can also contribute to acrylamide formation. To minimize the formation of acrylamide in fries, it is important to use raw materials that are low in asparagine and reducing sugars, and to use frying temperatures that are not too high. Additionally, the use of certain types of ingredients, such as rosemary extract, has been shown to be effective in reducing acrylamide formation.

To prevent acrylamide formation during the frying process, some precautions have been reported. The simplest precautions refer to the use of potato blanching either with water or acidic solutions, containing, for example, ascorbic acid or citric acid.

Recent studies demonstrated that a hydrocolloid-based coating was successfully used for the reduction in acrylamide formation due to its capability to increase water retention. For the same reason, hydrocolloid-based coatings were also effective in reducing oil uptake as they provided a reduction in the heat transfer coefficient during frying. It is worth noting that, due to their low cost and their colorless and tasteless properties, researchers believe that hydrocolloids may be adopted on a large scale for enterprises that produce commercial fried foods to maintain a lower acrylamide content. •



# Processors Remain Confident as Contract Prices Boom

The combination of historically high prices in recent times and a healthy market demand ensures that processors remain confident as 2023 begins. This confidence is reflected in the current contract prices, which are up 35% to 40% for the 2023 harvest year.

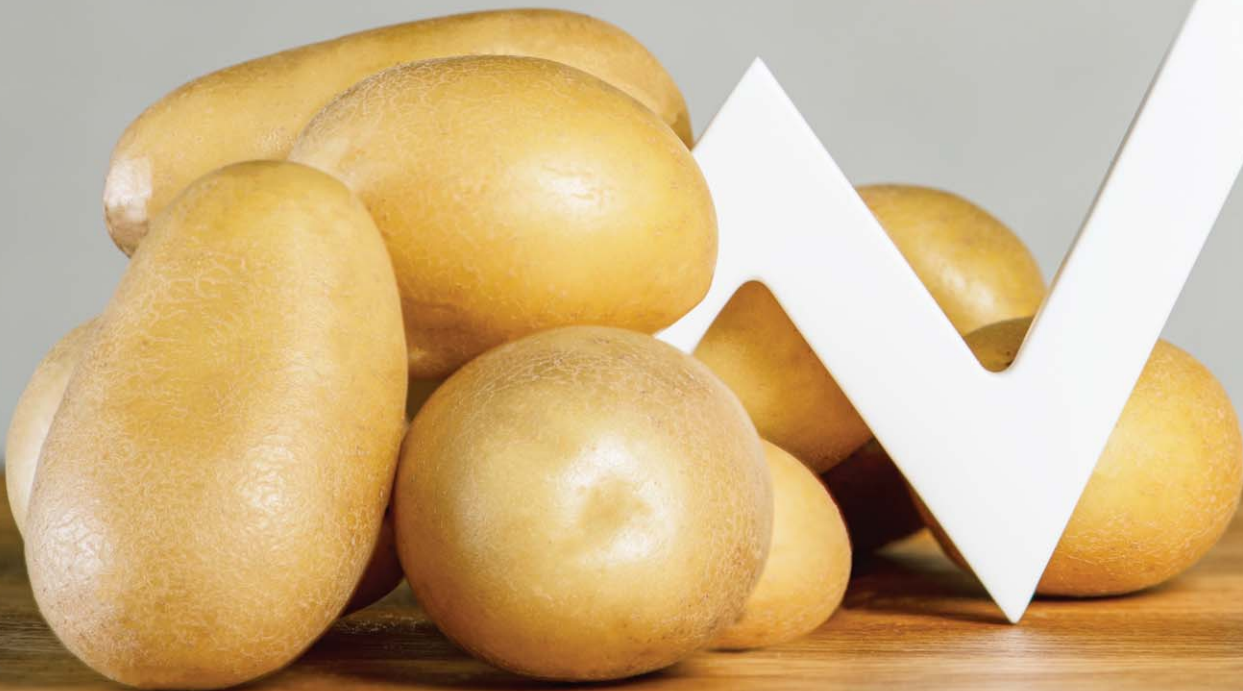
By Ionel Vaduva

**T**he latest data from the harmonized trading system shows that the average price of a tonne of frozen French fries from the EU-27 cost EUR1,160 (USD1,2342) in October, up 8% in September and up 65% year-on-year. This is in contrast to last summer when European processors had difficulties passing on increased costs. In October, the EU-27 sold 10% more end products than in October 2021. According to trade associations, processors have managed to include a price buffer in their product prices in addition to the

record prices. In this approach, unanticipated increases in energy expenses, for instance, can be partially offset in advance. Another benefit for processors (in Europe) is that, contrary to earlier expectations, processing costs have not increased significantly in recent months. Even still, energy costs have decreased significantly. Vegetable oils are also less expensive. The cost of packing supplies is either steady or declining. Although not as much as a typical 40-foot container, the cost of refrigerated containers (also known as reefers) has decreased.

## TOP EUROPEAN FRIES BUYERS AND PRICES

Beginning in January 2023, the spot price of a reefer was USD4,300, almost double the pre-COVID price of USD2,185. Despite price increases of about 80% in a year, Saudi Arabia continues to be the biggest consumer of European fries. The United States came in second for European fries, up 20%



year over year in October despite only a 55% increase in price. Brazil ranks third despite having trouble with prices that have nearly doubled in one year. Imports decreased here, albeit only by 1.5% year over year. Argentina specifically is down, primarily because this nation is attempting to expand its export of frozen fries to neighbors and is thereby importing less. South American exports from Europe are still good overall, notwithstanding Brazil and Argentina. Russia has experienced the greatest reduction. Finding a substitute for European fries is challenging for Russia and its neighbors. Turkey is taking action to capitalize on this need. The absence of Eastern European purchasers is not a problem, though, because of the lower European harvest. The focus of this has so far been on markets outside

of Europe, but it is important to note that exports to other member states of the European Union increased by 2.5% while they increased by 15% year over year.

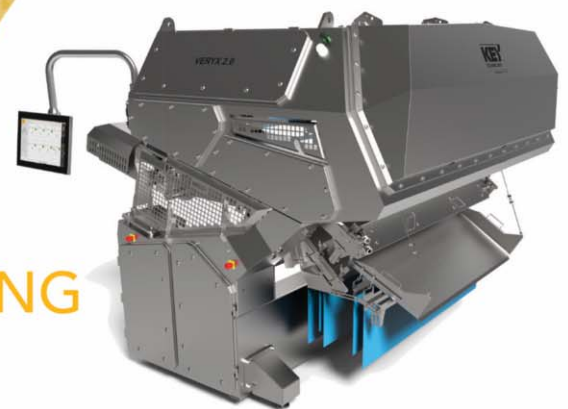
### STATS AND FACTS

Two-thirds of the frozen potatoes exported around the world come from Europe. Around 10,000 potato growers offer the French fry potato varieties to the processing sector, and 20,000 people are directly employed by potato processors across Europe. There is approximately EUR8bn yearly turnovers. A total of 74% of all sales of processed potato goods outside the EU were made up solely of frozen fries and potato specialty (EUR1,396bn); from EUR175m in 2005 to EUR1,396bn in 2021, this represents a major increase. Between 2011 and 2021, when looking at Belgium, the

Netherlands, and Germany, frozen fry exports from Belgium to extra-EU countries climbed from EUR170.9m to EUR696.6m (from 19.1% to 37.0% of total BE extra-EU frozen fry exports). From EUR196.8m to EUR486.6m (or 18.8% to 32.5% of all NL extra-EU frozen fry exports), the Netherlands' extra-EU exports grew. From EUR21.2m in 2011 to EUR67.8m in 2021, German exports increased (from 14.4% to 24.0% of all DE extra-EU frozen fry exports), based on different country stats. Due to the benefits of large-scale agriculture, the high yields of the European potato crop, and large production facilities, the sector has experienced rapid growth. Over the past ten years, the export of frozen potato products (including fries) has averaged 12.3% per year, and growth is predicted to continue above 10%. •



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# Bringing it Home

The continued growth of home delivery options as global economic conditions worsen should provide opportunities for suppliers of French fries and chips.

By Jonathan Thomas



Jonathan Thomas

**D**espite the worsening economic situation, global demand for French fries and what are usually termed 'chips' in countries such as the UK, Ireland and Australia remains relatively strong. Despite their similarities as menu items, some key differences exist between French fries and chips. French fries are typically fried twice (rather than once, as is the case with chips), while chips are usually cooked at slightly lower temperatures. Furthermore, the type of French fries served by companies such as McDonalds usually undergo a blanching process, which reduces the moisture content and helps them crisp up more easily when fried. Additionally, chips tend to have a thicker cut than most varieties of French fries. A range of French fries exists in both foodservice and retail channels – these include shoestring (which are usually around 6mm-7mm in width), thick cut (which are typically 15mm-18mm in width) and steakhouse, which represent the thickest version available and, as their name suggests, are frequently served as an accompaniment to steak. Both French fries and chips are usually eaten with a range of different sauces and accompaniments – some of the most popular include ketchup, vinegar, mayonnaise, curry sauce and a host of local specialties.

## MARKET & CONSUMPTION TRENDS

The global market for French fries and chips remains sizeable, valued at between USD15bn and USD20bn. French fries and chips are eaten widely throughout the world, usually

as a meal accompaniment (for dishes such as burgers, steak and coated foods), but also as a snack or dish in their own right. Although consumption levels have traditionally been highest in western markets such as the US and Western European countries, growth has been evident in regions such as Asia, Africa and the Middle East, as more consumers adopt westernized diets. The foodservice industry holds the larger share of the global market, due to the presence of worldwide operators such as McDonalds and Burger King.

The market is likely to face continued disruption from a supply perspective due to the ongoing situation in Ukraine. Prior to the conflict, Ukraine represented the world's third largest producer of potatoes, with an annual crop in the region of 21 million tonnes. However, for reasons such as concerns over quality levels, virtually no potatoes were exported. In contrast, Russia was a major exporter of potatoes prior to the conflict, ranking as the world's 15th largest. However, exports have dropped since the invasion of Ukraine, as sanctions have affected trade. Chips and French fries are widely sold throughout the foodservice industry in many parts of the world. According to data from Lumina Intelligence, 57% of dishes served within the UK's pubs in the 12 weeks ending October 2022 featured chips, fries or wedges in some form. In many western countries, demand for fries and chips is expected to benefit from the anticipated move by many consumers towards familiar foods offering comfort or nostalgia during these troubled times. However, the fact that consumers are now more discerning does suggest that

foodservice operators will have to become increasingly innovative with their menus to ensure fries and/or chips resist the greater competition that exists from other side dishes, such as rice and noodles.

One of the key trends expected to influence the market over the next couple of years is the continued growth of the home delivery sector, driven by the growing presence of operators such as Deliveroo, Just Eat and Uber Eats. This sector received a massive boost during the pandemic and the subsequent closure of much of the foodservice industry – in the UK, for example, it is estimated that 98% of consumers ordered takeaways or delivered foods during periods of lockdown. In 2021, McKinsey estimated the size of the global market at USD150bn, having tripled during the period since 2017. Now, as the cost of living increases for large sections of the global population, more people are expected to eat out less frequently, opting to stay at home instead to save money. However, many will still feel the urge to treat themselves from time to time, expecting dishes of restaurant quality within the home. This, coupled with increased penetration of internet-enabled devices such as smartphones (which makes the ordering process easier and quicker) and greater urbanization of the potential consumer base in many of the world's countries, is expected to result in further growth of the home delivery market. In global terms, annual market growth is expected to average more than 12% for the period leading up to 2030, according to various industry sources. Some of the world's largest and most mature markets are likely to include the US,



the UK and Australia. French fries and chips appear to be well-positioned to benefit from this projected growth, for reasons such as their versatility and their widespread popularity as an accompaniment to many dishes. The key challenge will be to develop products suitable for home delivery applications, specifically those capable of staying hot and crispy for longer periods. According to recent research from Aviko, 83% of UK consumers stated that crunchiness was the most important factors when ordering fries/chips for delivery, while 81% would order them more frequently

if they were warm and crunchy when they arrived.

Possibly because of their inherent simplicity, opportunities abound for both foodservice and retail operators to enhance French fries using various seasonings and sauces. According to research in the UK carried out by Lumina Intelligence, some of the most expensive menus found within the foodservice industry always included the term 'seasoning' or 'seasoned' when describing fries or chips, therefore enabling operators to increase their prices and hence profits. Some of the more common flavorings within the market include rosemary and sea salt, although more innovative varieties based on harissa salt and sriracha sauce have begun to appear. It is worth remembering, however, that as consumers become more cost-conscious in the present economic climate, value for money is likely to become a more significant driver of behavior.

One trend which continues to gather pace in both the retail and foodservice sectors is the growing popularity of 'loaded fries', i.e. French fries or chips served with various toppings. Sometimes referred to as 'dirty fries', these feature on various foodservice menus (either as side dishes



or meals in their own right) and have also started to appear within the retail sector. Their popularity has increased within the last year as they represent an affordable and filling treat for increasingly cost-conscious consumers and have also been shown to increase profits when served by foodservice operators. Demand for loaded fries is also rising due to their strong links with street food cuisine, as well as their suitability for sharing images on social media platforms. Many in the foodservice industry expect more operators to present diners with more choice as the market for loaded fries develops further, by offering them the option to build their own dishes using various toppings and sauces.

Many of the world's leading foodservice operators have led the way as far as loaded fries are concerned. In the US, for example, the Wendy's menu includes Baconator Fries, skin-on sea salted French fries topped with warm cheese sauce, shredded Cheddar and smoked bacon pieces. Elsewhere, Burger King has recently experimented with loaded fries topped with cheese sauce and bacon. Within the last few years, many of the UK's leading pub chains have added loaded fries to their menus to tap into this burgeoning consumer demand – the Brewer's Fayre menu, for example, now features Chipotle Beef Chilli Topped Chips, while Harvester restaurants serve dirty fries with toppings such as Tex Mex (salsa, cheese sauce, guacamole and jalapeno peppers) and BBQ Pulled Pork, where pulled pork is topped with spring onions and chilli.

Although most forms of French fries and/or chips are suitable for eating in this way, it has been suggested that waffle fries are amongst the best options. This is chiefly because they have an especially sturdy base, while the waffle pattern can 'trap' pockets of the toppings. Although traditional favorites such as cheese and bacon continue to hold sway, the variety of toppings used for loaded fries is expected to broaden as the market develops further. Potential

opportunities include Indian-based curry sauces, as well as kimchi, a Korean-based side dish consisting of salted and fermented vegetables. Toppings geared towards people following vegetarian or vegan diets are also becoming more widespread – the London-based burger chain MEATliquor, for example, serves a range of loaded fries. In addition to Chilli Cheese and Hippy Fries (which feature grilled onions and its own signature sauce), its menu also features Green Chili Cheese, which is described as suitable for vegans.

As consumers become more inclined to replicate the experience of eating out within the home in efforts to rein in their spending, it is also possible that loaded fries may find a niche in the burgeoning 'fakeaways' market. Towards the end of 2021, Aldi's UK business launched new Carlos Cheeseburger Dirty Fries, which were inspired by the McDonalds menu. These were fries topped with mini burgers and gherkins, smothered in cheese and burger sauce.

Other notable trends within the market include the growth in popularity of French fries and chips with a more rustic and/or artisanal appearance and taste, of which skin-on varieties represent a leading example. Many products within this sector boast an impressive texture, marketed as being especially crispy and therefore suitable for eating with dips. Meanwhile, many of the market's leading suppliers now include products made from sweet potatoes within their respective portfolios. These frequently appeal to health-conscious consumers, since sweet potatoes are recognized as being higher in fiber and antioxidants.

#### CORPORATE & NPD ACTIVITY

The Canadian multinational McCain remains the leader of the global market for frozen chips and French fries. The company's foodservice range in markets such as the UK and Australia includes SureCrisp products, which are geared towards the home delivery and takeaway market. These stay crispy for up to 20

minutes on account of their special coating and are packaged in a special delivery bag, thereby enabling foodservice operators to extend delivery zones and times. The range includes varieties such as Thin Fries, Julienne Fries and Gourmet Chunky Chips. Elsewhere, McCain UK has also extended its presence within the market for loaded fries, having launched Street Fries in flavors such as Cheese & Bacon, BBQ Beef and Pulled Pork.

One of McCain's leading competitors is Lamb Weston, which is present across much of the world and is headquartered in the US. Much of the company's recent innovation as far as French fries are concerned has been in the development of new products suitable for home delivery options, in keeping with current trends. Some of its leading lines in this sector include the following examples:

- **Crispy on Delivery Fries** – a range of fries suitable for home delivery applications, available in formats such as Shoestring, Concertinas and Regular Cut Skin On;
- **Stealth Fries** – these feature a special coating for an extra crispy bite;
- **Hot2Home** – these stay hot and crispy for longer periods (i.e. up to 20 minutes) than regular varieties;
- **Ziggy Fries** – these are described as having a unique appearance with a deep crinkle and extended crunch, as well as retaining their crispness even after having cooled down.

Elsewhere, Aviko (which ranks as the world's fourth largest supplier of value-added potato products) has also been developing products geared towards takeaway and home delivery applications in recent years. Its range includes SuperCrunch Fries, which are described as perfect for the home delivery market. According to the company, the fries feature a unique crispy coating made using a gluten-free batter, which acts as a barrier against moisture and therefore keeps them hotter for longer periods. Furthermore, they are also promoted as being 135% crispier than standard fries. The SuperCrunch range is available in formats such as Thin Cut, Thick Cut, Skinny and Chunky. •



Sprout  
Inhibitors:  
**The Best  
Solution**  
Depends  
on Storage  
Conditions

Stored potatoes are a valuable crop that can be kept for long periods of time to provide a consistent source of food throughout the year. However, one of the biggest challenges in storing potatoes is preventing sprout growth, as sprouts can reduce the quality and shelf life of the potatoes. In order to combat this problem, farmers and storage facility operators have traditionally used sprout inhibitors, which are chemicals that inhibit the growth of sprouts in stored potatoes.

One of the most widely used sprout inhibitors in the past has been chlorpropham (CIPC), which is a systemic herbicide that is taken up by the potato plant and works by inhibiting the growth of the sprouts. However, CIPC has been banned in Europe due to concerns about its potential environmental and health impacts, and this has led to a search for alternative sprout inhibitors that can be used to protect stored potatoes.

#### AVAILABLE SOLUTIONS

One alternative to CIPC is the use of natural inhibitors, such as cinnamon and clove oil or a combination of essential oils. These oils contain compounds that have been shown to inhibit sprout growth, and they can be applied to the potatoes before storage to protect them from sprouting. These products have been found to be effective in laboratory and field trials, and they are considered to be safe for use on stored potatoes.

1,4-dimethyl naphthalene (DMN) is another compound that has been researched and is being used as a sprout inhibitor for stored potatoes. It works by inhibiting the activity of an enzyme called alpha-amylase, which is involved in the sprout growth process. DMN has been found to be effective at preventing sprout growth in stored potatoes, and it has been shown to be as effective or even more effective than CIPC in some studies. However, the use of DMN as a sprout inhibitor is relatively new and some experts think further research is needed to fully understand its efficacy and safety. In addition, there are some concerns about the potential environmental impact of DMN, as it is a synthetic compound. DormFresh Ltd. is a company that

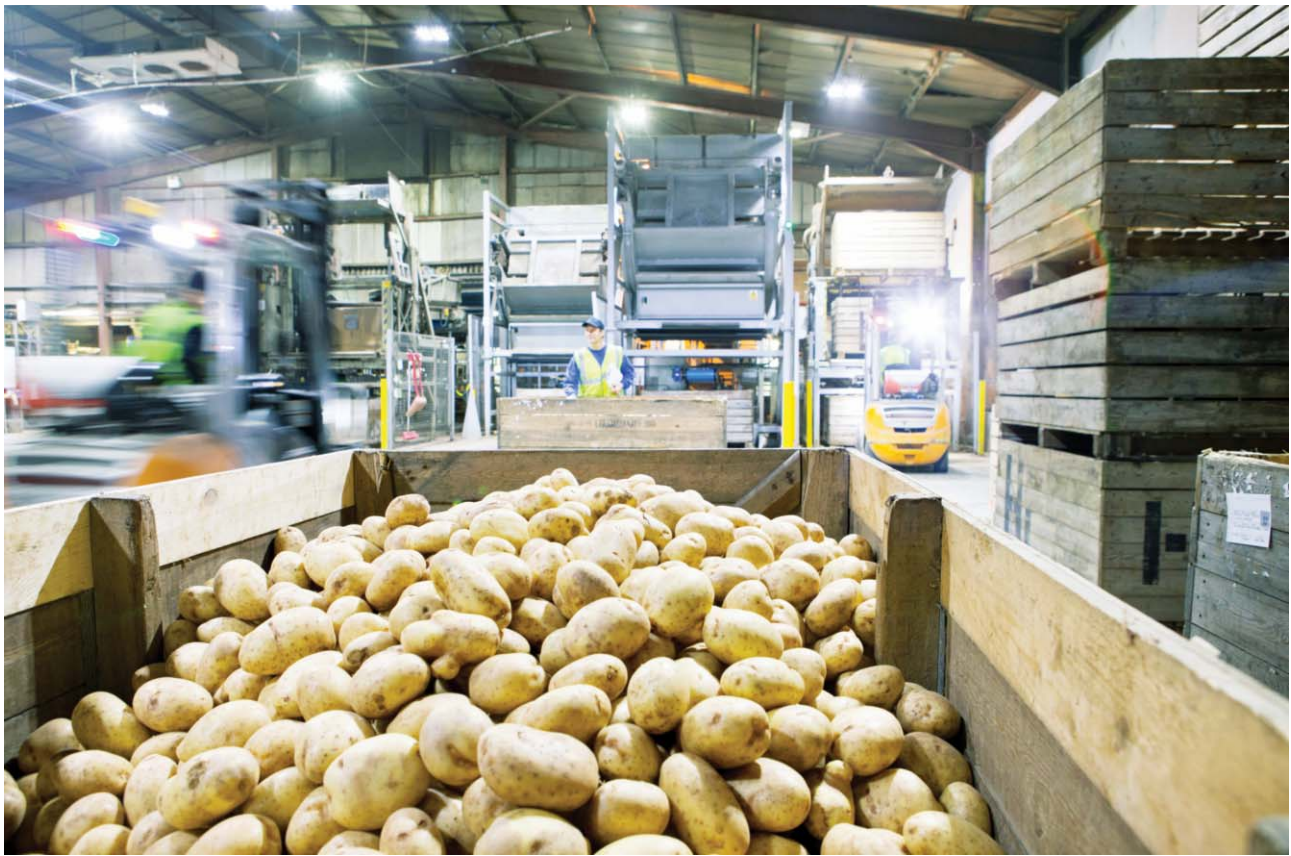
brings this solution to the European market under the brand name 1.4SIGHT. According to the company, this product works as a dormancy enhancer that prolongs suppression in stored potatoes and is reversible. It is normally applied as a vapor (usually hot) to stored potatoes. 1.4SIGHT penetrates through the potato skin and works internally to restore its dormancy, a process that lowers the respiration rate, slowing the loss of moisture and solids, thereby diminishing shrink and susceptibility to pressure bruise. Moreover, restoring dormancy may also shorten the post-harvest "sweat period". While the size of the store is not that crucial for the product performance, the producer warns that it is important to fill the warehouse with potatoes as much as possible, in order to minimize dilution effects due to empty space. Another product that is gaining popularity as an alternative sprout inhibitor is abscisic acid (ABA), which is a plant hormone that plays a role in regulating plant growth and development. ABA can be applied to stored potatoes to inhibit sprout growth, and it has been shown to be effective in laboratory and field trials. However, one of the challenges with using ABA is that it is a very stable compound and it may need to be applied multiple times during storage.

#### COST IS A FACTOR

Finally, another alternative sprout inhibitor is the use of growth regulators, such as 1-MCP (1-methylcyclopropene), which is a synthetic compound that can be applied to stored potatoes to inhibit sprout growth. Restrain is a product that contains this compound and it can be used in both long and short term storage of potatoes. It's applied as a gas at low

concentrations, and the treatment needs to be applied before the potatoes go into storage. Restrain is a very effective alternative to CIPC, and it has been shown to be as effective or even more effective than CIPC in laboratory and field trials. It has also been found to be safe for use on stored potatoes, and it is considered to be a viable alternative to CIPC for growers. Restrain's ethylene-based technology is also known to have a lesser impact on the environment compared to CIPC.

The company says that users who turned to alternatives such as mint oil, orange oil and DMN are now also exploring the possibilities of sprout inhibition with ethylene. This is because ethylene is a lot cheaper than the alternatives. In addition, the method is odorless. Despite these advantages, making the switch can feel like a big step. Restrain works with a generator that converts liquid ethanol into ethylene gas. The software-controlled generator continuously distributes a low concentration of ethylene evenly throughout the potato storage. After three days of exposure to ethylene, the sprouting process of the potatoes in the storage is blocked. A supplied sensor measures the ethylene concentration in the storage. The smart generator automatically adjusts the gas production to the measured values. The concentration of ethylene used is low. This makes the method cost-effective and safe. Moreover, the gas is natural and leaves no residue. Sprout suppression with ethylene is suitable for all types of storage, regardless of the storage size and the (un)used storage capacity. It is also effective in non-airtight storages, storages with cooling and storages with longitudinal aeration.



When switching to Restrain, users do not need to change their storage method. It works in virtually all forms of storage - bulk, boxes and on a grid floor. The Restrain generators have a large capacity. A single generator can handle an area with 5,000 tons of potatoes. This contributes to the cost-efficiency and popularity of the method.

## REQUIREMENTS

It is worth noting that in order to achieve the best results with Restrain or any other sprout inhibitor, the storage facilities need to be well-maintained and controlled, and the potatoes need to be properly cured before storage. Also, the treatment needs to be done under specific conditions, and it's important to follow the manufacturer's instructions and recommendations. A growing practice in recent times is the use of modified atmospheres in storage facilities. This involves controlling the levels of oxygen and carbon dioxide in the storage environment in order to slow down

the growth of sprouts. By decreasing the levels of oxygen and increasing the levels of carbon dioxide, the rate of respiration in the potatoes is slowed down, which in turn slows down the growth of sprouts. This method is considered efficient, however in the case of processing potatoes, the high levels of CO<sub>2</sub> in storage will trigger undesirable changes in frying color.

## POTATO VARIETY MATTERS

It's also relevant to understand that the choice of potato cultivar can have a significant impact on the effectiveness of sprout inhibitors. Different cultivars may have different levels of susceptibility to sprout growth, and some may be more responsive to certain sprout inhibitors than others. Therefore, when choosing a sprout inhibitor, growers should consider the specific cultivar of potato that they are growing, and to choose an inhibitor that has been shown to be effective for that cultivar. Furthermore, some cultivars are naturally less prone to sprouting and may not require any treatment.

In addition, the storage condition also plays a significant role in the efficacy of sprout inhibitors. Proper curing, low temperature and controlled atmosphere can affect the susceptibility of potatoes to sprout. Therefore, good storage management practices should be implemented, in addition to applying sprout inhibitors, to achieve the best results.

In conclusion, there are a number of alternative sprout inhibitors available for use on stored potatoes, including modified atmospheres, natural inhibitors, abscisic acid, and growth regulators. Each of these alternative sprout inhibitors has its own set of advantages and disadvantages, and farmers and storage facility operators will need to consider factors such as cost, efficacy, and safety when choosing a sprout inhibitor to use. It is also important to note that the availability of these products may vary depending on the region and the specific requirements. It's essential for growers to test and choose the best suitable alternative for their storage condition. •

# 2023 FEATURE PLANNING

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## JANUARY/FEBRUARY

Ad closing 16.01/Publishing 27.01



Key Exhibitors Road Map and Event Agenda

### Processes

Sorting, Pre-cleaning, Washing, De-stoning  
Energy and Water Saving

### Expert View

Cutting/Slicing/Dicing  
Sustainability in Production

### Spotlight

Cleaning and Sanitation

### Markets

Western Europe

### Products

French Fries in Retail and Foodservice

### Ingredients

Batters, Coatings

### Storage Special

Refrigeration and Long-term Storage  
Sprout Suppressants in Storage

Trade shows: Potato Expo 2023, Fruit Logistica 2023

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## MARCH/APRIL

Ad closing 13.03/Publishing 22.03



Key Exhibitors Road Map and Event Agenda

### Processes

Conveying Systems and Belts  
Process Monitoring

### Expert View

Automation - Ensuring a Reliable and Flexible Production Flow  
Drying - Innovation in Belt and Drum Dryers

### Spotlight

Smart Production/IoT/Industry 4.0

### Markets

North America

### Products

Chips and Potato-based Snacks

### Ingredients

Established vs. New Flavors

### Storage Special

Storage Challenges and Cost-saving Solutions  
Storage Design and Construction

Trade shows: World Potato Congress, Interpack 2023

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## MAY/JUNE

Ad closing 08.05/Publishing 19.05



Key Exhibitors Road Map and Event Agenda

### Processes

Cutting, Peeling, Slicing  
Seasoning & Coating

### Expert View

PEF Applications and Advantages  
Frying Technologies and Advancements  
Optical Sorting - Increasing Yields, Reducing Waste

### Spotlight

Alternative Energy & Increasing Efficiency

### Markets

Eastern Europe

### Products

Hash Browns and Croquettes

### Ingredients

Frying Oils

### Storage Special

Power Saving and Sustainability  
Sensors and Data Gathering

Trade shows: Europatat 2023

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## JULY/AUGUST

Ad closing 17.07/Publishing 28.07

### Processes

Blanching, Frying  
PEF Systems

### Expert View

Cutting Accuracy and Equipment Reliability  
IQF Freezing for French Fries

### Spotlight

Supply Chain Management & Logistics

### Markets

South America

### Products

Flakes & Mashed Potatoes

### Ingredients

Seasonings for Chips and Fries

### Storage Special

Automated Climate Control  
Potato Monitoring & Quality Assurance

Trade shows: Potato Association of America Annual Meeting

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## SEPTEMBER/OCTOBER

Ad closing 04.09/Publishing 15.09

### Processes

Oil Filtration Systems & De-fattening  
Cooling and Freezing  
Starch and By-products Processing

### Expert View

Remote Maintenance and Customer Service  
Complete Lines for Processing  
Conveying And Product Transport

### Spotlight

The Road to Sustainability

### Markets

APAC/ANZAC

### Products

Extruded Potato Products

### Ingredients

Salt

### Storage Special

Disease Management  
Handling Potatoes to & from Storage

Trade shows: Potato Europe 2023

6

## NOVEMBER/DECEMBER

Ad closing 07.11/Publishing 18.11

### Processes

"Forming and Extruding"  
Turnkey Projects  
Waste Management/Upscaling

### Expert View

Batch vs. Continuous Frying  
Cutting vs. Hydrocutting  
Pulsed Electric Field (PEF) Processing

### Spotlight

Increasing Production Capacity

### Markets

Global Market Predictions for 2024

### Products

Seasoning Trends

### Ingredients

Better for you/Clean Label

### Storage Special

Store Preparation and Hygiene  
Bulk vs. Boxed Storage

Trade shows: British Potato 2023



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