POTATO PROCESSING
INTERNATIONAL

Supporting the potato industry worldwide

Issue 6 • Volume 31 • 2023

Process
Turnkey Know-how in Potato Lines

Ingredients
The Rise of 'Better for You' Potato Chips

Storage
Storage Preparations for Crop Quality Assurance

PB

visit **potatobusiness.com** incorporating our digital magazine

POTATOBUSINESS

#digitalmedia

#news
www.potatobusiness.com

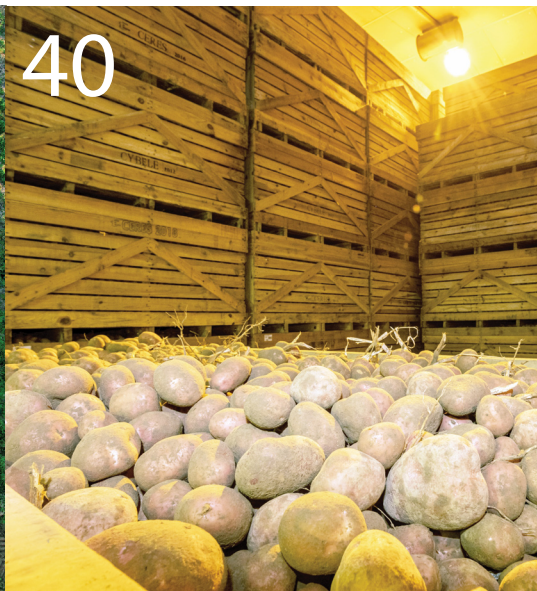
#exclusive content
Potato Business Digital

#insights
Dossier

#industry updates
Newsletter

#customization
e-Blasts

Contents



Navigating Choppy Waters: The Unpredictable Challenges of the Industry

Tudor Vintiloiu - Editor in chief
email: tudor.vintiloiu@trade.media

As we bid farewell to another year in the dynamic world of potato business, the European potato industry finds itself grappling with the aftermath of a tumultuous season marked by abundant rainfall and unforeseen challenges. There is currently a significant portion of the potato harvest stranded in the fields, casting a shadow over the upcoming season.

The relentless downpours disrupted the lifting period, rendering it too brief to secure potatoes in optimal conditions. Consequently, contracts for the approaching season must grapple with heightened risks and mounting costs. Seed availability emerges as a looming concern for spring 2024, adding another layer of uncertainty to an industry already contending with the unpredictable forces of nature.

The trials of 2023 serve as a stark reminder that potato production is becoming an increasingly demanding, risky, expensive, and stressful endeavor. The unusual weather patterns, oscillating between dry and hot to abundant rain, underscore the impact of climate change on agriculture. As we reflect on the lessons learned from this year, it is evident that future contracts must incorporate these evolving risks.

Looking ahead, the industry faces an additional hurdle in the form of diminished seed availability for 2024.

Looking ahead, the industry faces an additional hurdle in the form of diminished seed availability for 2024. A reduction in hectarage, coupled with larger tubers and increased downgraded seeds in key regions, will result in a 20% decrease in seed availability.

The potato market navigates uncharted waters as it bids farewell to a year marred by weather-related disruptions. As we welcome the challenges and opportunities of the upcoming season, the lessons learned in 2023 serve as a compass for steering through the unpredictable tides of the potato industry. As we close the chapter on this year, let us brace ourselves for the uncertainties that lie ahead and chart a course towards a resilient and adaptive future for the entire potato industry. ●

Tudor Vintiloiu (editor in chief)
email: tudor.vintiloiu@trade.media
Tel: +40 21 315 9031
Skype: tudor.vintiloiu

Ionel Vaduva (on-line editor)
email: ionel.vaduva@trade.media
Tel: +40 21 315 9031
Skype: ionel.vaduva

Cristina Nae (advertising sales director)
email: cristina.nae@cmgromania.ro
Tel: +32 499 731 114/+40 725 409 997

Marian Cilibeanu (production manager)
email: production@trade.media

Simona Ardeleanu (circulation manager)
simona.ardeleanu@trade.media

Raluca Canescu (publisher)
raluca.canescu@trade.media
Tel: +40 21 315 90 31
Skype: raluca.canescu

Nicoleta Marasescu (managing director)
nicoleta.marasescu@trade.media
Tel: +40 723 452 329
Skype: nicoleta.marasescu

Contributing writers
Jonathan Thomas, Cedric Porter, Nora Olsen, Mintel Group LTD, Euromonitor International, Future Market Insights, AHDB, Persistence Market Research

(IT Support)
email: admin@trade.media

Editorial office:
Trade Media Solutions SRL,
G-ral David Praporgescu Street, no.1, District 2, Bucharest, 020965, Romania
Tel: +40 21 315 9031
www.mediatrade.ro

Printed by: Sothis
ISSN: 0968-7661

facebook
Like our page and join our online community: www.facebook.com/**Potatobusiness**

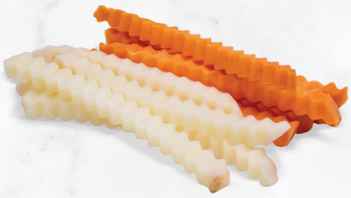
twitter
Follow us on Twitter: http://twitter.com/**potatobusiness**
We will update regularly on our activities, upcoming features and show attendance.

LinkedIn
Join our group on LinkedIn search for: **PPI News**

Trade Media SOLUTIONS

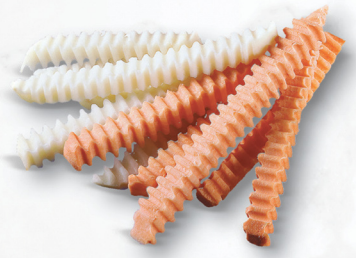
Annual subscription:
1 year €120 and 2 years €210
Subscribe online: www.potatobusiness.com/subscribe
Email: subs@mediatrade.ro
or Telephone: +40 21 315 90 31.
Visit our website: **www.potatobusiness.com**












Any Way You Cut It

Rely on Urschel

As a powerhouse developer and manufacturer of cutting machinery, Urschel delivers targeted results to meet processing goals and optimize profits. Rugged slicers, shredders, dicers, and milling machinery **built to exceed expectations.**

#1 Best selling provider of industrial cutting machinery throughout the world.

URSCHEL®
The Global Leader in Food Cutting Technology

Set up a free test-cut of your product.
www.urschel.com

Additional 4,000 Square Meters for the Calbee-owned Seabrook Crisps

The owner of Seabrook Crisps, Calbee, a snack company with its headquarters in Japan, is investing in its UK plant to boost output by 70%. Authorities have approved a 4,000-square-meter expansion at the potato chip manufacturer, which Calbee purchased in 2018 for an undisclosed amount. The property is located in Bradford, northern England.

A GBP3m capital infusion was given to the same plant in 2021 to boost output by 10%. The latest investment, according to the spokeswoman, is the result of increased demand in the UK market. The extension, which spans 4,000 square meters, will include new potato processing, frying, and bagging equipment, followed later by additional warehousing.

The enlargement project is now under construction, with completion anticipated in July of the following year.

Germany: A New Branch of AVR Opened in November

AVR, a major global leader in the potato cultivation industry and manufacturer of a complete range of machinery, announced a major expansion of the business with the creation of a new branch in Germany. This new company will act as AVR's strategic base of operations, to provide close and timely service to its German customers and dealers, and utilize know-how applicable to the local German market.

"Germany is one of the most important potato-producing countries in Europe and is therefore an extremely important market for AVR. As this is a key market for our potato machinery, now and in the future, AVR will additionally and continuously invest in the German market," Stefan Top, managing director of AVR, explained.

Wolds Produce Joins the AKP Group

AKP Group, one of the UK's leading vertically integrated potato supply chain specialists based in North Lincolnshire, has completed the acquisition of Wolds Produce, based in York.

"By combining the expertise, resources, and experience of the AKP Group and Wolds Produce, the companies can achieve economies of scale. The complementary partnership will drive innovation and build a stronger, more resilient supply chain, ultimately contributing to the growth of the UK potato industry," according to a recent press release.

The smooth integration of the combined operations will guarantee growers and partners receive continuous support from Wolds Produce and AKP Group in all areas, including variety and seed selection, new contracting opportunities, and the use of first-rate grading and storage facilities.

China's 'Potato Capital' Enjoys a New Lamb Weston Processing Facility

Recently, Lamb Weston Holdings, Inc.'s management team members celebrated the grand opening of the company's new processing facility in Ulanqab, Inner Mongolia, China. Situated in the region dubbed China's Potato Capital, the plant can generate 113,000 tons of frozen potato goods per year. The company will have more flexibility to satisfy the region's expanding client demand thanks to the additional capacity. The company has a sales office in Shanghai and has been running a production facility in Shangdu, Inner Mongolia, since 2014.

"This investment demonstrates Lamb Weston's commitment to growing our business in China. The new facility is the result of the hard work and dedication of many team members, and I'm proud of their accomplishments," President and CEO Tom Werner, mentioned.



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

- Potato Handling & Storage
- Preparation & Electroporation
- Batter Coating
- Frying & Oil Management
- Energy Saving
- Pollution Control
- Seasoning & Conveying







Across industries and applications, we design specialised solutions.

Bringing together leading brands in processing and packaging equipment for the French fry and potato product industries. Our solutions set the standard for yield, efficiency, and safety while producing the highest quality straight cut, crinkle cut, wedges, curly fries, hash browns and potato gems. Whatever your product needs, we can meet it with precision and passion.

HEAT AND CONTROL® | FastBack® SPRAY DYNAMICS® MASTERMATIC

info@heatandcontrol.com | heatandcontrol.com

OptiCept Has Partnered with FPS to Deliver PEF Applications in the Potato Processing Industry

To foster greater cooperation in the development, manufacturing, and marketing of Pulsed Electric Field (PEF) applications in the potato processing equipment industry, but also in the food industry in general, OptiCept Technologies has partnered with FPS Food Process Solutions Corp.
The partners agreed to take an active role in advancing and promoting OptiCept's PEF system, which is intended for use in solid food applications.
"We believe that this partnership will help meet the growing needs in potato processing equipment but also in the food industry in general. We will be able to offer our customers the tools they need to deliver high-quality products and maintain competitiveness in a rapidly changing industry. Our goal is to combine the leading PEF technology with the market-leading food handling solutions available. I look forward with great excitement to starting our collaboration and introducing innovative PEF systems to the market," Jeffrey Chang, CEO, of FPS, mentioned.

Automatic Testing in the Bag at Frozen Fries Factory

Fortress Technology's automatic testing solution has been deployed by one of the largest international suppliers of frozen retail, wholesale, and food-service potato products, ensuring the ultimate product integrity and premium quality from farm-to-freezer-to-table.
One of Fortress Technology's longest-standing customers has installed more than two dozen of the firm's highly sensitive Stealth metal detectors. Each is equipped with customized reject conveyors and Halo Automatic Testing. Producing everything from French fries to hash browns and onion rings, alongside scales, shakers, vibrators, graders, baggers, open bag detectors, case packers, sortation conveyors, palletizers and wrappers, located towards the end of multiple processing lines are several highly-sensitive stealth metal detectors. Each provides a final and robust quality check. Every hour, each metal detector automatically performs up to nine machine validation tests – equating to 180 or more repeatable tests on multiple SKUs and different-sized bags of French fries, ranging from 225 grams to 9 kilograms. The deployment of Halo Automatic Testing ensures tests are not skipped.

PepsiCo - 15% Sodium Reduction in U.S. Lay's Classic Potato Chips

As part of PepsiCo Positive (pep+), the company's end-to-end strategic change, PepsiCo, Inc. unveiled two new, ambitious nutrition goals: lowering sodium and intentionally including significant sources of nutrition in the meals that consumers are reaching for. "Excess sodium intake is a leading risk factor for diet-associated disease and disability, prompting global public health authorities to call on the food industry to reduce sodium in their products. The World Health Organization (WHO) recommends less than 2000mg of sodium per day for adults. PepsiCo is setting a new sodium reduction goal, with category targets that consider guidance from public health experts including the World Health Organization, and are approximately 15-30% lower than the company's current target for key convenient food categories. Our new sodium goal aims for a 15% sodium reduction in our U.S. Lay's Classic Potato Chips, which would result in a sodium level of 140mg per 28g serving. According to the U.S. National Health and Nutrition Examination Survey, the sodium intake in daily diets from savory snacks is currently around 3%," according to a recent press release.René Lammers, Executive Vice President and Chief Science Officer of PepsiCo says the firm is constantly innovating to reimagine the foods it creates and the processes it uses to make them, all while maintaining the highest quality for its customers.

Key Technology - Enhancements for Rotary Sizing & Grading Systems

Key Technology introduces innovative Rotary Sizing and Grading System features. The Precision Size Grader (PSG), Rotary Size Grader (RSG), and Sliver Sizer Remover (SSR) are part of a versatile family that allows vegetable, potato, and fruit processors and packers to mechanically size and grade product while eliminating small bits, waste, and other targeted material. Key's Rotary Sizing and Grading Systems, which are available with newly optimized rollers, Lubed for Life bearings, and drive covers, improve product quality control, increase yield, maximize sanitation, and reduce maintenance.
"Our Rotary Sizing and Grading Systems have set the industry standard for decades. As the market leader, we're always developing new ways to improve our popular, field-proven equipment to optimize it for the modern age. By advancing our technology, we offer our customers the very best solutions for solving current as well as future production challenges," Jack Lee, Duravant Group President – Food Sorting and Handling Solutions, mentioned.

Mettler-Toledo Unveils Enhanced ProdX Data Management Software

Mettler-Toledo Product Inspection has released the latest edition of ProdX, their comprehensive data management software. ProdX 2.6 is intended for food makers to increase data handling, quality control, and operational efficiency in the food business.

The primary goal of the new software additions to ProdX 2.6 was Mettler-Toledo's dedication to satisfying the high demands of food manufacturers looking for comprehensive, efficient, and data-driven solutions.

"Positioned as a cornerstone of quality control and data management in food production, ProdX 2.6 seamlessly integrates with Mettler-Toledo product inspection equipment – x-ray inspection, metal detection, checkweighing, and vision inspection – facilitating the secure collection and management of critical inspection data," according to a recent press release.

With a high degree of accessibility and automation, the update permits users to monitor reject data, contamination incidents, and report generation.

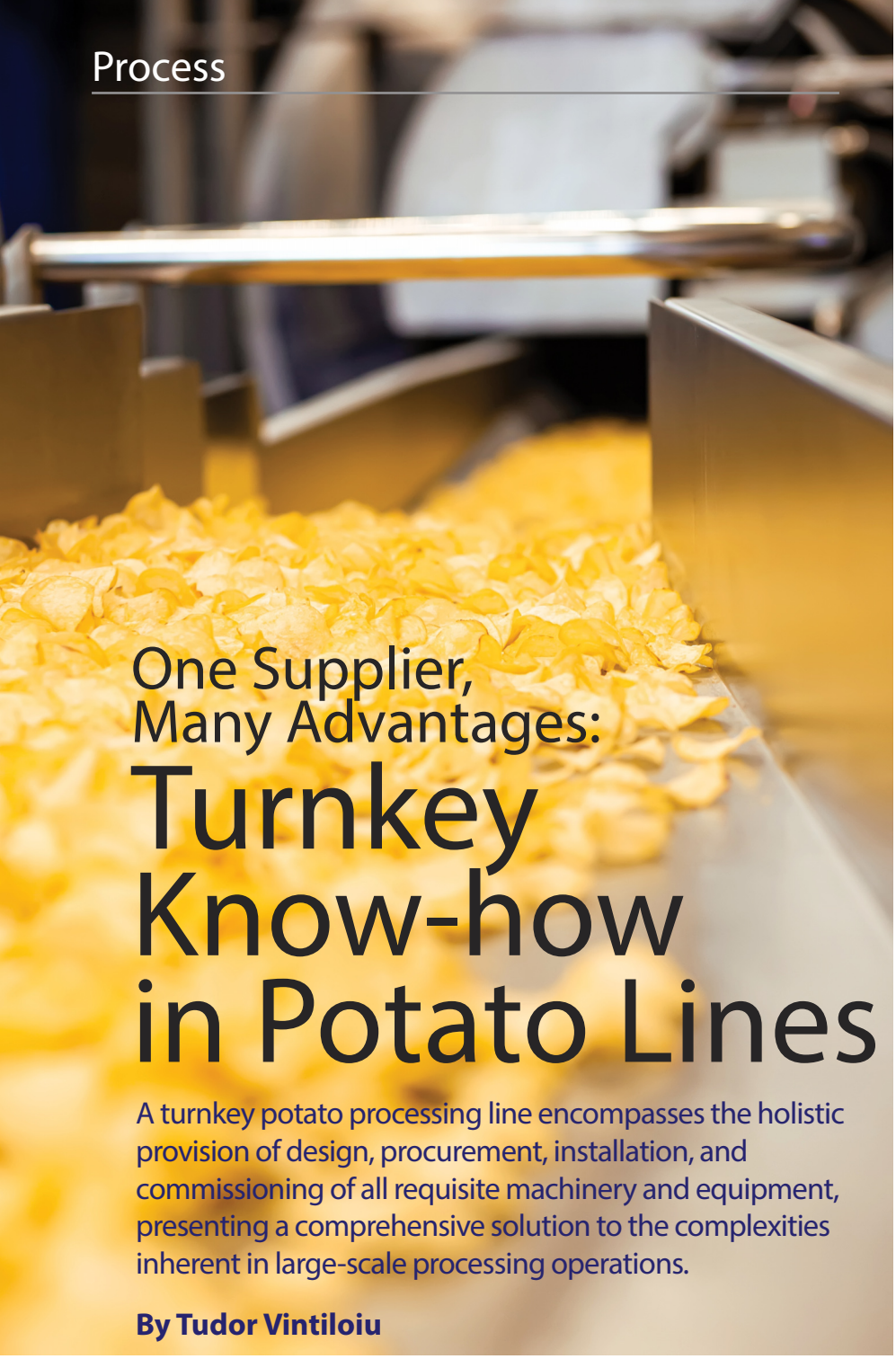
USD6.9m for Improving Soil Health Go to McCain Foods USA

The U.S. Department of Agriculture (USDA)'s Regional Conservation Partnership Program (RCPP) has granted McCain Foods USA USD6.9m in funding. This money will be utilized for the project "Improving Soil Health in Potato Supply Chains."

On more than 2,400 hectares in Wisconsin and Maine, potato growers will receive assistance from McCain Foods USA, Campbell Soup Company, and the Soil Health Institute (SHI) in implementing soil health and climate-smart agriculture practices and systems.

Both McCain and Campbell have business initiatives in place to assist producers inside their supply chains in implementing regenerative agriculture techniques to combat climate change.

"As potato growers face increasing challenges from climate change and variable weather, shifting towards smart and sustainable farming practices is vital. We are profoundly grateful that USDA has invested nearly USD7m in our soil health project, which will advance our work with McCain growers and customers to re-imagine the way potatoes are grown. The funding award is an important step toward meeting McCain's bold commitment to implement regenerative agricultural practices across 100 percent of our potato acreage worldwide by the end of 2030," Dan Metheringham, McCain Foods' Vice President of Agriculture North America, mentioned.



One Supplier, Many Advantages: Turnkey Know-how in Potato Lines

A turnkey potato processing line encompasses the holistic provision of design, procurement, installation, and commissioning of all requisite machinery and equipment, presenting a comprehensive solution to the complexities inherent in large-scale processing operations.

By Tudor Vintiloiu

One of the key advantages of embracing a turnkey approach lies in the seamless integration it affords across the diverse stages of potato processing. From the initial washing and peeling to subsequent cutting, blanching, frying, and packaging, this integrated system minimizes the risk of compatibility issues and bottlenecks between various equipment components. The result is an optimized and harmonized production process, enhancing overall efficiency.

To meet these demands, companies like **Kiremko** have adopted a project-based approach, offering turnkey solutions that encompass the entire processing line. Whether it's a single machine or a complete project, the focus is on delivering the best quality equipment along with comprehensive project management.

Kiremko has established a dedicated service called Kiremko Project Development (KPD) to cater to the growing demand for turnkey projects. KPD specializes in assisting customers in decision-making, operational management, and eliminating bottlenecks in the production process. Their team of specialists leverages extensive knowledge and experience in the potato industry to translate initial ideas into technical concepts with financial substantiation.

"I am regularly invited to visit our clients to highlight our project-based approach and to demonstrate the benefits of our partnerships in practice. The advantages of turnkey solutions are many and I like to show them to our customers, because it works. Together with our strategic partner Idaho Steel, we know how to get the most out of the potato for our customers. With our sustainable approach, we go for our customer's success, not just for the short term but for the long term," said Andy Gowing, Kiremko director.

BENEFITS

Customization and flexibility are inherent benefits associated with the turnkey paradigm. Engaging with a single supplier empowers processors to tailor the entire processing line according to their unique specifications and production requirements. This adaptability ensures that each component functions cohesively, accommodating the inherent variations in potato types and processing parameters that may be encountered in a dynamic production environment. But even once the right supplier is found, manufacturers will need to ask numerous questions before they can make a decision. Will the system integrate with my other equipment? Will the equipment help me achieve my objectives? Will my operators require additional training to use the system? Partnering with a single source

"A single source supplier is able to not only evaluate your needs for each segment of the line, but also takes a holistic view of your entire production process."

tna

Belgian Potato Producers Invest in Innovation to Meet Changing UK Consumer Trends in 2024

In a market that is still feeling the effects of the cost-of-living crisis, inflation and elevated energy costs, 2023 has undoubtedly seen a behaviour shift in UK food consumption, with both consumers and professional chefs seeking value, quality, and ease of cooking to reduce energy usage. This winter, there is clearly a drive toward frozen and fresh pre-prepared products that offer lower prep time and food waste to meet this consumer need. In fact, the global frozen food market is forecast to increase by $250 billion between 2021 and 2030 .

New Potato Concepts Cater to Consumer Trend Toward Exploration

Across the festive season and beyond, consumers are still seeking high quality, innovative dishes to enjoy at celebratory occasions. There is thus a huge opportunity for retailers and hospitality operators to offer new, exciting fresh and frozen potato concepts, be it sweet potato variants, croquettes, duchess potatoes or baby potatoes in delicious marinades.
The rich, fertile soil, mild climate and long-held potato growing traditions ensure western European potatoes are the perfect raw ingredient for innovative potato concepts. Therefore retailers and hospitality buyers have an almost unlimited choice of standard and bespoke products, formats, coatings and packaging to excite their customers. High quality certified seed combined with scientific research and the latest technology deliver fluffy interiors, crispy or crunchy coatings and the unmistakable taste of Flanders.

Consumers Set to Add More Potato Products

The combination of human and planetary health is a key consumer trend and one that will no doubt continue this year, with 67% of UK adults stating it is important that their diet is healthy for both themselves and the planet .
Eating less but better-quality meat has been a vector by which consumers are shifting their diet to align more with their goal of achieving better personal and planetary health. This will no doubt impact retailers and hospitality operators as UK consumers increasingly look for tasty, filling and convenient dishes made with less or no meat, even those customers that don't consider themselves vegetarian or vegan. There's every expectation that potato products will see marked interest from consumers, as they can offer excitement, great flavour and ease of preparation to a wide spectrum of cuisines and plant-based dishes.
This trend is particularly true for consumers cooking at home as the lasting impact of the lockdowns and working from home have caused people to cook more and explore at-home alternatives, which has resulted in consumption of innovative potato products to rise sharply. Offering customers in both the convenience and grocery channel a diverse range of products will no doubt translate into sales.

Good for the Consumer Good For the Planet

Sustainability of ingredients will become an ever-increasing influence on purchase and Belgian processed potatoes can certainly cater to this demand. Developments have already been made within the production methods of the potato sector to tackle packaging and plastic, reduce carbon footprint and water usage to help create confidence of a sustainable product with full traceability. This includes initiatives like the European Farm to Fork Strategy, which addresses the challenges of sustainable food systems and recognises the link between people, planet and profit. A combination of efforts is allowing the market to contribute towards positive targets, such as those laid out by the European Commission like the goal to be the first climate-neutral continent by 2050. A range of efforts have been taken to increase sustainability in potato production and processing in Belgium and the sector actively participates to reach the sustainability goals.

[1] Astute Analytica, August 2022, Frozen Food Market
[2] UK Attitudes Towards Eating Healthy Market Report 2022

FRESH FROM BELGIUM
Funded by the European Union

supplier, who can offer turnkey solutions for a complete production line, can save a lot of time and paperwork. Not only will it provide a single point of contact, meaning clients spend less time dealing with various suppliers, but it will also give access to a much broader portfolio of technology, services and skills. A total system provider can be helpful at every stage of the process, from setting the objectives to design, installation and training, all the way to after-sales-support, ensuring that the line keeps running well after the first contact is made and the install is complete.

"When it comes to commissioning new production equipment, manufacturers need to start right at the beginning. What am I trying to achieve? While this might sound like an easy question, it's often one that many businesses struggle with. It's not always easy to know how many bags of chips you're looking to achieve per minute or what the cost per bag will be, which type of frying process best suits your products, or how local nutritional specifications may affect your labelling requirements. This can be especially challenging when you're new to the market, looking to introduce an untested product or expanding your operations into a country you're not familiar with," representatives from **tna**, a leading turnkey equipment supplier, explained.

Efficiency in project timelines is another noteworthy benefit derived from turnkey solutions. With a single supplier overseeing the entire process, the coordination of equipment delivery, installation, and commissioning becomes a synchronized effort. This synchronization has the potential to reduce downtime and expedite the time-to-market for the processed potato products, a critical consideration in the competitive landscape of the food processing industry.

LIMITATIONS

However, it is imperative to acknowledge the limitations associated with the turnkey model. A primary concern is the dependency on a single vendor for all processing equipment. If the chosen supplier encounters challenges such as production delays or quality issues, the potential repercussions on the overall project timeline can be significant. Furthermore, the turnkey approach may curtail the spectrum of equipment options available to processors. While the integrated system is meticulously designed for cohesion, it may not always accommodate the most cutting-edge technology or specialized machinery that could potentially enhance specific processing stages.

Cost considerations also factor into the decision-making process. The convenience of a turnkey solution comes at a price, potentially leading to higher costs compared to sourcing individual components from multiple vendors. A judicious cost-benefit analysis is imperative to ascertain the overall economic viability of this approach within the context of specific operational requirements and budget constraints.

CONCLUSION

While in the past many manufacturers may have incorporated a variety of different suppliers' equipment into their production line, more and more are seeking total solutions. With a line that is tailored to each plant's needs, using the total systems approach, key productivity objectives can be met, efficiency can be improved and throughput increased.

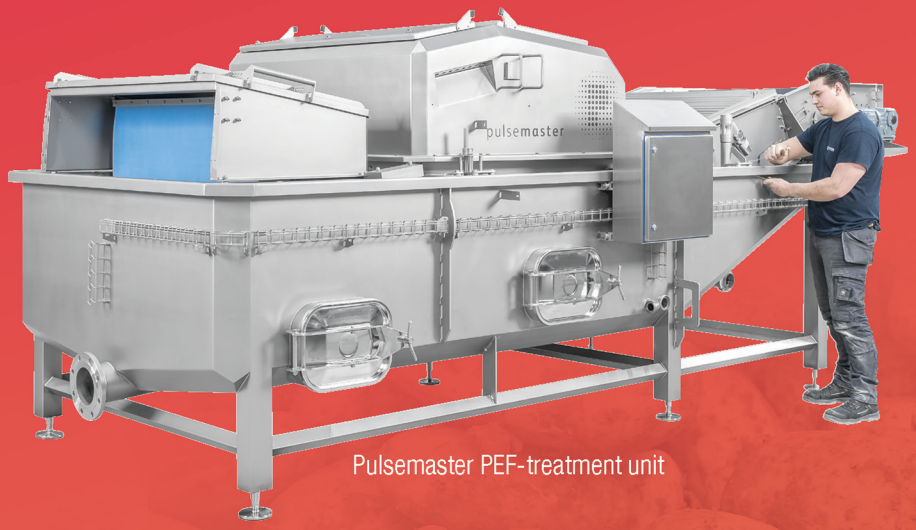
The decision to implement a turnkey potato processing line necessitates a nuanced evaluation of its advantages and limitations. Processors seeking a streamlined, accountable, and integrated approach may find turnkey solutions to be a pragmatic choice. However, a thorough consideration of project requirements, budget constraints, and the technological landscape is essential to determine whether the benefits outweigh the potential limitations in a given operational context. •

"Kiremko Project Development will provide well-founded advice with objective results. The feasibility of your plan will be clearly mapped and based on your wishes and resources to enable you to determine the profitability of the plan."

Kiremko

pulsemaster

#1 provider of Pulsed Electric Field systems for French fries and chips.



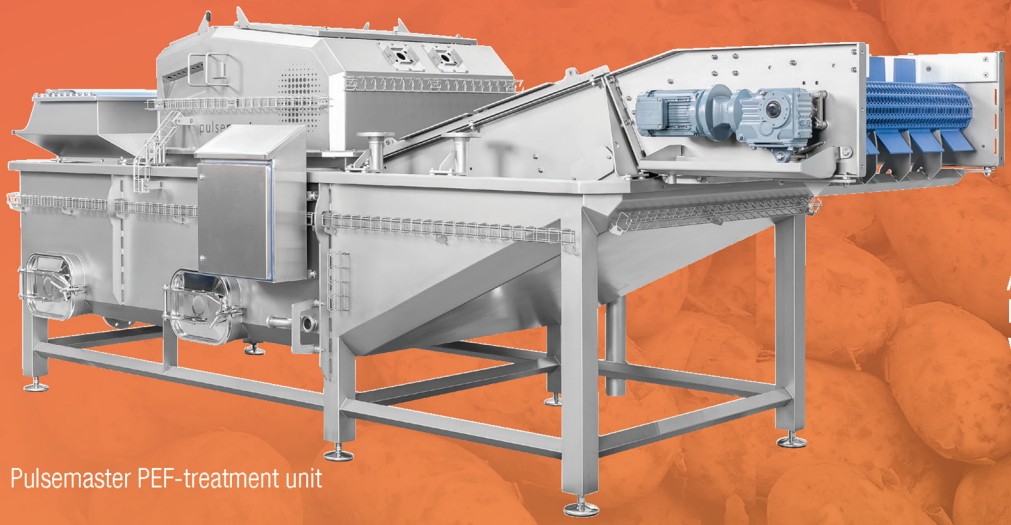
Pulsemaster PEF-treatment unit

ADD VALUE TO YOUR BUSINESS WITH PULSEMASTER PEF-SYSTEMS

The pulsed electric field creates very small holes in the membranes of the cells with electrical pulses - within one second – prior to cutting.

You need 40 percent less cutting force to make French fries. You cut much better, you have a nicer cut and the fries don't break that easily. You can shorten the blanching and frying time. Tough, hard produce like sweet potato, turnip and beet root become easily processable with PEF, to make French fries and veggie chips. More complicated cuts, such as deep ridge, waffle or lattice are now easier to slice with higher overall yield.

Pulsemaster Pulse Generator



Pulsemaster PEF-treatment unit

A range of five Pulsemaster PEF-systems for fruit and vegetable processing.

Hapert, Netherlands & Lohne (Oldenburg), Germany & Woodstock NB, Canada
www.pulsemaster.us • info@pulsemaster.us • +31 (0)497 820300




FLO-MECH LTD

www.flo-mech.com

With over 40 years of experience, Flo-Mech Ltd is a leading supplier of equipment to the food processing industry, providing a complete range of products and worldwide turnkey project management solutions including: Complete snack processing lines, Flo-Starch™ – Starch and water recovery systems, Flo-Therm™ – Oil heating systems with pollution control, Flo-Cut™ - Potato grading / halving equipment, Flo-Peel™ – Peeling systems, Flo-Flavour™ – Flavoring systems, Flo-Filter™ – Oil Filtration systems & fryer chimney filter systems, Flo-Dry™ - Energy efficient snack drying systems , Health & safety management, Energy & sustainability management.

Flo-Mech
SYSTEMS - SERVICES - SOLUTIONS

FPS Food Process Solutions

www.fpscorp.ca

FPS FOOD PROCESS SOLUTIONS

FPS Food Process Solutions produces the world's most hygienic French Fry tunnels. Our range of Individual Quick Freeze (IQF) tunnels implements a combination of pneumatic and mechanical fluidisation techniques for product separation. This ensures careful freezing for a wide variety of food products, including French Fries.
Our industry-leading designs feature stainless steel welded enclosures with high-density polyurethane, flexible panel joints, and floors that prevent water pooling. In addition, our external motors and gearboxes protect components from the harsh internal environment, eliminating maintenance and hygienic concerns. Our optimised hygienic design includes smooth TIG welding, sloped surfaces, and minimal lap joints and bolting.
If you are looking to optimise your processing needs, whether it be new equipment, servicing or retrofit of existing equipment – FPS is your potato partner.

HEAT AND CONTROL

www.heatandcontrol.com

HEAT AND CONTROL®

Advancing food processing technology with creativity, passion, and unmatched expertise at a global scale. For over 70 years across food industries and applications, Heat and Control's specialised equipment solutions have set the standard for yield, efficiency, and safety. Offering complete turnkey solutions featuring integration from start to finish ensures full line efficiency and performance.
Food Processing: From raw produce preparation and value-adding to frying, cooking, seasoning, and coating.
Product Handling: Maintain efficient production at optimal capacity. Smart design and line management that achieves accurate feed, accumulation, and distribution flow. Includes conveyors, elevators, and proportional feeding systems.
Potato products: Producing the world's best tasting potato chips, French fries and formed potato products, our systems are the workhorses of the industry.

Insort GmbH
WE catch THEM ALL

www.insort.at

insort
years of intelligent selection

Insort GmbH is one of the worldwide leading companies providing real time sorting, monitoring and analysing solutions based on Chemical Imaging Technology (CIT®) for the food processing industry. Our expertise combines the latest optical sensor systems and digital signal processing with mechanic and electronic machine design specially developed to fulfil highest food processing standards. The machines branded as the "Sherlock" family set a new benchmark in performance and food safety.

FLO-MECH LTD

www.flo-mech.com

With over 40 years of experience, Flo-Mech Ltd is a leading supplier of equipment to the food processing industry, providing a complete range of products and worldwide turnkey project management solutions including: Complete snack processing lines, Flo-Starch™ – Starch and water recovery systems, Flo-Therm™ – Oil heating systems with pollution control, Flo-Cut™ - Potato grading / halving equipment, Flo-Peel™ – Peeling systems, Flo-Flavour™ – Flavoring systems, Flo-Filter™ – Oil Filtration systems & fryer chimney filter systems, Flo-Dry™ - Energy efficient snack drying systems , Health & safety management, Energy & sustainability management.

Flo-Mech
SYSTEMS - SERVICES - SOLUTIONS

FPS Food Process Solutions

www.fpscorp.ca

FPS FOOD PROCESS SOLUTIONS

FPS Food Process Solutions produces the world's most hygienic French Fry tunnels. Our range of Individual Quick Freeze (IQF) tunnels implements a combination of pneumatic and mechanical fluidisation techniques for product separation. This ensures careful freezing for a wide variety of food products, including French Fries.
Our industry-leading designs feature stainless steel welded enclosures with high-density polyurethane, flexible panel joints, and floors that prevent water pooling. In addition, our external motors and gearboxes protect components from the harsh internal environment, eliminating maintenance and hygienic concerns. Our optimised hygienic design includes smooth TIG welding, sloped surfaces, and minimal lap joints and bolting.
If you are looking to optimise your processing needs, whether it be new equipment, servicing or retrofit of existing equipment – FPS is your potato partner.

HEAT AND CONTROL

www.heatandcontrol.com

HEAT AND CONTROL®

Advancing food processing technology with creativity, passion, and unmatched expertise at a global scale. For over 70 years across food industries and applications, Heat and Control's specialised equipment solutions have set the standard for yield, efficiency, and safety. Offering complete turnkey solutions featuring integration from start to finish ensures full line efficiency and performance.
Food Processing: From raw produce preparation and value-adding to frying, cooking, seasoning, and coating.
Product Handling: Maintain efficient production at optimal capacity. Smart design and line management that achieves accurate feed, accumulation, and distribution flow. Includes conveyors, elevators, and proportional feeding systems.
Potato products: Producing the world's best tasting potato chips, French fries and formed potato products, our systems are the workhorses of the industry.

Kiremko B.V.

www.kiremko.com

Kiremko
Food Processing Equipment
IDAHOSTEEL
REYCO®

Kiremko is a leading manufacturer of processing lines for the potato processing industry. By focusing on product development, continuous improvement, innovation, sustainable technology and cooperation, we add value for every customer. Together with our partners Idaho Steel, Reyco Systems, we innovate, design, manufacture and install advanced processing lines worldwide; process potatoes into French fries, potato chips, potato flakes, pellet snacks, fresh cut and pre-cooked potato products, hash brown products and other potato specialties. Kiremko's strength is to deliver total solutions for the processing of potatoes, from the infeed of potatoes to the packaging line, with a high-quality end product as a starting point.

Kuipers Food Processing Machinery

www.kuipers.nu

Kuipers Food Processing Machinery engineers and manufactures high-end, innovative snack processing technology for products such as nuts, pellets, extruded snacks and chips. The company is a known specialist when it comes to frying systems and delivering turnkey lines for snack production. Since 1985, Kuipers has supplied food plants to more than 60 countries worldwide. The company's systems help small food producers, as well as multinationals, manufacture the tastiest snacks on the market in the most efficient manner.

Optimum Sorting

www.optimum-sorting.com/en/home/

Optimum Sorting develops, builds, installs and services innovative optical sorting solutions for the food-, non-food and pet-food industry. All machines use camera and laser technology. Its commitment to continuous innovation and its collaboration with research institutes worldwide enable using the latest detection technology to solve the most complex sorting problems. Optimum Sorting high-end solutions, supported by a team with +1000 years of combined experience in optical sorting, ensure its clients can provide their customers with products of consistently high quality.

Pulsemaster - Pulsed Electric Field Systems

www.pulsemaster.us

The Pulsemaster Compact PEF system is a robust, all-in-one unit with a small footprint, which is designed to suit small and mid-scale production lines treating up 10 tph. As the #1 supplier of Pulsed Electric Field systems for better French fries and potato chips, the innovative Dutch-German company Pulsemaster continues to specialize in Pulsed Electric Field processing. Pulsemaster offers PEF-systems with capacities up to 80 tons per hour. With Pulsemaster PEF-systems huge improvements can be achieved in the production process of chips and French fries. Pulsemaster aims to apply this innovative technology – also known as electroporation – in the widest range of applications in the food industry. PEF technology meets the industry's need for natural and clean processes.

Rosenqvists Food Technologies AB

www.rosenqvists.com

Rosenqvists Food Technologies AB develops, designs and manufactures complete processing lines for the global snack food and French fry industries. We focus on the thermal treatment process´ with special know- how and expertise in blanching, drying and frying. Rosenqvists supplies complete lines for potato chips from 500 to 3000 kg / h and complete French fry lines from 2 – 15 t / h. We are experts in complete frying for coated fries and wedges (up to 25 t/h) and frying systems for potato specialties (up to 9 t / h). "Oil management" is our trademark.

Schaeffler Lifetime Solutions

www.medias.schaeffler.de/en/lifetime-solutions

Designed with maintenance teams and plant managers in mind Schaeffler Lifetime Solutions offers a full suite of industrial maintenance products, services and solutions for the lifetime of your production equipment. From mounting to condition monitoring and smart lubrication: Schaeffler's products, solutions and services work together to eliminate unexpected machine failures.

TNA Solutions

www.tnasolutions.com

TNA solutions is known globally as a leading system integrator in the food processing and packaging industry. With branch offices, manufacturing offices and sales offices distributed across 30 strategic locations around the world, the company has an installed base of more than 14,000 systems in over 120 countries! As TNA upholds its goal to make customers successful, to realise their goals and exceed expectations, its focus and strategy goes beyond the delivery of equipment alone. With over 40 years of experience and a dedication to help customers succeed in a rapidly changing world, TNA closely cooperates with carefully selected, highly dedicated partners to enable customers to benefit from the most comprehensive and reliable processing and packaging solutions available on the market today.

Tolsma-Grisnich

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

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

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

www.urschel.com

As the global leader in food cutting technology, Urschel continues to lead the world in the manufacturing and selling of commercial cutting equipment to food processing and allied industries. Founded in 1910 by inventor William E. Urschel, the company has continued to expand throughout its 100-plus year history keeping pace and adapting to the everchanging needs of the marketplace. Increases in productivity, energy-saving machinery, cleaner, more precise cuts, and developing new cut shapes, are just a few ways Urschel continues to rise to the demands of this dynamic industry.

Innovators in Potato-

Dedicated to developing high-performing industrial potato-cutting solutions, FAM STUMABO is recognized as a key player in the global potato processing industry. Our knowledge of both mechanical and hydrocutting systems allows us to offer the best technology for each customer's needs.

By Emerson Jiménez Barajas, Blade Operations & Food R&D Director, FAM STUMABO

The production of high-quality potato products requires accurate cutting methods that consider different potato types and conditions. Our partnerships with leading potato processors and line builders all over the world ensure that our innovations align with evolving requirements and keep adding value for the customer in terms of higher capacity, improved yield, lower costs and reduced processing time.

MECHANICAL CUTTING SPECIFICITIES

Mechanical cutting happens with a cutting machine. The mechanical cutting machines use different tools to cut the potato in different shapes, going from slices to dice. For the potato industry, there are different types of machines depending on the product the customer wants to produce and the potato (shape, size, type, etc.) used as raw material. The main types of machines are dicers, transverse slicers, and centrifugal slicers.

Dicer/French Fry Cutter

These mechanical cutters are a bit more complicated than a hydrocutting system in normal operation. These machines use centrifugal force to hold the product against the inside of the drum wall as the impeller paddles carry the product past the slicing knife. The slicing knife cuts slices, which can be converted into strips by an assembly of circular knives. Then, these strips can be cut by a crosscut knives assembly into dice.
However, for the French fry industry, these machines generally work with the slicing knife and the crosscut spindle. By doing so, and adapting the impeller to ensure that the potatoes are well placed on their longest side before reaching the slicing knife, we ensure that the fries always have the longest possible length.
The cutting tools, slicing knife, and crosscut spindle can also be developed to create new shapes. And because the crosscut knives are cutting perpendicular to the slicing knife, the shape does not need to follow the fry lengthwise. This versatility is one of the main advantages of the mechanical cutting system. Some fry shapes can only be made using this system, like the famous crinkle and deep crinkle fry. Especially for the crinkle fry, FAM has developed a drum and paddles designed to trap the potato into position to ensure a uniform pattern of the shape, maximizing the yield and controlling cut quality.
However, these machines have a slight disadvantage compared to the other system: the capacity of a mechanical cutting machine is not the same as the capacity reached with a hydrocutter. The capacity depends also on the slice thickness of the fry: the smaller the fry, the lower the capacity on these machines. This happens because the complete thickness of the potato needs to be cut in more rotations when the slice thickness is smaller, so the next potato can come into place for slicing.
One of the focus points when developing a new mechanical cutting machine is capacity. FAM STUMABO developed the high-capacity potato dicer/French fry cutter Tridis™ 240P. The advantage of mechanical cutters is the flexibility to make shaped fries but also straight fries in low to medium quantities at a lower investment cost. The Tridis 240P is the best standard for all those customers who want to start processing their potatoes. FAM has also smaller machines for lower capacities, like Tridis™ 180P. An important focus point while developing a new machine is that we are continuously developing new cutting tools to improve the user experience and make the setup and maintenance easier for the operator. For instance, the new Tridis™ family includes new cassette systems to facilitate the

cutting Technology

changeover of a cutting size or shape. This system includes Set & Forget features, effortless replacement, and adjustment of cutting tools and no need for special training.

Transverse Slicers

Another type of machine used in the potato industry is the V-belt slicer. In these machines, the product slides onto two conveyor belts positioned in the V-shaped feed channel which ensures automatic positioning and highspeed transport of the product to the cutting wheel. The slicing wheel, in combination with the selected or programmed speed on the feed belt and slicing wheel VFDs, maintains the speed of the product while it is being sliced. The thin, tensioned knives of the cutting wheel act as spokes and support the rim. The knives are twisted to create a uniform pitch from the hub to the rim. It is this pitch that maintains the continuous speed of the product while it is being sliced. The conveyor belt speed is synchronized with the cutting wheel speed to ensure the correct advance of the product per revolution of the cutting wheel.

These slicers are used in the food industry mainly to cut oblong/elongated potatoes into slices, both flat and crinkle. But more shapes are also possible. Because the potatoes are positioned in the V-belt and the blade cuts them perpendicularly, the result is a coin cut.

The capacity of some models of these machines, like the new Volantis™ slicer, is high. But of course, when compared to the hydrocutter the capacity is less. However, this type of machine and the dicer/French Fry cutter can make shapes that are otherwise impossible in a hydrocutter line.

The potato type has an important effect on the quality of the cut. Elongated potatoes are positioned correctly in the conveyor belts and the coin cuts have a consistent thickness. However, round potatoes will tend to roll in the conveyors, they do not sit stable, and the cut quality can be affected.

The cutting tools are less complicated than the dicers/French fry cutters. The knives need to be properly tensioned in the wheel and the changeover is relatively easy, with pre-programmed settings depending on the slice thickness required.

Centrifugal Slicers

Our Centris™ technology has become the referent in quality and capacity in the potato chips industry. The operating principle of this technology is quite simple: the product is fed through the infeed chute and enters the rotating impeller. Centrifugal force pushes the product against the inside of the stationary cutting head where the impeller paddles guide it through each of the 12 or 16 cutting stations. Slices are produced as the product passes each knife smoothly and uninterruptedly.

This technology is widely used to make potato chips, thanks to the very high accuracy in slice thickness: because the chips are very thin (less than 2 mm in most cases), any difference in the slice thickness can create some issues during frying, like burning, undesired color and acrylamide formation.

This technology can also be used to create thicker slices that can be consumed in a different way than potato chips, for instance, as frozen or other specialty products. There are different shapes available for chips and thicker products. This technology can also make shreds and julienne cuts.

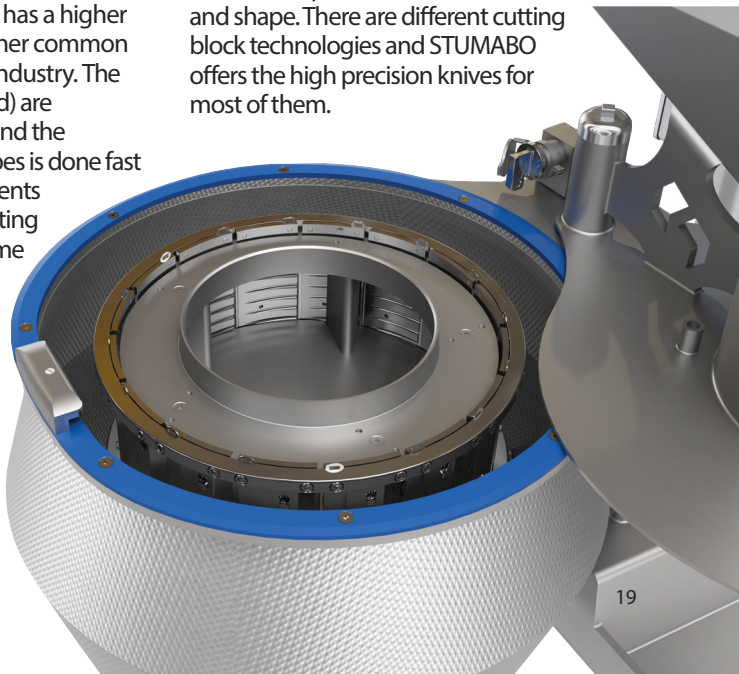
The Centris™ technology has a higher capacity compared to other common centrifugal slicers in the industry. The cutting tools (cutting head) are also very easily replaced and the changeover to other shapes is done fast in the line. The improvements made to maintain the cutting tools have reduced the time spent by operators.

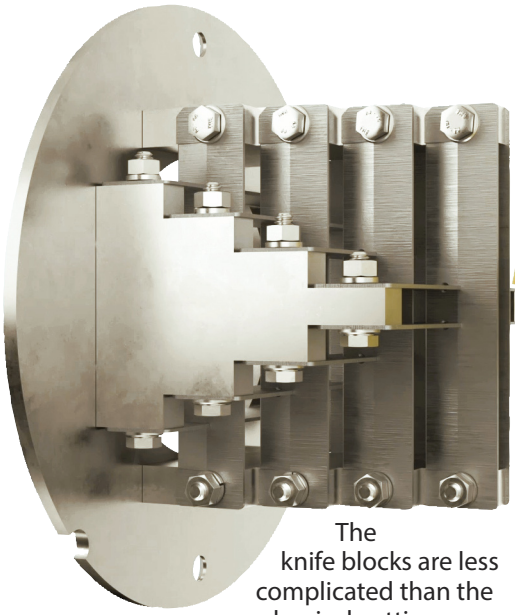
Although this technology is mostly used in the potato industry to make chips, the possibilities for more products are real thanks to the versatility of these machines.

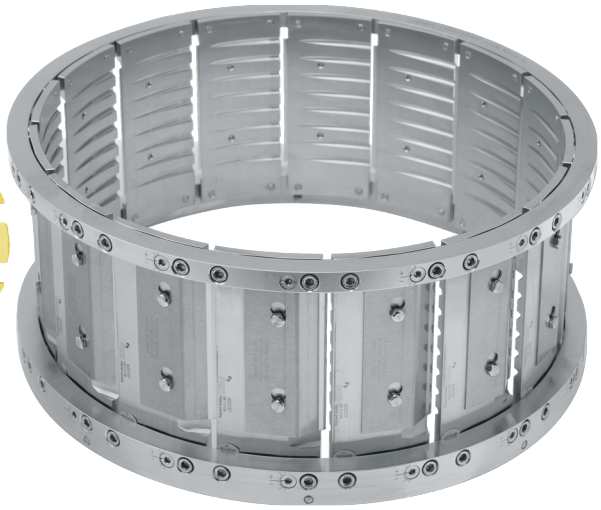
HYDROCUTTING HIGHLIGHTED

Hydrocutting or chipgun systems use water to transport potatoes, at a very high velocity, through knife blocks to be cut. The main components are therefore the pump, the high-pressure water piping, and the cutting block. Every component must be designed correctly to ensure the best-cut quality. The pump needs to provide the energy and pressure to push the potatoes through the cutting block, but it should not damage the potatoes while doing so. The high-pressure water piping must help transport the potatoes to the cutting block, but also position them at the best place before starting the cutting process. This alignment is generally done with venturi tubes just before the cutting block. This step is crucial to ensure that the longest possible fries are cut. This alignment is also important to reduce the amount of waste.

The size of the Venturi should be related to the size of the potato. Yet every potato is different from the other. Therefore, many customers have also a sizing (sorting) installation before the pumps. Potatoes of a similar size are then directed to the best Venturi size. The last component can also be adapted to this specific size. The 3rd component is also the focus part for our group: the cutting block. The cutting block is an assembly of blades, mounted so that the potato is cut into different strips at a defined thickness and shape. There are different cutting block technologies and STUMABO offers the high precision knives for most of them.







Conibot technology to improve the slots.

The knife blocks are less complicated than the mechanical cutting machines. The apparent simplicity of the cutting block might not be confused with a lack of technology or innovation. On the contrary, STUMABO is continuously developing new ways to improve the cutting action in the hydrocutting technology.
The blades mounted in the cutting block are slotted. These slots allow that every blade is mounted on each other. This creates a solid and stable structure, which is needed to cope with the impact and forces caused by the potatoes traveling at high velocities. The accuracy of the slots is crucial to avoid that the blade vibrates in its position, creating variations in the thickness of the fry. STUMABO produces also blades that have our patented ***Conibot technology:*** after joint research with customers, STUMABO introduced the unique Conibot technology. This technology features a sharpened area at the bottom of the slots in the blades. This sharpened area prevents the potatoes from seeing any dull surface while traveling through the cutting block. The main advantage is that the cut quality remains superior, as there is significantly less obstruction in the cutter heads, especially when sprouting occurs on the potatoes. Without this technology, the sprouts start to accumulate in the slots where the blades cross each other and where there is no sharpened surface. This accumulation stops the potatoes while cutting, increases the friction, and produces cracks in the fry. When the Conibot technology is used, especially during sprouting, there is far less shattering/feathering. These cracks are the perfect spot for oil to accumulate, which also means less oil uptake during frying.
The changes in sizes are also quite simple, but the fries are always cut lengthwise, which reduces the versatility of this system. However, some new shapes have also been developed by our group using this system, like wedges, or fries with not a squared form. STUMABO has blades for an enormous amount of different fry sizes and also very unique shapes developed on its own or together with some customers.

Innovative cut shapes: new and interesting shapes of French fries, specialty products, and appetizers are always relevant in the market as they generate consumer interest. Many new types of French fries and special potato products have been the result of close collaboration and partnership between our Food R&D and application teams and our customers. For example, we have popular shapes specifically designed for dipping into sauces.
As already explained before, the volumes of processing these systems can reach are higher than any mechanical cutting system. The consumption of blades, especially during the fresh potato season, is very important. These blades can be resharpened, which is important to keep operating costs at a proper level. STUMABO is also working on the complete life cycle of our blades as we want to be sure that the blades used by our customers (new or resharpened) are of the best quality.
FAM STUMABO's unique combination of knowledge, technologies, and experience makes us the ideal partner to cut your potato products to perfection. •

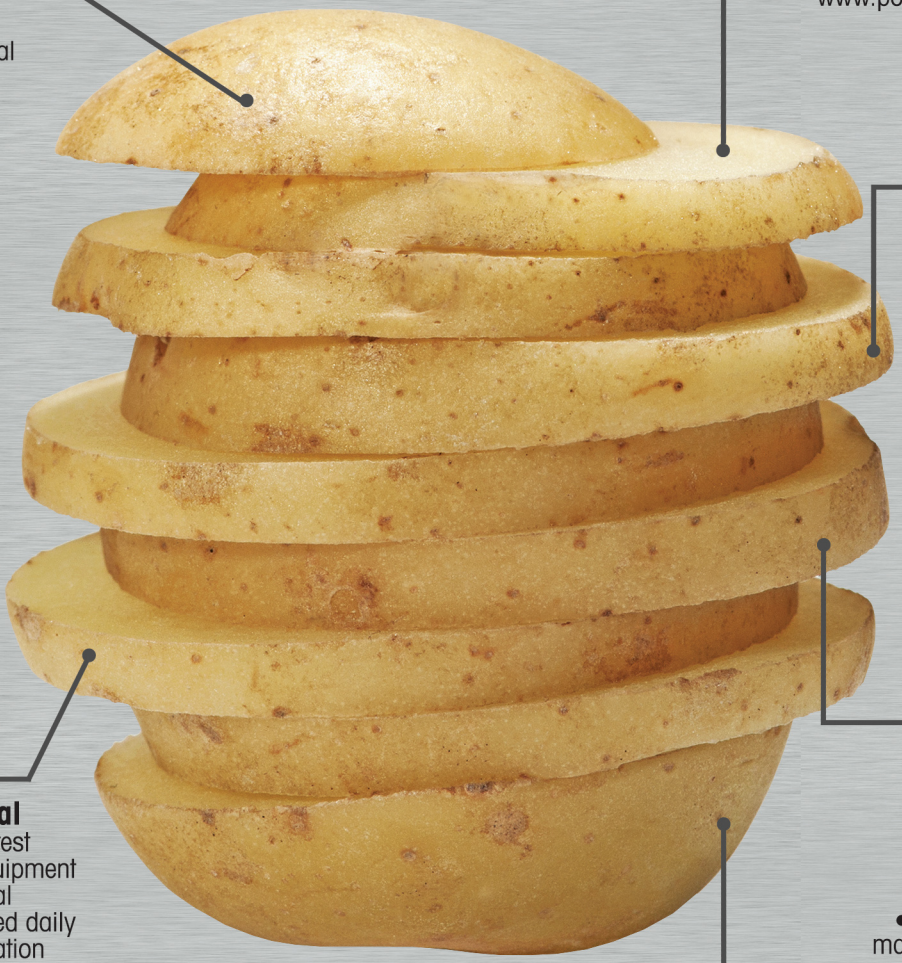
It's all about POTATO

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 portal.

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 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.

POTATO BUSINESS Portal

From breaking news to the latest innovations in processing equipment and potato products, the portal 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.

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
Potato Business Dossiers

Information-rich reports on potato industry topics that include our content, as well as original content from our partners.

A COMPLETE COMMUNICATION PLATFORM

Turning Waste Into Protein

The potato is one of the most cost-effective crops that are consumed globally. According to the "Food and Agricultural Organisation of the United Nations," 376 million metric tonnes of potatoes were produced globally in 2021. It is anticipated that around 8000 kilotons of potato peel waste might be generated in 2030, with related greenhouse gas emissions of 5 million tonnes of CO_2 equivalent. As such, waste generated throughout the food supply chain, from potato farms to forks, contributes considerably to global warming.

By Tudor Vintiloiu

Apart from animal feed, technical processes in the potato processing industry generate waste organic residues with high amounts of bioactive compounds and carbohydrates, and thus extraction and bioconversion processes can produce high-value products. These include the isolation of functional ingredients for the formulation of nutraceuticals and pharma products, bioenergy-related products, enzymes, and fertilizers for the market, hence contributing to a more responsible production and consumption and, overall, circular economy.

POTATO PROTEIN FOR THE WIN

Potato protein will be positioned as a sought-after alternative protein source in the plant-based ecosystem as a result of studies supporting its use as a fitness supplement and persistent strategic efforts from key producers.

Despite their controversial reputation, particularly in the fitness industry, potatoes are known to be quite nutritious in their raw form, making them a popular source of nutrition in vegan diets.

"Over the last decade, consumers have grown increasingly selective about their dietary choices and the implications they have on not just human, but environmental health. This shift in perception has added merit to the belief that vegetarian and vegan diets are more sustainable dietary options in the long run, with estimates from Plants Protein suggesting that over 2-6% of the population in the US is vegan," according to an exclusive Global Market Insights Inc. report for Potato Processing International.

PLANT-BASED TREND AS DRIVER OF INNOVATION

One of the most important aspects of a proper vegan diet is ingredient selection - consumers are looking for authentic ingredients that fulfill their macronutrient and caloric requirements, especially when it comes to protein.

For a long time, peas, soy, and beans were the main sources of protein in plant-based food products. However, over the past few years, food companies are focusing on other vegetable sources to extract protein. With spuds emerging rapidly as a frontrunner in this regard, the potato protein industry has captured widespread interest globally.

Traditionally, potatoes have not been considered good sources of dietary protein, since they contain only around 1 – 1.5% of protein. However, the quality of protein derived from potatoes is superior to other vegetable sources, as demonstrated by various studies highlighting their high amino acid concentration and biological value, which indicate how well they can be absorbed in the body.

The high functionality of the ingredient is one of the reasons the potato protein market is growing at a rapid pace, with an expected valuation of nearly USD150m by 2027, as per estimates from the above-mentioned source's report.

MOVE YOUR BUSINESS FORWARD

AT THE WORLDWIDE FAIR FOR SAVOURY SNACKS

SNACKEX

XX International Trade Fair for Savoury Snacks & Nuts

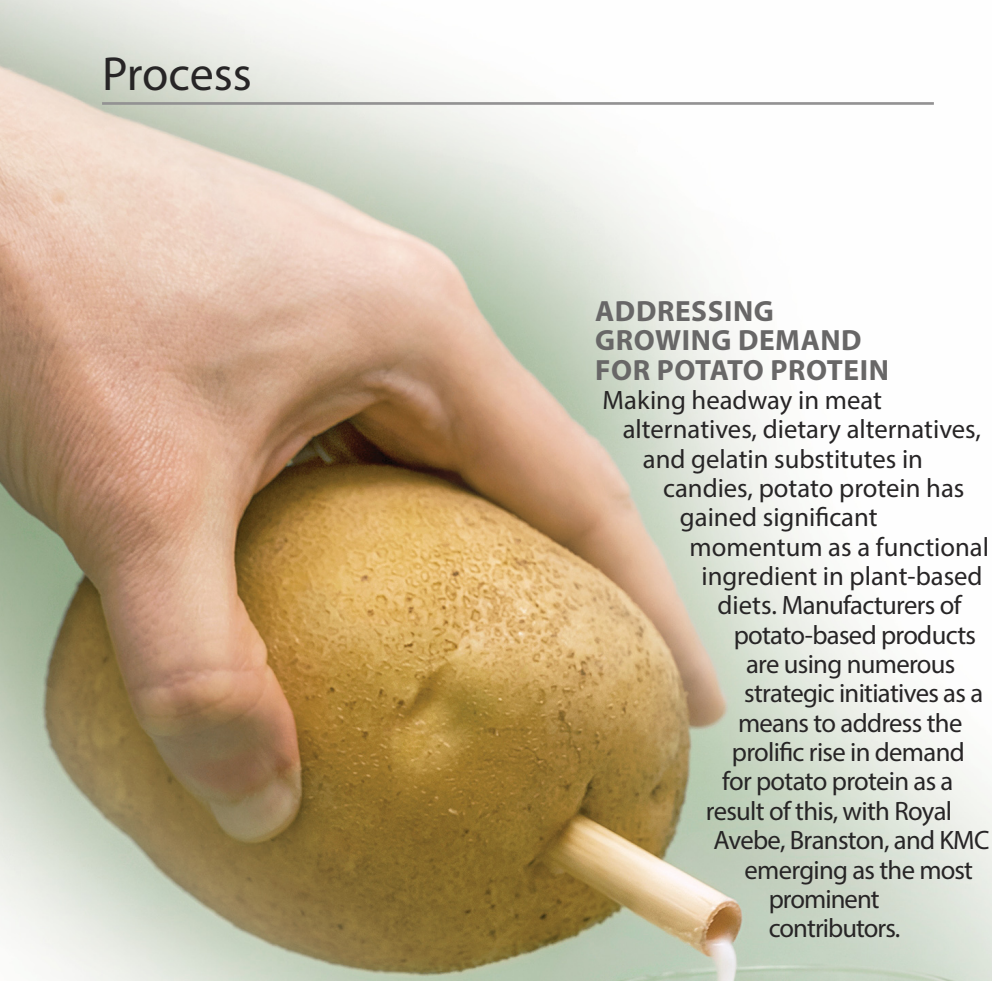
TRENDS
TASTES
TECHNOLOGIES
SUPPLIERS
DECISION-MAKERS
DISTRIBUTORS
TRADE PARTNERS
CUSTOMERS

STOCKHOLMÄSSEN
STOCKHOLM
19-20 JUNE 2024

SNACKEX.COM

ESA European Snacks Association

Stockholmsmässan



ADDRESSING GROWING DEMAND FOR POTATO PROTEIN

Making headway in meat alternatives, dietary alternatives, and gelatin substitutes in candies, potato protein has gained significant momentum as a functional ingredient in plant-based diets. Manufacturers of potato-based products are using numerous strategic initiatives as a means to address the prolific rise in demand for potato protein as a result of this, with Royal Avebe, Branston, and KMC emerging as the most prominent contributors.

PROTEIN FIT FOR FITNESS

Animal protein has long been hailed as superior to plant-based sources by fitness enthusiasts, seemingly due to the high amino-acid profiles that make them ideal for muscle protein synthesis. While this is true for many plant proteins, which are deficient in one or more amino acids essential for proper muscle repair and growth, many studies are now indicating how plant-derived proteins can still trigger a strong anabolic response. A randomized controlled study conducted by researchers at the Netherlands-based Maastricht University, for instance, has chosen potato protein as its area of focus. According to the study, the consumption of 30g of protein derived from potatoes, following rigorous resistance exercise, was able to elevate the rate of muscle protein synthesis to levels that were similar to those observed after ingestion of an equivalent amount of animal-derived milk protein. This supports projections from Global Market Insights Inc., which suggest that the potato protein market from the concentrates segment could depict over 4.5% growth through 2027, owing to its burgeoning reputation as a fitness supplement.

In July 2021, Branston, one of the largest potato distributors in the UK, announced a new project aimed at upcycling unwanted potatoes into a functional alternative protein ingredient for use in vegan food preparations. Part of this project was the establishment of a USD7.1m facility for the extraction of the potato-based protein from low-value potatoes considered unsuitable for retail, to be used in ready-to-cook, clean-label vegetarian and vegan products.

Royal Avebe is another company that focused some of its efforts in the production of potato-derived protein. Avebe's Solanic potato-based protein, especially, has become a highly coveted replacement for functional animal proteins such as gelatin, milk protein, or egg protein, creating avenues for the growth of advanced plant-based dairy, meat, and confectionary alternatives. The Solanic protein has also earned a reputation for having the lowest CO_2 footprint among its other animal and plant-based counterparts. While this has proved to be beneficial to the plant-based food ecosystem as a whole, it has also led to a supply shortage in recent years. Avebe, however, has addressed this issue with strategic plans aimed at boosting production capacity. The most recent example of this is its USD74.8m investment in its sustainability program announced in December 2021, part of which included the expansion of Solanic potato protein production-output volumes, in line with the growing demand for plant-based protein alternatives. In February 2022, the Danish firm KMC introduced an innovative protein powder ingredient extracted from potatoes, designed to have a structure similar to meat. As the first of its kind worldwide, the textured potato protein ingredient was aimed at revolutionizing plant-based meat products, through high nutritional values and better texture.

As a staple crop in many regions, the availability of potatoes across the globe remains strong, which may prove to be a boon for food businesses looking to expand their alternative protein portfolios beyond the conventional soy source. Potato protein is thus likely to emerge as one of the most sustainable and coveted ingredients in plant-based diets in the modern food landscape. Riding on reliable product properties such as strong emulsification, binding, and gelation, the potato protein industry outlook is slated to remain optimistic in the years to come. •



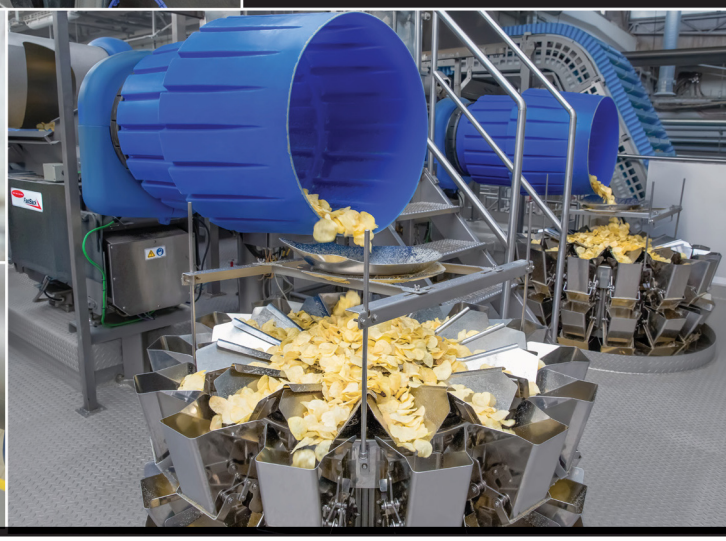
Complete Potato Chip Solutions **designed for your business**

- 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.

HEAT AND CONTROL | FastBack | Spray Dynamics | MASTERMATIC

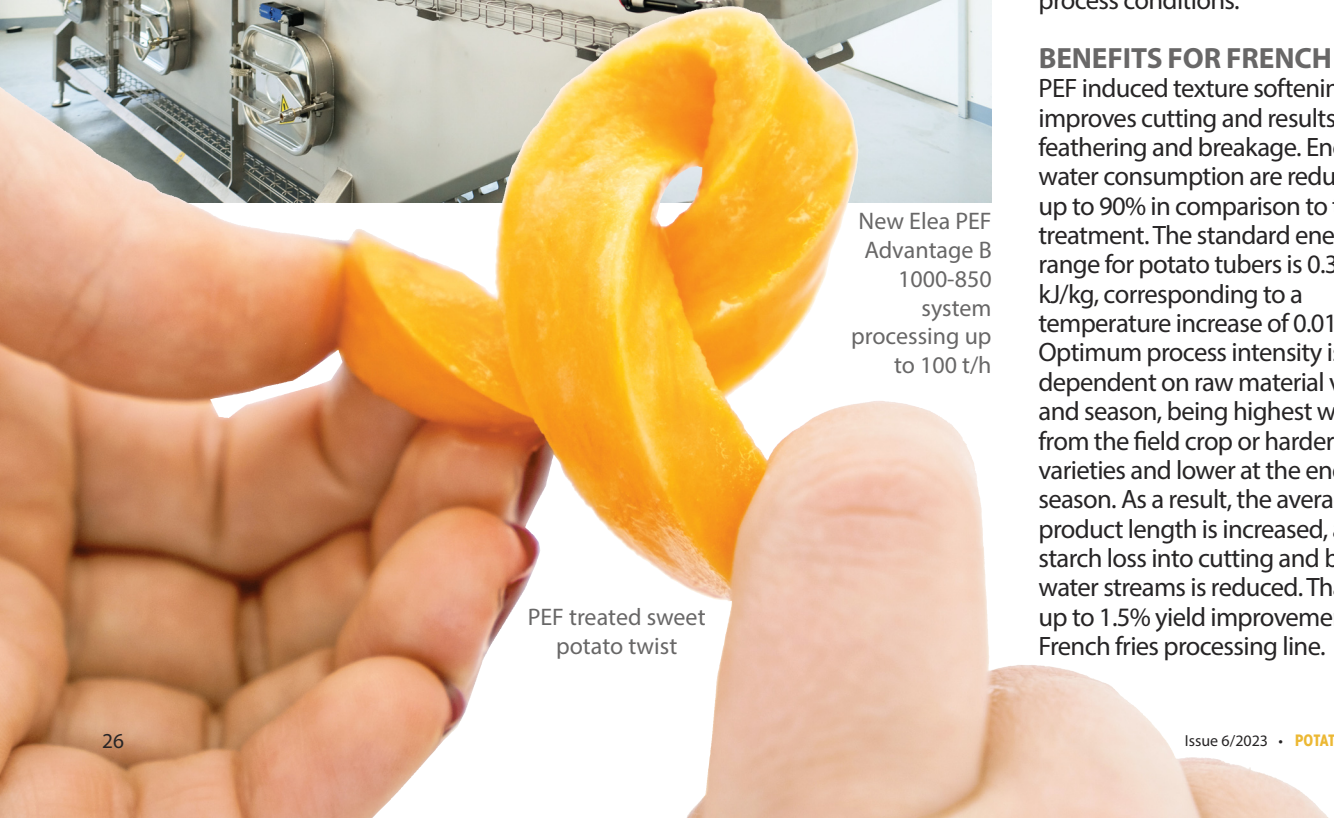
info@heatandcontrol.com | heatandcontrol.com

The Best PEF Solution - Recent System and Process Upgrades in Potato Treatment

Pulsed Electric Fields or PEF processing has turned into a standard process for texture management in potato and vegetable processing. With 250 industrial units installed Elea is the leading technology supplier. The technique based on electroporation allows cutting and yield improvement as well as reducing water and energy consumption. This expert view will discuss PEF and its benefits and highlight recent equipment design upgrades.

By Stefan Toepfl, Elea Technology GmbH, Quakenbrück, Germany
s.toepfl@elea-technology.com

New Elea PEF Advantage B 1000-850 system processing up to 100 t/h



PEF treated sweet potato twist

THE PEF EFFECT

PEF is an instant, volumetric technology opening nanometer sized pores in fruit and vegetable tissue. The release of intracellular liquid causes tissue softening, dependent on concentration gradient applied the uptake or extraction of soluble substances are accelerated. The extent of tissue softening can be controlled by selecting optimum treatment conditions. In contrast to thermal processing there is no dependence on tuber size and no delay after startup or when changing process conditions.

BENEFITS FOR FRENCH FRIES

PEF induced texture softening improves cutting and results in less feathering and breakage. Energy and water consumption are reduced by up to 90% in comparison to thermal treatment. The standard energy input range for potato tubers is 0.3 to 1.5 kJ/kg, corresponding to a temperature increase of 0.01 to 0.4°C. Optimum process intensity is selected dependent on raw material variety and season, being highest with fresh from the field crop or harder tuber varieties and lower at the end of the season. As a result, the average product length is increased, and the starch loss into cutting and blanching water streams is reduced. That allows up to 1.5% yield improvement for a French fries processing line.

Elea PEF Advantage B 1 system in Amica chips production in Italy

Due to less tissue breakage the oil uptake during frying is reduced by approximately 10%. As the electric field effect is instant and volumetric, there is no holding time requirement and no start up or shut down time need. Today approx. 170 Elea PEF systems are in use in the French Fries industry with processing capacities from 5 to 100t/h of raw material. Most recent projects are also looking into treatment of non-potato raw material such as sweet potato, parsnip or cassava.

FRY THE PERFECT CHIP

Potato chips quality is highly dependent on raw material quality used and optimized processing. Slicing quality and consistency are key factors, as performance of subsequent processing steps and product properties such as color, fat uptake or acrylamide levels depend on them. PEF reduces hardness of potato tubers and other vegetables, and tissue breakage in centrifugal slicers. The result is a lower number of fines and smaller particles. A smother cut surface will also cause less tissue layers being ruptured and less starch loss and free starch on product surface. This is beneficial for product yield and texture, to reduce product stickiness and doubles and to keep the frying oil clean. Keeping starch in the slices also contributes to improved texture and crunch. With reduced starch loss and improved cutting up to 2% yield increase is achieved. Due to faster water release frying temperature and / or time can be reduced. On continuous frying lines – dependent on line setup - up to 10% frying time reduction is possible, which in combination with a reduced final frying temperature results in less heat load, lighter product color and increased product quality. For batch frying up to 15% capacity increase can be achieved due to facilitated moisture removal. Where blanching is used, PEF can help to reduce temperature as well as to revert undesired blanching effects on product texture.

The smoother cut surface will result in less oil uptake during frying, up to 15% for typical product and frying conditions. With today's frying oil costs, reducing oil uptake provides a major contribution toward fast return of investment. Less fines and particle carry-over into the fryer will also help to reduce oil degradation and increase frying oil lifetime. For raw materials such as carrots, parsnip, sweet potato or cassava similar benefits are observed. PEF will improve product cutting and allow faster water removal and reduced oil uptake. Reducing frying time and temperature will allow lighter product color and more natural product appearance. At present approx. 70 Elea PEF systems are in use in snacks industry, ranging from 1 to 18t/h raw material treatment capacity for single lines or up to 32t/h where multiple slicing and frying lines are supplied from one PEF system.

SAVINGS POTENTIAL

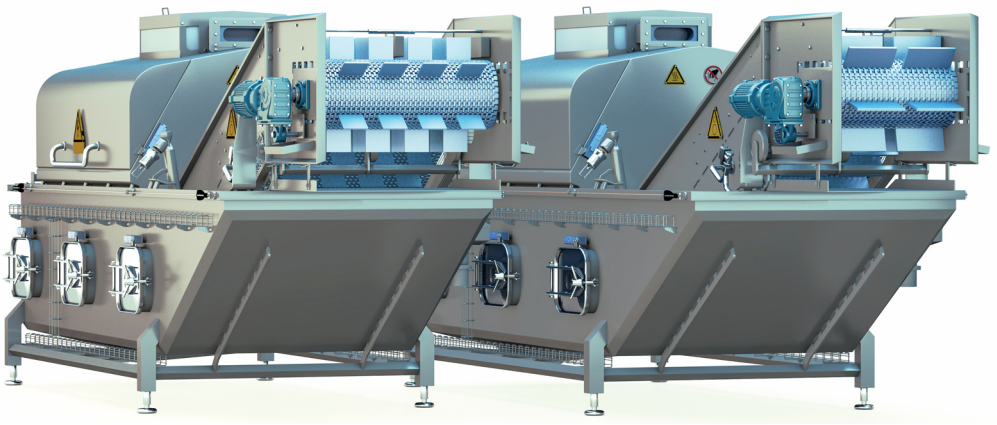
PEF use delivers savings at various levels of the production chain. Replacing preheating and reducing blanching time, less starch release, increased yield and a reduced oil uptake will result in reduced energy, raw material and frying oil expenditure. On a standard sized French Fries line of 30t/h final product output the water and energy savings can amount up to 20 million kWh of thermal energy and 60 million liters of processing water in comparison to preheating. Reduced starch losses will generate up to 500t of extra yield per year, whilst oil uptake is reduced by up to 700t per year. Other product quality benefits such as more consistent product quality or color improvement and the potential to use different raw materials or cuts provide further process and financial benefits.

Elea PEF Advantage B 1 system

In snacks processing yield increase and reduced oil uptake contribute towards a fast payback. Dependent on raw material quality and product shape up to 1.5% yield increase is achieved due to reduced starch losses. On a 1,300 kg/h final product line an annual extra yield of up to 47t is possible. Less fines or doubles as well as reduced fryer heat load will reduce level of defects and increase product yield even further. Lowering the oil content from 33 to 28% translates to up to 175t less oil consumption per year. Again, product benefits such as better crunch or lighter color will provide extra benefits. Our Elea PEF experts are available to discuss expected benefits and return of investment as well as for line optimization to make use of the full savings potential.

PROCESS CONTROL AND OPTIMIZATION

With increasing PEF energy input pore size increases and besides water also sugar or starch are released. The more the better is not the right approach here. Overtreatment may cause to fast water removal during frying and undesired solids and yield losses. For process monitoring and optimization Elea has developed two tools: PEF Control and Cut Control. Elea PEF Control is based on impedance measurement, detecting water mobility in the tissue to predict mass transport improvement e.g. in extraction, infusion or drying processes. Elea Cut Control measures compressing and cutting force for tubers and hence allows selection of suitable processing parameters dependent on raw material variety, season and desired cut. Together with our clients as well as line integrators we have run in person or remote supported installation and line optimization projects. Our support ranges from first trials in pilot scale through proof of principle testing at place to system installation, startup and commissioning and long-term line optimization. Remote diagnosis and support are available for customer service as well as product development. When integrating a PEF system into turnkey projects or for retrofit, our team of experts is available to maximize overall line performance by optimization of process equipment and settings on all stages of the production line.



Features of the new Elea PEF Advantage B 1000-850 system

BEST INDUSTRIAL PEF SOLUTIONS

All Elea systems are designed with a focus on ease of operation and reliability. Most recent members of the system portfolio are the B1000-850 and B100-550 system. We have distilled the know-how and experience of 10 years of industrial scale potato processing into the design, capable of processing up to 100t/h. The design features the largest free cross section on the market for hassle free product transport with high product load ratio and maximum energy efficiency. All safety features are included into the vessel design, no extra safety fencing is required. Modular belts from different suppliers are available, suitable for sinking and floating products. Other new features include enhanced water management, options for fresh water and process water infeed, easier cleaning and servicing and new pulsed power cabling for increased maximum length. For smaller treatment capacities the new B100-535 (up to 32t/h) and B10-535 (up to 20t/h) as well as the compact, all in one B1-200 range (3t/h and 8t/h version) are available. And, an even smaller unit for a capacity range of 1t/h is in development to be launched early 2024. Small footprint and highest power efficiency design is what they all have in common - processing more for less.

WHAT'S NEXT AND WHERE TO TRIAL?

Our PEF experts work closely with clients to provide tailor made solutions to best suit individual requirements. Current development work focusses on in-line process optimization and new shapes and so far underused raw materials. PEF enhanced infusion and uptake of color, flavor or active ingredients allows to impact on product taste and appearance. PEF can not only be used for tissue softening, but in combination with thermal treatment can also be used to manage tissue texture by targeted pectin modification. That allows to reduce texture degradation during cooking or canning of potatoes and other vegetables. The Elea pilot hall in Quakenbrück, Germany is available to develop the best solution for your potato product. Making use of our network of regional agents and technology partners demo activities or on-site-trials in your area or your production can be arranged. •

Elea CutControl, allows for precision process control and optimized treatment conditions

Get your updates right from the core of the potato processing industry

- Interactive information
- Dynamic design
- Tablet & mobile friendly

POTATOBUSINESS DIGITAL

Loading...

Efficiency Gains: AI's Labor-saving Role to Modernize Operations

AI labor shortages are driving spending in automation. For potato sheds, this means updating traditional processes - often performed manually by human sorters - and seeking new ways to improve throughput, reduce costs, and drive profits.

By Scott Parrott, Business Development Lead for Smart Vision Works, a KPM Analytics Brand

AI-driven sorting and grading systems, such as the SiftAI® Machine Vision System shown here, help potato packers improve processing throughput and accuracy while reducing labor costs.

The best example is artificial intelligence (AI) technologies tied to vision inspection systems used to sort potatoes. Many companies in the potato packing industry see the value AI can bring to make their operations more efficient and drive profits.

AI is no longer just an in-vogue topic in popular culture – it is a revolutionary concept that is steadily changing our daily lives. As a result, many AI suppliers have appeared in recent years, offering applications to help companies satisfy their desire to innovate. However, as these suppliers emerge, it is essential for shed operators to know that not all AI is created equal. Knowing how AI works and the right questions to ask suppliers helps companies maximize their investment.

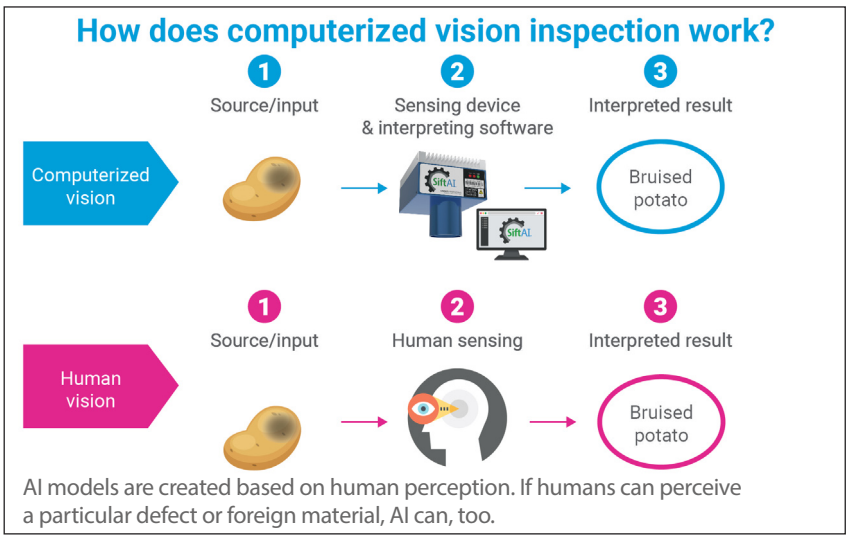
WHAT DOES THE AI INTEGRATION PROCESS INVOLVE?

AI systems in potato sheds include hardware (typically a camera and fixture) to scan products on the line, and analysis software to analyze real-time scans against pre-programmed models. Each model represents several attributes on the potato – bruises, scabs, cracks, percent green, to name a few – that could be present in the processing lanes.

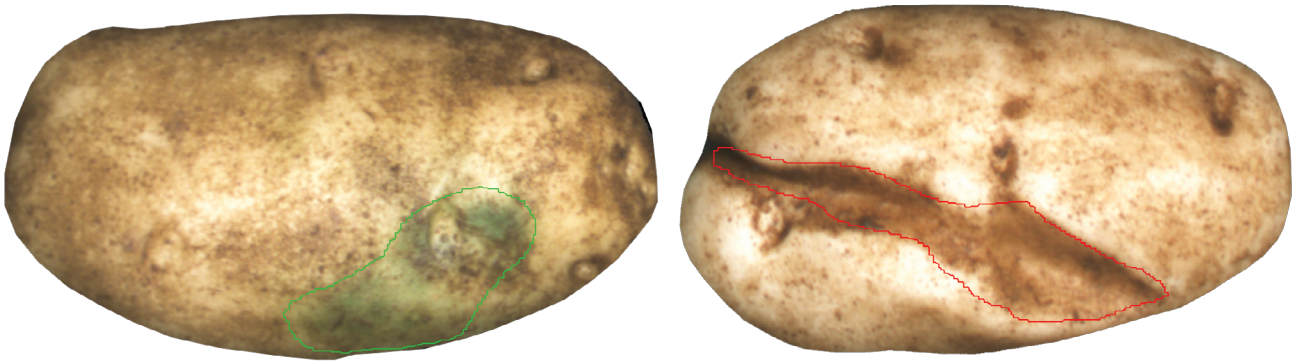
When the AI system detects a defect, it will prompt an automated rejection mechanism (kicker, sorting robot, etc.) to put the potato where it needs to go based on the operation's needs.

Most AI companies utilize "supervised training" of AI models, which is the process of showing an AI model many "correct" samples (up to 10,000 samples in most cases) but also several thousand "incorrect" samples. During this process, companies can begin to set acceptable tolerances for certain products and help drive robust sorting applications.

However, developing a dependable AI model can take many months and, in most cases, a significant investment from the user. Because of the investment risk, it is critical for companies to choose a supplier who has a track record of experience in the potato industry, has the manpower to support high throughput operations, and uses state-of-the-art tools to label and train models.



AI models are created based on human perception. If humans can perceive a particular defect or foreign material, AI can, too.



A robust AI model can more effectively segment and calculate the percentage of a defect on a potato passing on a conveyor line than a human, thus helping companies obtain quality metrics to support regulatory standards.

HOW ARE POTATO SHEDS GENERATING A RETURN ON THEIR AI INVESTMENT?

Labor Savings

Many potato sheds today are not operating at their ideal capacity because they do not have enough sorters to grade potatoes. High employee turnover, especially in sorting and quality control responsibilities, is a significant reason for this ongoing problem. This fact is especially problematic considering that most potato sorting and grading methods (e.g., sizers) still require human sorters to take measurements and correctly grade the potato. Not only do fewer employees slow operations down, but an unreliable workforce inevitably leads to errors and customer complaints (e.g., rejected loads).

It is inefficient and costly if potatoes are not graded properly. Still, many sheds cannot track this process. With AI sorting and inspection systems, however, some potato companies have been able to increase their throughput by 10-25% while reallocating their workforce, thereby boosting efficiency, and significantly reducing errors.

Stronger Standards for Sorting and Grading

With a robust AI Model, companies can develop segments for acceptable tolerances for a particular potato trait. For instance, one packer may allow for a 1% green at one period of the year, but up to 3% green at a different period. Asking a human sorter who can accurately quantify a difference of 2% green visually is a subjective task and nearly impossible to control. But with an AI system, a simple tweak within the analysis software can make this change possible and with accuracies within fractions of a percent. In addition to detecting abnormalities, most AI software gathers operational analytics, including throughput metrics and defect indices. This feature enables packers the capability to monitor the efficiency of their lines and the quality of yields from growers.

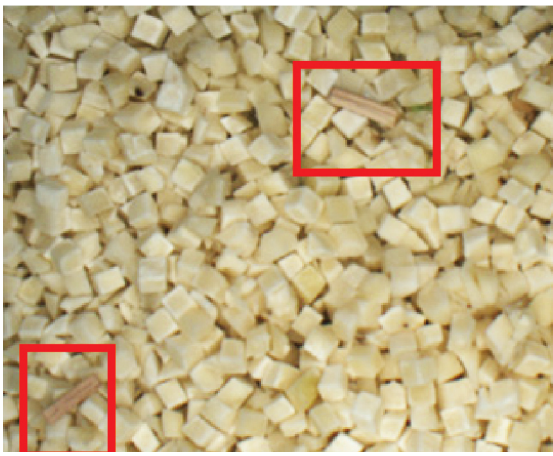
Fortifying Food Safety Standards

While used successfully in primary processing, Instantly Quick Frozen food processors (IQF) have also implemented AI foreign material detection into their process to detect foreign materials in diced potatoes. For some foreign material detection systems – X-ray being the most common – detecting objects like plastic, paper, and wood is not feasible. As AI modeling has improved, foreign material detection systems are better equipped to spot these challenging materials accurately to enhance quality control and food safety standards.

BE THOUGHTFUL ON YOUR PATH TO MODERNIZING OPERATIONS

Many potato processing brands are eager to innovate, and AI is a tool that allows companies to address workforce struggles, improve operational efficiency, and satisfy customer demands. However, successful AI applications require diligent training and continued guidance from a supplier who has experience in your industry.

When considering an AI supplier, challenge them to explain how they will create their models for your specific application. Be wary of suppliers who may advertise an out-of-the-box AI sorting or inspection system. These vendors use "unsupervised training" of their AI models, which means the AI makes its own rules and tolerances without human intervention, leading to inaccuracies and errors.



Small wood chips detected by AI in diced potatoes at an Instant Quick Frozen (IQF) processing plant.

Continuous tweaking and updates are necessary to maintain a robust model. For instance, potatoes may change in color from one year to the next, or a new defect may need to be added to the model. Having a supplier who can act quickly to deploy updates or additions to a model in a timely manner is vital to a company's long-term success.

Patience is also crucial during the integration process. Understand that creating an AI model takes time and dedication but remember that the effort put forward in the early stages of the process will pay back over time.

Integrating AI into the potato sorting and grading process prompts a significant culture change within a company. Nevertheless, reaching the full potential of your AI application is only possible with strong support from shed operators, sorters, and a trustworthy supplier. •

The Rise of 'Better-for-You' Potato Chips

With consumer interest in organic products, and all things natural, continuing to grow in popularity, processors have to adjust to keep up with changing demands. While consumers increasingly want to make ethical and healthier food choices, new technologies are helping potato processors stay ahead of the curve.

By Tudor Vintiloiu

Consumers today have a wealth of information at their fingertips and are much more aware of the holistic effect their diet has on their overall health and well-being, and increasingly so, on the environment. Instead of relying solely on the brand communications they see adorning supermarket shelves, many people are actively seeking to know more about the products they are consuming so they can make more ethical and healthier choices.

THE QUEST FOR HEALTHY SNACKING

The notion of 'healthy potato chips' might seem like an oxymoron at first glance. Traditional potato chips are notorious for their high levels of salt, saturated fats, and empty calories, making them a less-than-ideal choice for health-conscious consumers. However, as consumers become increasingly aware of the importance of a balanced diet and mindful snacking, they are seeking alternatives that provide the satisfying crunch and flavor of traditional potato chips without the guilt. While it may be challenging to completely transform potato chips into a health food, it is possible to create a "better-for-you" potato chip that offers improved nutritional value. These chips may have reduced fat and sodium as this can make them a healthier option. Baked chips, for example, can significantly reduce fat content.

Infusing potato chips with vitamins, minerals, and fiber from vegetables or legumes can enhance their nutritional profile and create a more appealing product for this demographic. Smaller portion sizes can also help consumers manage their calorie intake while enjoying the taste of potato chips. According to market researchers, already today in Europe, 56% of consumers always or usually read labels on food packages, worldwide this rises to 64% of consumers - and more than 1 in 3 consumers around the globe check for traffic light or nutri-score type messaging on pack. However, many still find nutritional

labeling confusing and crave simplicity and transparency from product labels. On their quest to discover more about the ingredients contained within, consumers are seeking out natural, organic and local ingredients.

SALT REDUCTION

Excess salt in the diet has been linked to high blood pressure and cardiovascular disease. The World Health Organization's recommendation for daily salt intake is just five grams, though many people take in twice that amount. The reduction of salt intake is now a major challenge for health authorities and the food industry. Salt isn't just a flavor enhancer. Historically it has been added to enhance shelf life, improve functionality, and control fermentation. Breads, snacks, and potato chips are among the major dietary contributors to our salt intake. There is now a clear need for the food industry to find ways of preserving these attributes while maintaining the consumer experience.

Tate & Lyle's SODA-LO is one example of a ground breaking, salt reduction ingredient that tastes, labels and functions like salt because it is salt. With SODA-LO, food manufacturers can reduce salt levels by 25% to 50% in various applications without sacrificing taste.

Soda-Lo, which is engineered using a patented process that re-crystallizes salt to create free-flowing, microscopic hollow balls just 5-10 microns in size, offers formulators a distinct advantage over other sodium reduction strategies as it can still be listed as 'salt' on food labels. It is a well-known fact that the smaller the crystals, the higher the salt perception. However, simply grinding salt to make the particles smaller does not deliver as the tiny particles quickly lose their free-flowing properties and stick together.

TRANSPARENCY

Although the ingredients and seasonings are an important factor, taste is still the dominant factor impacting buying behavior. It is vital to ensure that texture and stability is maintained without the use of what consumers may consider as artificial products, while still delivering the perfect taste and color.

The demand for better-for-you potato chips is a reflection of the evolving consumer landscape, where health-consciousness and dietary preferences play a central role in purchasing decisions. While it may be challenging to transform potato chips into a health food, producers can respond to this market demand by offering innovative, nutritionally enhanced, and sustainably produced alternatives. By catering to these trends and prioritizing transparency, manufacturers can capitalize on the growing interest in healthier snack options while still delivering the irresistible taste and crunch that consumers love. •

What's Your Flavorite?

Jonathan Thomas

The development of new flavors continues to represent one of the most common types of innovation amongst the world's manufacturers of potato-based snacks such as crisps and chips. Much of this has been in response to the continued growth in consumer demand for more adventurous and novel taste profiles, as has been illustrated by the rising popularity of hotter and bolder flavors.

By Jonathan Thomas

Consequently, interest is growing amongst manufacturers of potato-based snacks in the various herbs, spices and seasonings used to give products their distinctive tastes. Flavor trends for snacks are often influenced by the availability of the various herbs and spices.

In the US, the latest edition of Frito-Lay's Snack Index (which canvassed the opinions of 2,000 adults aged 18 and over and was released in January 2023) found that interest in new, imaginative flavors was highest amongst younger consumers. The research found that 61% of millennials were eager to sample new flavors of potato chips, a figure which decreased to 57% for those from Generation Z and 52% for those from Generation X. At the other end of the age spectrum, 38% of baby boomers preferred to stick with classic or familiar flavors.

Another key finding from the 2023 Snack Index was that around half of US consumers like to experiment with new flavors, rather than sticking with the classics. Furthermore, 71% claimed they found the prospect of

trying new variations or flavors of their favorite snacks exciting. The trend towards more novel flavors in sectors such as potato chips can be further illustrated by a 2023 report on flavors, colors and textures in North America released by FMCG Gurus. This found that 81% of consumers within the region expressed an interest in trying new flavors from around the world.

Moving to Europe, the UK represents one market where the trend towards bolder flavors has been most evident, as might be expected given the widespread popularity of various types of ethnic cuisine. In February 2023, KP Snacks extended its McCoy's range (which leads the ridged crisps category with annual sales worth more than GBP148m) with new flavors under the Epic Eats banner, namely Nacho Cheese and Spicy Salsa. These were joined later in the year by Chip Shop Curry and Bangin' BBQ flavors. Staying in the ridged crisps sector, recent additions to the Walkers Max range from market leader PepsiCo have included Bold BBQ Ribs and XXL Chicken & Chorizo. In the German market, one of the most recent additions to the Funny-Frisch range has been a Chili Cheese Fries flavor, which came into stores in September 2023 following a consumer competition run by owner Intersnack.

Despite this trend towards more imaginative flavors, however, it should be noted that traditional varieties still command a strong following. In the large US market, plain and/or salted varieties represent the leading variety of potato chip. There also exists strong loyalty to various flavors – in the UK, for example, PepsiCo has recently axed Beef & Onion and Worcester Sauce flavors from its Walkers range of crisps. This provoked something of a backlash on social media platforms. The industry also continues to experiment with novel and unusual flavors based on seasonal occasions such as Christmas, when people are more likely to socialize together and therefore drive up demand for potato-based snacks. During October 2023, PepsiCo extended the Walkers range with Pigs in Blankets and Christmas Pudding flavors.

A WORLD OF FLAVORS

Demand for flavorings for foods such as potato-based snacks continue to be influenced by trends in ethnic cuisine. As international travel has resumed in the post-pandemic world, consumers are now more inclined to use food to explore different cuisines and cultures. Additionally, research carried out by the Institute of Food Technologists (IFT) in the US found that consumers are increasingly opting for flavors offering physical, emotional and planetary benefits.

Differences in global flavor and seasoning trends are apparent according to region. In the US market, the wide variance of local tastes has resulted in an interesting diversity of flavors within the potato chips market, even if plain varieties still hold sway. Barbecue, for example, enjoys a strong following with large sections of the US population, especially in the more southern States, due to the popularity of grilled meat and smoky flavors. In addition, it should be noted that further differences in cooking styles and seasonings exist within the US market for barbecued foods – in Texas, for example, brisket is the meat most often used, whereas pork and

pork ribs are favored in areas such as Memphis. Regional differences also exist in terms of ingredients for barbecue sauce.
Elsewhere in the US, flavors in places such as Florida and New Mexico are strongly influenced by the presence of a large Hispanic community. For this reason, flavors such as Limon and Salsa are commonplace. Use of chili peppers as a basis for seasoning and therefore flavors for potato chips is also strong in these parts of the country. Chili peppers can vary in color, size, flavor and heat, with around 4,000 varieties existing – common examples which are used in the development of flavors for snack foods include jalapenos, cayenne peppers and bell peppers. Distinctive flavor preferences also exist in Hawaii, owing to its geographical isolation and the heavy use of seafood and tropical fruits.
The world's multitude of herbs and spices form the basis of many of the seasonings used in the manufacture of potato chips and crisps. Research carried out recently by Instacart in 2023 identified the following herbs and spices as the most popular amongst US consumers:

1. Cilantro
2. Dried garlic
3. Flat-leaf parsley
4. Dried onion
5. Cinnamon
6. Thyme
7. Ground paprika
8. Dried basil
9. Dill
10. Chili powder

As can be seen, cilantro is the most popular with US consumers. It is a signature flavor in Mexican, Asian and Middle Eastern cuisines, possessing a strong grassy taste and undertones of citrus. Cilantro is most popular in parts of the US such as the Mid-West and West Coast areas, many of which have sizeable Hispanic populations. In contrast, dried garlic is preferred in much of the Deep South and further east, whereas flat-leaf parsley commands a strong following in the North-East and New England.
Mexican flavors are well represented within the potato chips market, both in the US and south of the border. The country is renowned for its spicy and tangy flavors – some of the more common for applications such as potato chips are based around cheese, jalapenos, chipotles and chili with lime. Inspiration for Mexican flavors can also be drawn from the cuisine's strong position within the market for street foods. Some of the more popular types include tacos, quesadillas, tostadas, tamales, tortas, burritos and elote, which is grilled Mexican street corn. These dishes are usually made with proteins such as beef, chicken, pork or shrimp, as well as vegetables (e.g. refried beans).
The research from the IFT mentioned earlier suggests that regional cuisine from Mexico may start to impact upon global demand for food and flavors. Oaxacan cuisine is one such example, where the emphasis is largely upon chiles (often roasted and doused with lime), black beans, quesillo cheese and wild herbs such as haja santa. Another regional Mexican cuisine attracting interest is Yucatan, which makes strong use of citrus fruits and habanero peppers and is usually regarded as an interesting blend of Spanish and Mayan influences.
The IFT has also identified Caribbean as a growth cuisine for 2024 and the following years. This is becoming increasingly popular in markets such as the US and the UK, satisfying the growing demand for sweet yet spicy flavors. Much of the emphasis in Caribbean cuisine is upon earthy flavors based around ingredients such as jerk seasoning, pimento and coconut milk, as well as various fruits (e.g. mangoes, pineapples and guava). In the UK, the market for Caribbean foods is now worth around GBP100m per year, while the cuisine is achieving greater penetration within the food delivery and takeaway sector.
Furthermore, Caribbean flavors are also becoming apparent within the potato chips category – the Lay's range includes a Caribbean Onion & Balsamic Vinegar variety.
Away from the traditional favorites, one type of Caribbean food expected to have an influence on the snack food market in the future is Pickapeppa Sauce, which is steadily gaining an audience and is widely regarded a Jamaican form of ketchup. Its taste is described as sweet, sour and mildly spicy, and is made from cane vinegar, sea salt, sugar, ginger, tomatoes, onions, peppers, black pepper, garlic, thyme, mangoes and orange peel.
Another cuisine which appears set for further expansion is African, incorporating foods and dishes from countries such as Morocco, Nigeria, Ghana and Kenya. African cuisine places a strong emphasis upon dishes such as spicy stews and aromatic curries, using grains, starchy vegetables (e.g. yams and plantains) and a wide range of fruits and nuts. In the summer of 2022, the US-based Green Sahara launched new potato chips made with African spices. The varieties include North African Savory Spices (a Sahara spice blend), West African Savory Spices (a Savanna spice blend) and East African Barbecue Chili.
Asian countries such as Japan and China have a well-established reputation for unusual flavors for potato-based snacks. Although flavors based on soy sauce and seaweed are popular, the Lay's range in the Chinese market encompasses varieties such as Spicy Crayfish, Fried Crab, Roasted Garlic Oyster and Pickled Fish. As tastes have become broader, more Chinese consumers are now displaying an interest in foreign flavors and fusion cuisine, examples of which include Korean-Japanese and Mexican-Chinese. It seems likely that these trends will influence demand for seasonings from manufacturers of potato chips over the coming years.
On a related note, demand for Asian and Oriental flavors in the western snack food markets appears as strong as ever. Cuisines such as Chinese and Japanese remain popular with many western consumers, with interest in the region widening to include flavors from other Asian nations such as Malaysia, Thailand and Vietnam. In October 2022, Wuju Foods launched a new Asian Tang variety of potato chips in the US market, which was sold via HomeGoods stores and appeared in response to growing interest in Asian-based flavors. The new chips balanced sweet and heat sensations with the umami-style flavor of traditional Vietnamese Pho, a soup dish made with noodles, rice and herbs.
The enduring popularity of Asian cuisine in many western markets has

been aided by the growth of the street foods phenomenon. According to research carried out in September 2023 by Lantmännen Unibake, 86% of consumers surveyed consider Asian flavors to represent the next major trend as far as street foods and burgers are concerned. Furthermore, over half (53%) of respondents stated that trying new flavors was a leading consideration when purchasing new varieties of street foods. Some of the meals and dishes offering up potential for snack flavors on this basis include Katsu Curry, Chinese Pulled Pork, Korean BBQ, Teriyaki and Sweet Chili. It is perhaps significant to note that many leading ranges of potato crisps and chips already contain flavors such as these.

One Australian-based flavor which appears to be gaining traction in markets such as the US is chicken salt. This is a popular seasoning in the Australian food industry, where it is widely used as an accompaniment to products such as French fries. It has a rich, umami-type flavor and is made from salt, rice flour, onion, garlic, paprika and a few other spices. •

2023 in Rearview: Current Market Landscape and Outlook

To make sense of what lies ahead in 2024 for the processing potato industry, it's crucial to look back at 2023. The events of the past year have left their mark, influencing how the market functions today. From changing consumer preferences to technological advancements, these elements play a pivotal role in determining the industry's trajectory.

By Tudor Vintiloiu

Equally important is a snapshot of the current market dynamics. This involves examining production levels, technological advancements, and the competitive landscape.

US MARKET

US potato production declined for the fourth consecutive year and this season's crop is the smallest since 2010. Potato prices surged to their highest levels, accordingly. Strong demand for frozen potatoes also contributed to the high price environment. These two factors are typically sufficient reasons to raise contract prices, particularly since heightened demand for processing potatoes has gone unmet for two years running and fryers were able to pass on costs to consumers without a loss in sales.

Competitive open market and higher contract potato prices, an improved water outlook, and crop rotation pressures are expected to increase potato planted area by 2% YOY and lead to a 7% drop in price in the 2023/24 marketing year.

In a recent interview with Dale Lathim, President of the PMANA, the UPGC experts have learned about the oversupply situation in the Pacific Northwest.

"It's been a better year for Northwest french-fry-making potatoes than the last couple of years – too good in fact", he mentioned.

Lathim said farmers eagerly planted more spuds this year than last. That all totals up to a big potato glut. Now, massive amounts of spuds must be destroyed: 165,000 tons of them. The tubers are from Washington, Oregon, Idaho, and Alberta.

Lathim also declared that the industry has had two years of shortages but this year farmers overblew the hole by growing an additional 22,250 hectares. In Lathim's 30 years in the industry, he said he has never seen anything like it. Of the 22,250, only about 2,000 hectares of potatoes total will be destroyed – that's because the pipeline was so empty.

"But it's still a huge amount of spuds. This problem will likely carry over to next year's farmers' woes. That's because 10% more potatoes from this year will be used next year by major potato processors – the companies have already warned growers they will have to cut back an additional 10% in 2024," the UPGC representatives wrote in their report.

EUROPEAN OUTLOOK

The European Union (EU) is currently facing a period of uncertainty in its potato farming industry in 2023. This uncertainty has arisen due to a series of adverse weather conditions earlier in the year, including excessive rainfall during planting and subsequent hot and dry weather in May and June. These weather anomalies have had a significant impact on crop development, leading to concerns about the size of the potato harvest for the year. Market sources have expressed concerns that the 2023 potato crop may yield below the five-year average. The combination of adverse weather conditions and reduced planted areas has raised doubts about the size of the harvest. In fact, some experts believe that the 2023 potato harvest in the EU could rank among the smallest in history. This prospect is worrisome, given the importance of potatoes in the European diet and various industries, including food processing and manufacturing.

Despite the temporary price relief, caused by the anticipation of the new crop entering the market, players are cautious about the potato market's long-term outlook. It is expected that prices will likely remain above average throughout the 2023–2024 marketing year. This is due to several factors, including the projected strength in demand for potatoes and the likelihood of constrained supplies. The uncertainties surrounding the 2023 crop may exacerbate supply shortages, further impacting prices and potentially affecting various potato-related industries.

CANADA

The United Potato Growers of Canada (UPGC) analysts believe it is crucial to revisit the nation's September 2023 output estimate because the potato harvest is virtually over in the East and finished in the Western provinces of Canada. The September prediction for Canadian spud production was revised downward by UPGC specialists in light of recent changes in the U.S. potato processing industry.

"Based on the weather for harvest in October for the Eastern provinces, as well as hectares taken out of production in the west, we feel overall production will be down […] from our earlier estimate, but still an increase of 2.6% over last year and the highest ever for the country," the UPGC report reveals.

Fresh potatoes ought to be readily accessible for domestic markets despite reductions in the country's Eastern region, even while pricing pressure from oversupply in the Pacific Northwest continues to hinder Canada's potato exports to the U.S.

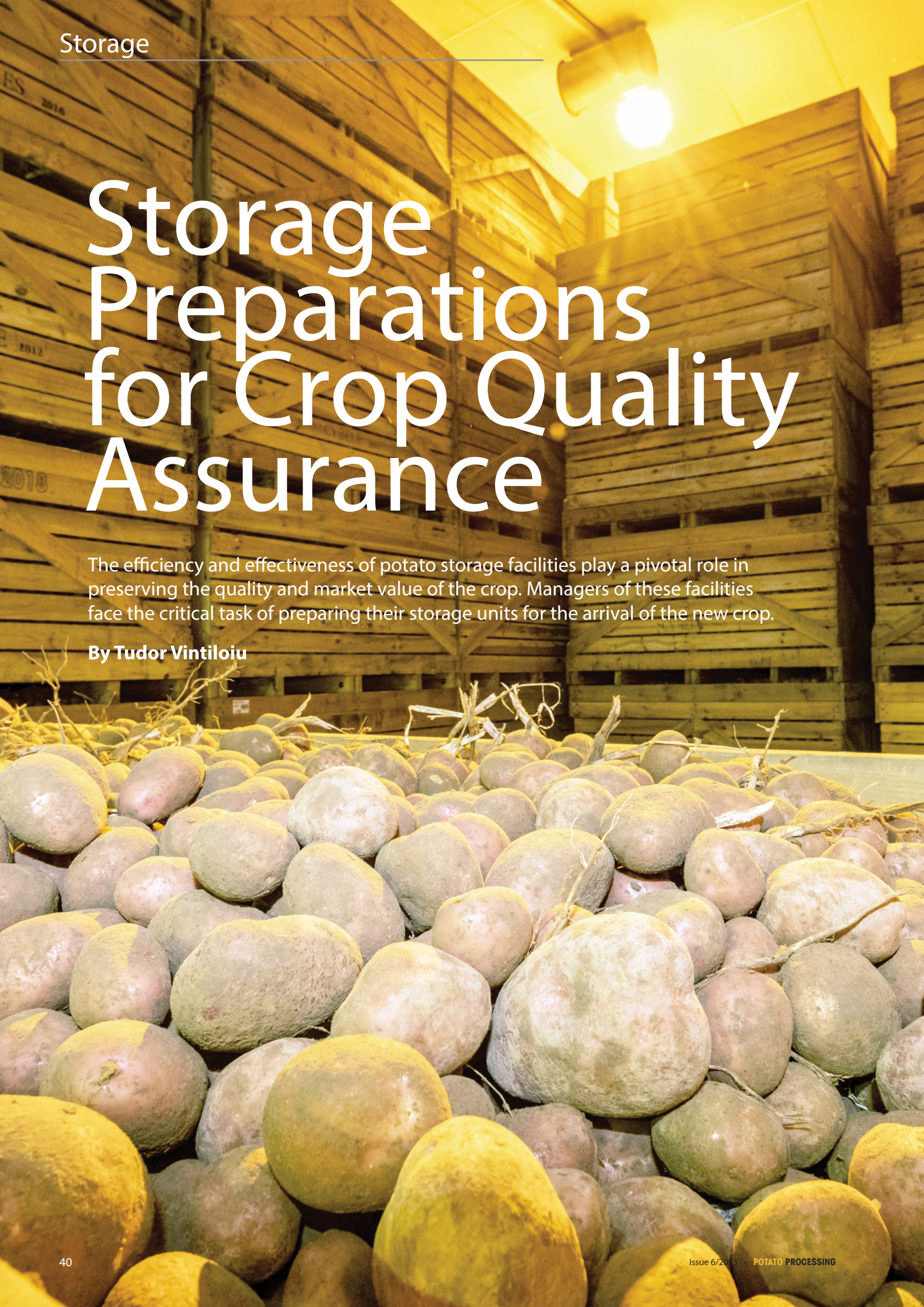
CONCLUSION

The trends and challenges encountered in 2023 are likely to continue shaping the industry, influencing the strategies adopted by businesses. The processing potato industry is poised for growth in 2024, driven by a combination of technological innovation, consumer trends, and global market dynamics. Industry players are advised to stay agile, embrace sustainability, and monitor emerging market trends for a competitive edge. •

Storage Preparations for Crop Quality Assurance

The efficiency and effectiveness of potato storage facilities play a pivotal role in preserving the quality and market value of the crop. Managers of these facilities face the critical task of preparing their storage units for the arrival of the new crop.

By Tudor Vintiloiu



This involves a systematic approach that integrates cleaning, maintenance, and preparation procedures, backed by cutting-edge technologies.

SANITATION

Cleaning, the initial phase in the preparation process, is fundamental to ensuring a sanitary storage environment. Facility managers must implement thorough cleaning procedures to eliminate residual debris, dust, and pathogens from the storage infrastructure. High-pressure washers and specialized cleaning agents are often employed to sanitize surfaces effectively. This meticulous cleaning process is imperative for preventing the accumulation of contaminants that can compromise the integrity of the stored potatoes. According to a paper published by Colorado State University, "a variety of disinfectants are used for cleaning the potato storage facilities and potato handling equipment to reduce pest and disease issues. Implementing good routine hygiene measures and practices for workers and machine operators is critical. Some pathogens, such as the silver scurf pathogen, may survive from one season to the next and ring rot from 3 to 7 years, depending on the type of storage facility."
An unclean storage building cannot be sanitized. Since sanitization effectiveness requires direct contact with the pathogens, the researchers recommend the surface should be free of cracks, pits, or crevices that can harbor microorganisms.
"Efficient cleaning starts at the top of equipment and working down. Cleaning the floor of storages and warehouses with an industrial vacuum cleaner is the best option because sweeping can distribute pathogen spores along with dust. If the storage has a dirt floor, it is advisable to remove 1 to 2 inches of soil and replace with soil from healthy non-potato growing field. Remove all dust, dirt, and sprout inhibitors from fan blades," the paper recommends.
Effective sanitation requires a thorough cleaning of all surfaces before a disinfectant is applied. The efficacy of disinfection may vary according to the surface type, temperature, and water hardness. Rinsing is necessary when using corrosive disinfectants.
Recently, the use of wooden crates to store potatoes has been increasing to reduce pressure bruise incidence in long-term storage. Disinfectant should be applied directly on wooden crates, without washing with water, as this will fill the crevices and cracks, preventing contact with the disinfectant.
Research shows that foam application mediates the adherence of a higher amount of disinfectant solution to the wood surface compared to fluidal spray application. Foaming delays the drying process, and therefore the

disinfectant's reaction time is extended, and the probability of disinfection success increases. In general, disinfectants must contact the surface to be disinfected for a minimum of 10 minutes to kill bacteria.
A foaming agent can be added to some disinfectants to help the chemical stay in place, such as on a wall, for 10 minutes to penetrate the fungal cell wall or dissolve the bacterial slime and kill the pathogen.

TECHNICAL PREPARATIONS

Maintenance, the subsequent step, focuses on the upkeep of equipment and infrastructure to guarantee optimal functionality throughout the storage period. Regular inspection and servicing of ventilation systems, refrigeration units, and humidity control mechanisms are critical components of this phase. This proactive maintenance approach not only enhances the longevity of the equipment but also contributes to the overall energy efficiency of the storage facility. Technological advancements, such as remote monitoring systems, allow managers to assess the performance of equipment in real-time, enabling prompt interventions in case of any irregularities.
Preparation, the final stage, requires meticulous planning and implementation to create an environment conducive to prolonged potato shelf life. Temperature and humidity control are paramount considerations during this phase. Advanced climate control systems, often integrated with artificial intelligence algorithms, enable precise regulation of environmental conditions within the storage unit. Additionally, managers must optimize storage configurations to facilitate proper air circulation and minimize the risk of condensation or uneven temperature distribution. This strategic arrangement is vital for preventing the onset of common storage issues, including sprouting and rotting. •

FACILITY PREPARATION CHECKLIST

- Repair all insulation materials to minimize the potential for condensation;
- Clean plenum and duct ports thoroughly;
- Remove all foreign material (duct tape, loose insulation, wood, etc.) and pass magnets;
- Replace worn humidity equipment and high-pressure nozzles;
- Check for corrosion on all surfaces that may limit the life of the storage facility;
- Service the air system and check all fans for proper balance. Check the air delivery system by adjusting all ports or ducts for optimum and consistent airflow;
- Repair or replace worn components on air louvers, both fresh air and exhaust;
- Calibrate all computerized sensors that are used for control functions;
- Service the relative humidity supply cell decks. Check for mineral-deposits and eliminate clogged flow paths;
- Operate your storage for conditioning before the potato crop is delivered;
- Know the quality of the incoming potato lot and the potential problems that might arise in storage. Protecting the quality of the stored tuber lot is the goal of all storage management;
- Tape all duct seams to improve system performance. Open seams will reduce air delivery consistency;
- Check pulp temperatures of potatoes going into storage. Temperature minimum of 48°F to maximum of 60°F should be maintained. Suspend harvest operations, whenever possible, until pulp temperatures in the field are in this temperature range;
- Limit potato pile height to 16-18 feet to minimize pressure bruise (Remember that pressure bruise can be variety dependent);
- Operate fan and humidity systems as soon as the first few ducts are covered.
- This early operation helps to remove pulp temperature differences between fields, truckloads and time of day;
- Clod and debris removal from the incoming loads is important to achieve optimum air circulation performance from the mechanical system;
- Fill each storage structure with potatoes destined for similar end uses. Close storages as soon as filled to rapidly achieve temperature equilibration of the pile;
- Maintain pulp temperatures between 50-55°F for two to three weeks for proper wound healing. Relative humidity of 95% is always recommended for the wound-healing period and for continued short or long term storage;
- Reduce pile temperatures slowly, approximately 2-3°degrees per week, to a holding temperature of 45-48°F for processing, 42-45°F for fresh pack, 50- 52°F for chipping stock;
- Continue to monitor the storage daily for operational continuity and for any potato problem that might occur. Circulation times should be set to maintain the pile temperatures less than 2°F from bottom to top. Continuous fan operation at reduced airflow or speed is capable of maintaining the desired temperature control of the pile while reducing energy costs of fan operation;
- Sprout control should be done by certified applicators. The type of inhibitor or time of application may change with different varieties;
- Maintain storage air supply during storage unloading to minimize quality losses. Remember that good storage management during the unloading operation includes adjustment of duct airflow to maintain consistent supply to all parts of the remaining pile;

**Source: Nora Olsen, Extension Potato Specialist with the University of Idaho*

2024 FEATURE PLANNING

1 JANUARY/FEBRUARY
Ad closing 16.01/Publishing 30.01

Key Exhibitors Road Map and Event Agenda

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

Expert View
- Cutting / Slicing / Dicing
- Drying - Innovation in Belt and Drum Dryers

Spotlight
- Raw Product Handling

Markets
- Eastern Europe

Products
- Freshly Packed Potatoes

Ingredients
- Salt

Storage Special
- Potato Monitoring & Quality Assurance
- Sprout Suppressants in Storage

Trade shows: Fruit Logistica 07-09 Feb 2024

2 MARCH/APRIL
Ad closing 20.02/Publishing 05.03

Key Exhibitors Road Map and Event Agenda

Processes
- Cutting Accuracy and Equipment Reliability
- Process Monitoring

Expert View
- PEF Applications and Advantages
- Sustainability in Production

Spotlight
- Smart Production/IoT/Industry 4.0

Markets
- Western Europe

Products
- Extruded Potato Products

Ingredients
- Better for you/Clean Label

Storage Special
- Automated Climate Control
- Sensors and Data Gathering

Trade shows: Anuga FoodTec 19-22 March 2024

3 MAY/JUNE
Ad closing 22.05/Publishing 05.06

Key Exhibitors Road Map and Event Agenda

Processes
- Blanching, Frying
- PEF Systems

Expert View
- Automation - Ensuring a Reliable and Flexible Production Flow
- Optical Sorting - Increasing Yelds, Reducing Waste

Spotlight
- Food Safety

Markets
- North America

Products
- Chips and Potato-based Snacks

Ingredients
- Frying Oils

Storage Special
- Power Saving and Sustainability
- Disease Management

Trade shows: SnackEx 19-20 Jun 2024

4 JULY/AUGUST
Ad closing 17.07/Publishing 28.07

Processes
- Conveying Systems and Belts
- Seasoning & Coating

Expert View
- Drying Technology Advancements
- 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
- Storage Challenges and Cost-saving Solutions
- Potato Monitoring & Quality Assurance

Trade shows: World Potato Congress, Adelaide 23-26 June 2024

5 SEPTEMBER/OCTOBER
Ad closing 04.09/Publishing 15.09

Key Exhibitors Road Map and Event Agenda

Processes
- Efficient Freezing Technology
- 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
- French Fries in Retail and Foodservice

Ingredients
- Batters/Coatings

Storage Special
- Storage Design and Construction
- Handling Potatoes to & from Storage

Trade shows: Interpom 24-26 Nov 2024

6 NOVEMBER/DECEMBER
Ad closing 07.11/Publishing 18.11

KEY SUPPLIERS GUIDE

Processes
- Oil Filtration Systems & De-fattening
- Turnkey Projects
- Waste Management / Upscaling

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

Spotlight
- Increasing Production Capacity/Future-proofing Processing Operation

Markets
- Global Market Predictions for 2025

Products
- Potato Seasoning and Flavor Trends

Ingredients
- Stabilizers/Functional additives

Storage Special
- Store Preparation and Hygiene
- Bulk vs. Boxed Storage

Trade shows: Gulfood Manufacturing, Dubai 5 - 7 November 2024


Like our page and join our online community:
www.facebook.com/Potatobusiness
Follow us on Twitter:
http://twitter.com/potatobusiness
We will update regularly on our activities,
upcoming features and show attendance.
Join our group on LinkedIn search for:
Potato Processing
International News
POTATOBUSINESS
on social media