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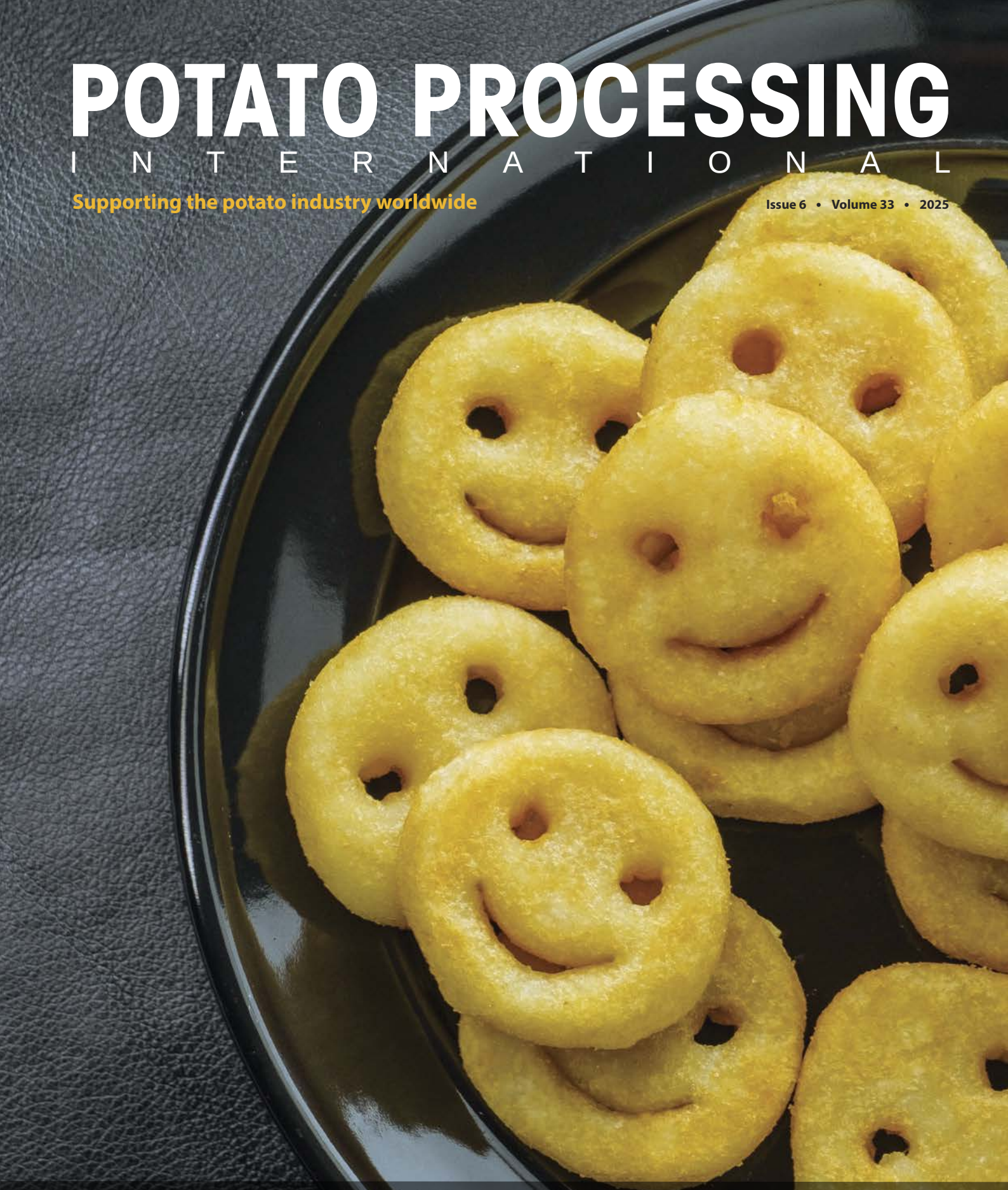
Issue 6 • Volume 33 • 2025



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The Invisible Engine of Fry Quality: A Look at Modern Filtration Systems

Spotlight
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Ingredients
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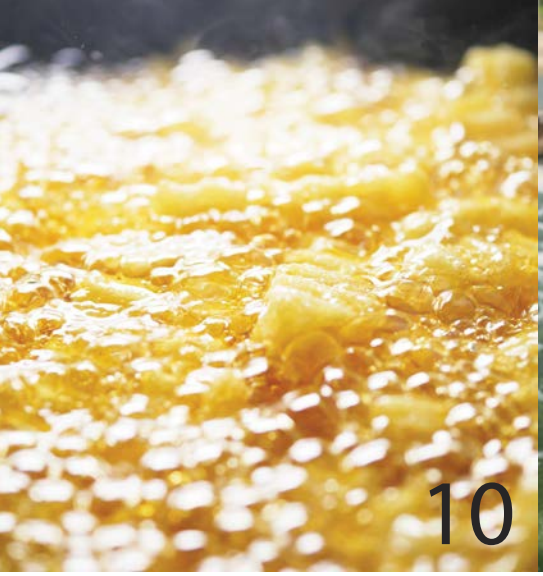

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Steady Lines, Sharper Choices: 2026 Around the Corner

Tudor Vintiloiu - Editor in chief
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As we close 2025, the potato-processing industry stands at an unusual intersection of stability and acceleration. Factories across Europe - particularly in the Netherlands - ran with reliable rhythm through the autumn, even as export lanes became more competitive, shaped by China and India's rising footprint in Asia and the Gulf. Canada's integrated structure continued to offer a useful benchmark for predictability, while New Zealand's recovering export pulse reminded us that agility, not scale alone, defines resilience. And in policy, the WTO's late-October ruling on Colombia's duties removed one of the year's most persistent headwinds for EU exporters, setting a clearer path into 2026.

This issue captures that transition. **In The Invisible Engine Of Fry Quality: A Look at Modern Filtration Systems**, we examine why oil-management investments have quietly become decisive for both yield and product consistency. Our Spotlight on strategies for scalability distills the structural lessons of 2025 and what they mean for next year's contracting season. And in our Ingredients feature we explore how ingredient science is pushing fry performance beyond traditional coating boundaries. Together, these pieces frame a simple truth: technical precision matters more when markets tighten.

Looking ahead, 2026 begins fast. Fruit Logistica in Berlin will again set the tone for cross-border trade discussions, and our team will be on the ground from day one.

Looking ahead, 2026 begins fast. **Fruit Logistica** in Berlin will again set the tone for cross-border trade discussions, and our team will be on the ground from day one. You will also find our **full editorial offer** for next year on the last page of this magazine, while digital, dossiers, and our expanded trade-show packages are available on demand. We expect a busier, more complex year for processors, traders, packers, and equipment suppliers alike, and we look forward to meeting you throughout the season. ●

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www.mediatrade.ro

Printed by: Sothis

ISSN: 0968-7661

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Victoria Fast-Tracks Major Farm Frites Investment in Dooen

Dutch processor Farm Frites will build its first Australian production facility in Dooen, Victoria, after receiving fast-tracked approval under the state's Development Facilitation Program. The A$300 million (approx. €185 million) project will create around 250 jobs and serve as the company's Asia-Pacific headquarters. The plant will be located in the Wimmera Agriculture and Logistics Hub near Horsham. According to Victoria's Minister for Economic Growth and Jobs Danny Pearson, the state is supporting advanced manufacturing to drive economic growth. Farm Frites Australia General Manager Kieran Prestidge said the site offers ideal access to key growing regions and strong road and rail links. Horsham Rural City Council welcomed the investment as a major boost for the agri-food sector. The facility

is expected to process up to 250,000 tonnes of potatoes annually, with construction planned for 2026 and production for 2027.

Optimum Sorting Unveils Laser Detection For Wet Rot In Potatoes

Optimum Sorting has introduced a new laser configuration capable of identifying wet rot in potatoes, a defect that is difficult to detect once potatoes are washed. According to Alexander Dewilde, the company's agent for Belgium and France, the VENTUS sorter can now detect wet rot, while the NOVUS system targets tiny metal particles in French fries. Optimum has more than 800 machines in operation, with NOVUS using up to nine high-resolution cameras to identify colour, shape and size deviations, supported by a laser box with 0.3-millimetre resolution. The M-TEC module adds fine metal detection directly inside the sorter and can be retrofitted, providing earlier control than a check-weigher detector. The company has also improved lower-side fry inspection with a camera that looks through a rapidly rotating glass to prevent starch buildup. Dewilde said the new laser system solves a major cause of batch rejection during wet seasons. Demonstrations are available at Optimum's demo centre in Hasselt.

Tummers And Callens Partner On Emission-Free Processing

Tummers Food Processing Solutions and Belgian energy specialist Callens have formed a strategic partnership to advance Tummers' Emission-to-Energy (E2E) concept. The companies aim to accelerate the development of an emission-free, energy-self-sufficient potato processing factory by integrating high-efficiency energy recovery with fully automated production. According to both partners, Tummers will drive process technology and circularity within the E2E framework, while Callens contributes expertise in energy generation, heat integration and steam systems. "This collaboration is no coincidence, but a logical step," said Lennaert van Dijk, CEO of Tummers Group. Callens Technical Director Bert De Gryse said both companies share a vision for smarter, more sustainable industrial processes. The first phase will focus on embedding Callens' energy solutions into the E2E platform to move toward a fully autonomous, emission-free "lights-off factory." Early results will be applied in upcoming customer projects.

Produce Investments Acquires Biofresh Safestore To Expand Agri-Tech Portfolio

Produce Investments (PI) has acquired Biofresh Safestore, a long-established specialist in fixed sprout control systems for crop storage. Biofresh Safestore has operated for more than 20 years across the UK, Europe and Japan, with Jeremy Barraclough continuing in the business and maintaining its strong presence in France. The move aligns with PI's strategy to broaden its post-harvest technology offering. It also strengthens synergies with Restrain, PI's provider of natural ethylene-based sprout suppression systems. According to PI CEO Rachel Cook-Coulson, the acquisition is a significant step in the group's growth. Restrain UK Managing Director Dan Hewitt said combining the two companies will accelerate expansion and enhance customer value. PI's wider portfolio includes Greenvale, a major UK potato supplier, and Produce Solutions, its agronomy and R&D division. Adding Biofresh Safestore reinforces PI's position in sustainable storage technology.

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Rosenqvists Upgrades Batch Peeler for Higher Efficiency and Chip Quality

Rosenqvists Food Technologies has released an upgraded batch peeler aimed at improving control, reliability and operational efficiency for potato chip processors. The new design refines key mechanical elements to deliver more consistent peeling and simpler maintenance. Operators can adjust batch weight, speed and peeling time to match potato quality and production needs, while the optimized drum and bottom disk are easier to access and replace through a simplified opening mechanism. For higher capacities, the twin batch peeler supports 750–1,250 kg of finished chips per hour, depending on raw material quality. Enhancements include a redesigned outfeed for larger potatoes, a new outfeed angle for smoother transfer to the screw conveyor and improved access to valves. Additional updates feature an inspection lid for faster checks, a flexible water supply and a redesigned chute under the batch weigher to reduce drop height and product damage. "We're excited to bring these improvements to our clients," said Mikael Larsson, Design Engineer at Rosenqvists.

WTO Rules Colombia In Breach Over EU Frozen Fries Duties

A WTO compliance panel has ruled that Colombia failed to meet its trade obligations in the dispute with the EU over anti-dumping duties on frozen fries from Belgium, Germany and the Netherlands. The panel found Colombia acted inconsistently with WTO rules by using methodologies that inflated dumping margins, supporting the EU's position. With the appeal deadline expired, either party may ask the WTO Dispute Settlement Body to adopt the report at its 24 November 2025 meeting, after which Colombia must withdraw the duties. Colombia first imposed the measures in 2018, covering about 85% of EU exports, and later extended them to September 2027. Following the ruling, growers' federation Fedepapa expressed concern, saying farmers are losing between 15 and 20 million pesos per hectare and noting that the share of affected imports fell from 64% in 2018 to 1% by late 2024, when volumes reached 80,000 tons.

New CIP-Asiryq Potato Variety Delivers Late-Blight Resistance

The International Potato Center (CIP) has released CIP-Asiryq, a new late-blight-resistant potato variety developed with the Yanapai Group and Indigenous communities in Peru. Late blight causes USD 3–10 billion in annual losses, and CIP says fungicides can account for up to 25% of smallholder production costs. CIP-Asiryq shows strong resistance to Phytophthora infestans, reducing the need for repeated spraying and lowering both costs and health risks for farmers. Bred using Solanum cajamarquense from the CIP genebank, the variety combines local genetic resources with advanced pre-breeding. "The new resistant variety gives potato farmers an option that can reduce losses, cut costs, and strengthen food security," said Dr Stefan Schmitz, Executive Director of the Crop Trust. According to CIP scientist Dr Thiago Mendes, CIP-Asiryq is suitable for both table use and industrial processing, with frying traits that meet chip-quality standards. It is already being tested as a parent line in Kenya for highland varieties.

Royal HZPC Advances Hybrid Potato Breeding for African Markets

Royal HZPC Group is highlighting its hybrid potato programme at Potato Days under the new NOVA name, marking what it calls a "Resilience Revolution." The company has submitted its first hybrid variety for registration in Kenya, giving smallholders access to certified, clean seed material produced locally. CEO Hans Huistra said hybrid breeding allows varieties to be developed up to twice as fast as classical methods and enables production from seed. Program Leader Ad Vrolijk explained that hybrid potato breeding became possible after incorporating a self-pollination gene first identified in a wild potato in 1999. The initial focus is on Africa and Asia, where access to quality seed is limited. In Kenya, only about 10% of smallholders use certified seed, and late blight remains a constant threat. HZPC's hybrid line D23HY2515 matches leading varieties and maintains yield under high disease pressure due to dual resistance. While hybrids progress, seed potatoes remain essential for high yields. HZPC expects hybrid potatoes to reach Europe later.

Europe's Potato Boom Creates Market Pressure for Growers

Europe's fresh-potato sector is facing a paradox as record yields in Switzerland and Germany put pressure on storage, pricing and quality standards. Swisspatat data indicate Switzerland's harvest is about 20% higher than 2024 and well above the long-term average. After years of shortage, the surplus is causing stricter quality demands and storage strain, with some growers reporting large volumes rejected for not meeting size or appearance criteria. Retail chains have already reduced prices, though overall grower earnings may rise due to larger contracted volumes. Agroscope warns that future productivity is threatened by heat and drought, prompting interest in higher-altitude cultivation and resilient varieties. Germany is also expecting a glut, with output forecast at around 13.4 million tonnes - well above last year and the ten-year average. Reports note many farmers expanded acreage after strong prices, only to face limited off-take and falling revenues. The situation underscores how bumper crops can tighten margins without matching demand, storage capacity and contract alignment.

Study Finds Potato Peels Can Remove Heavy Metals and Dyes From Water

A study by researchers at Batman University in Turkey, published in Ionics, shows that waste potato peels can act as an effective, low-cost bio-adsorbent for removing mercury and industrial dyes from contaminated water. Tests demonstrated strong adsorption across different mercury concentrations and several anionic dyes, with high removal efficiency achieved in short contact times. The process was found to be endothermic, with performance increasing at higher temperatures. Thermodynamic and isotherm analyses indicated complex interactions between pollutants and the peel surface. The findings point to a scalable, sustainable alternative to synthetic filtration materials, offering a potential dual benefit: reducing potato-processing waste while contributing to water-purification solutions. Researchers note that pilot-scale trials are needed to assess real wastewater performance, long-term efficiency and reusability.

The Invisible Engine Of Fry Quality: A Look at Modern Filtration Systems

When discussing the industrial thermal processing of potatoes, the quality of frying oil is inseparable from the quality of the final product. Although processors know the fundamentals of oil degradation and the effects of heat, oxygen and particulates, the frontier of performance today lies not in general oil management principles but in the sophistication of filtration technologies integrated directly into high-capacity frying systems.

By Tudor Vintiloiu

As frying lines become larger, faster and more continuous, the engineering behind oil filtration is becoming a decisive factor for yield, energy efficiency, operating cost and, ultimately, product consistency.

Oil filtration is the mechanism that prevents the accumulation of crumbs, starch fines and carbonized particles that otherwise darken the oil, accelerate the generation of free fatty acids, alter heat-transfer efficiency and compromise both color and flavor. For potato processors, filtration is not a secondary safeguard. It is an operational requirement that stabilizes the entire thermal system. Today's leading suppliers of potato-processing equipment have invested heavily in filtration technology because the structure of the oil loop - not just the fryer - determines whether the line runs at optimum conditions.

Modern potato-frying operations demand the continuous removal of particulates at production temperature, without interrupting throughput. This has driven the industry toward full-flow filtration designs, slipstream vacuum systems and integrated sensing technologies that can track oil quality in real time.

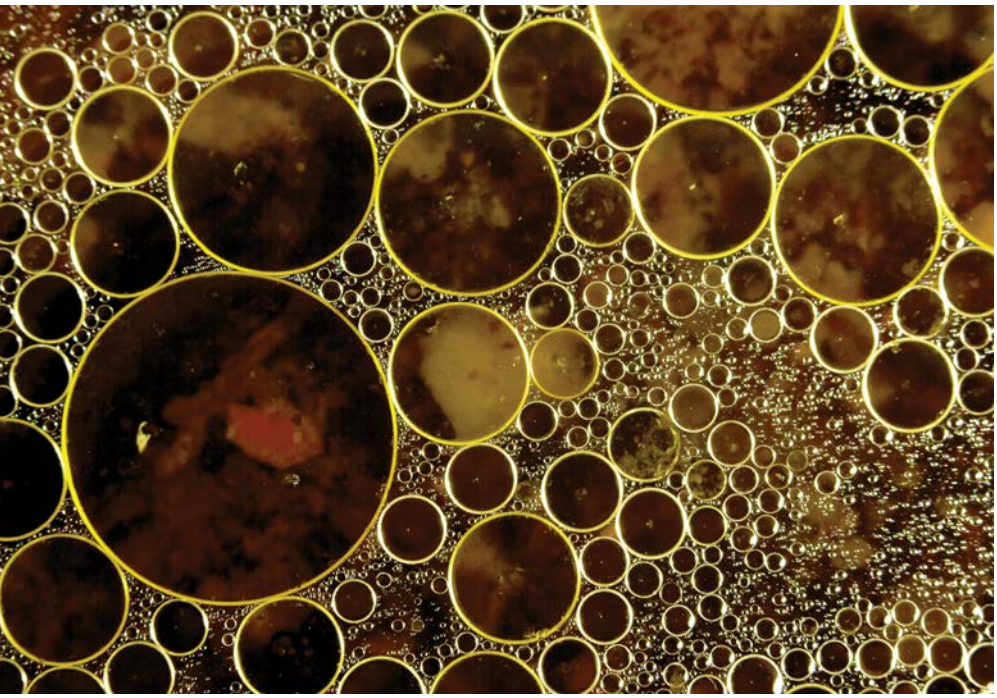
HEAT AND CONTROL: HIGH-EFFICIENCY MICRONIC FILTRATION

Heat and Control's OilSaver Filtration System represents one of the most notable developments in high-efficiency slipstream filtration. The company describes OilSaver as a system designed to extend the life of frying oil with continuous high-efficiency filtration down to 10 microns. By removing solids during production while the fryer is in use, the system preserves oil quality for coated products, snacks, peanuts, appetizers and other high-particulate applications. Heat and Control states that the OilSaver's vacuum technology "makes it the

safest option on the market with no chance of spraying dangerous, hot oil from the system." This characteristic stands out in facilities where safety risks associated with high-temperature oil handling are taken extremely seriously.
The OilSaver accommodates up to 60 gallons per minute in a relatively compact footprint. It operates as a slipstream filter during production, continuously removing coating fragments, crumbs and fine particulates. The dry cake discharge system recovers large quantities of oil that would otherwise be lost with the solids and returns this oil to the fryer. According to the company, the OilSaver's primary benefit is its ability to maintain consistent color, reduce free-fatty-acid generation and minimize the chance of scorching or off-flavors. Every component of Heat and Control's wider oil-management solutions - including heating, filtration, transfer, cooling and storage - is engineered to maximize oil quality, improve energy efficiency and maintain rapid oil-turnover rates, ensuring that products leave the fryer with the intended color and texture.

KIREMKO: FULL-FLOW FILTRATION AND INLINE OIL QUALITY MONITORING

The emphasis on continuous filtration is equally strong at Kiremko, whose Primary Oil Filter (POF) is integrated directly into the fryer's oil-discharge zone. This full-flow design filters the complete oil stream coming out of the fryer, resulting in a cleaner, more stable frying medium. By achieving roughly 10–15% less oil content compared to a conventional belt filter, the system ensures significantly shorter turnover time, meaning the entire oil volume circulates faster, is refreshed more frequently and remains within the desired quality parameters for longer periods.
The POF distinguishes itself through mechanical simplicity. The oil flows through a perforated screen, which is kept clean by flights that slide over its surface. These flights are mounted on a chain driven by a single drive and, critically, the system contains no bearings, sprockets or other moving parts below the oil level. The smallest available perforation is 0.8 mm, giving it a finer filtration capability than most filters used at this stage of the process. Kiremko highlights that improved crumb separation at the primary filter stage reduces solids load on any secondary filtration equipment downstream, increasing overall line efficiency. In high-capacity fry systems where multiple filtration steps are required, relieving the load on fine filters has direct returns in both maintenance and performance stability.
Kiremko links its filtration systems with its oil-quality monitoring technology, the Oil Guard, which measures total polar materials (TPM). The company explains that these inline measurements replace the need for manual sampling and laboratory testing and deliver between three and six readings per hour, depending on the line configuration. During testing, Kiremko observed oil-quality levels stabilizing closer to the desired set points, giving operators time to take corrective action and preventing loss of final product. The company emphasizes that, beyond operational savings, the food safety aspect is crucial, with the Oil Guard offering a safeguarding capability that aligns closely with strict processing specifications.



ROSENQVISTS: HIGH-VOLUME FULL-FLOW DRUM FILTRATION

Rosenqvists presents a third major industrial approach with its Continuous Drum Filter, designed specifically for high-volume vegetable-oil filtration at industrial frying temperatures. The company notes that its "smart round design" allows every drop of oil to be filtered every 30–50 seconds. Depending on drum size, the system filters anywhere from 2,000 to 14,500 liters per minute, a range that covers both medium-scale and extremely large frying operations. Rosenqvists states that filtration at this frequency is essential for maintaining both product quality and production efficiency.

The drum filter uses a perforated stainless-steel screen with an electro-polished surface, forming the rotating drum. Particles accumulate on the outside of the drum as it slowly rotates through the oil. A displacement body inside the drum reduces oil volume within the filter, improving efficiency. Stainless-steel scrapers remove the debris and transfer it to a waste auger, a design that ensures the removal of both floating and adhered particles. Rosenqvists highlights that the system can operate with perforation sizes from 800 microns and is built with a fully welded design conforming to SS-EN 1672-2:2020, matching the life expectancy of other frying-system components. For specialized products, the drum filter is often complemented with centrifugal and fine-filtration systems that treat a smaller proportion of the oil for advanced purification.

TOWARDS CLEANER, FASTER, MORE CONTROLLED FRYING SYSTEMS

Taken together, these three industrial systems reflect a broader shift in the sector: filtration is no longer treated as a generic accessory but as an engineered unit operation integrated into the fryer's process loop. Instead of interrupting production for batch filtration or relying on single-stage belt filters, modern lines deploy multi-stage, high-efficiency filtration at full operating temperature. The common themes across suppliers - continuous operation, reduced oil volume, shorter turnover time, engineered separation surfaces, vacuum or drum technologies, and inline quality monitoring - demonstrate how filtration has become a pivotal determinant of process stability.

In practical terms, the performance of frying oil during potato processing depends heavily on how quickly and thoroughly particulates can be removed as they are generated. Coated products, seasoned products and high-starch raw materials impose extremely high particulate loads. The longer these particulates remain suspended, the faster the oil deteriorates. Systems like Heat and Control's OilSaver, with its 10-micron slipstream filtration, Kiremko's fine-perforation full-flow Primary Oil Filter, and Rosenqvists' high-capacity continuous drum unit, are structured precisely to counter this phenomenon. Each manufacturer approaches the problem through a different mechanical principle, but all target the same objective: to stabilize the frying medium and safeguard product quality during extended production runs.

The evolution of filtration systems for potato processing shows that oil management has become a domain of technical differentiation among leading OEMs. Effective filtration now brings together high-precision mechanical design, thermal integration, hygienic engineering, safety protection and data-driven quality control. As processors operate larger lines, adopt more complex product varieties and face rising costs for both oil and energy, the ability to keep the frying medium clean and stable has become central to operational competitiveness. Modern potato processors increasingly view filtration not as an isolated maintenance function but as a core component of line performance. When filtration is designed into the frying system from the outset - based on the particulate load of the product, the required turnover time of the oil, and the strictness of quality specifications - the entire plant benefits. With the latest filtration technologies now capable of micronic separation, ultra-fast turnover and continuous monitoring, the frying systems used across the potato industry are more controlled, more predictable and more efficient than ever. •

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Kuipers Food Processing Machinery is a worldwide leader in engineering, manufacturing and servicing food processing equipment. The company has successfully delivered turnkey processing plants to more than 60 countries worldwide catering for small-scale production needs as well as larger plants for multinationals. The company focuses on perfecting industrial frying for products such as potato chips, nuts, pellets and French fries. Since 2024, Kuipers has acquired Lalesse Extrusion and can also supply turnkey extrusion plants for snacks.

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.

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At Tummers Food Processing Solutions, we pride ourselves on being at the forefront of innovation in potato processing technology. With almost five decades of expertise, we develop advanced, sustainable solutions that revolutionize the industry. Our top of the market machinery, including next-generation drum dryers, new blanching systems and zero-emission steam peeling system, significantly enhance efficiency while reducing environmental impact. We tailor our turnkey solutions to maximize productivity and minimize costs, delivering precision, reliability, and value to our global clients. Our commitment to sustainability and innovation drives us to shape the future of food processing!

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Energizing the food industry, Urschel now offers KRONEN Systems in the U.S., Mexico, Pakistan, and China. Both KRONEN and Urschel machinery will be on display at EATS in Chicago. Through a strategic investment, Urschel now holds a stake in KRONEN GmbH, the German-based developer and manufacturer of commercial peelers, washers, conveyors, slicers, dicers, dryers, mixers, and preparation equipment. KRONEN Systems complement Urschel's world-renowned cutting technology. Leading processors around the globe rely on Urschel to deliver the future of cutting today.

Waste to Win: Systems to Recover What Is Lost Through Processing

Waste in potato processing begins with the loss of essential resources, particularly water, heat, and energy. These utilities represent some of the highest operating costs, and inefficiencies multiply across every stage of the line.

By Tudor Vintiloiu

Optimizing water use is often the first and most impactful step. Washing and slicing operations traditionally rely on large volumes of fresh water, but cascading systems now allow processors to reallocate water strategically. Cleaner water is directed toward final rinses, while reused water is channeled to earlier stages such as peeling. This approach reduces overall intake without compromising sanitation standards or slice quality.
Dewatering systems further decrease load by removing surface moisture, starch, and fine particles from potato slices before frying. When integrated with slice-washing systems, water cleanup modules developed by **Heat and Control** can reduce fresh water usage by up to 50% compared with conventional systems. Since drier slices require less energy to fry, this also lowers fuel consumption and stabilizes oil temperature during peak loading.
Blanching is another significant source of resource waste. Conventional hot-water blanchers demand considerable thermal input, yet new electroporation systems have changed the process chemistry of potato preparation. Systems such as **ELEA**'s technology apply short, controlled electrical pulses to create micro-perforations in cell walls. These perforations allow the removal of asparagine and reducing sugars through a cold-water wash, reducing or even eliminating the traditional hot-water blanching step. This shift decreases both water consumption and heat demand, while improving texture, reducing breakage, and generating more uniform color development in the fryer.
Drying immediately before frying is one of the most energy-intensive phases. Approximately 15% of moisture must be removed from the blanched product using clean, indirectly heated air. Experts estimate that the energy demand for this stage can be reduced by around 30% with an effectively engineered heat-recovery system. **Kiremko**'s belt dryer,

for example, operates inside a conditioned room where controlled hot air ensures precise moisture removal. Crucially, this system can be configured to reuse heat captured from the frying process, transforming what was previously waste heat into a stable, predictable input for the dryer. The result is consistent moisture control, smoother fryer loading, and a substantial reduction in gas consumption.

Fryer exhaust represents one of the largest single sources of thermal waste. Heat and Control's Stack Heat Recovery System is designed to capture this high-value exhaust heat and redirect it to blanchers, sanitation circuits, or facility heating systems. Additional thermal optimization systems, including graduated-density heat-exchange tube bundles and combustion-air pre-heaters, increase thermal efficiency and can raise fryer production capacity without additional fuel. Oil Sweep de-oiling systems further reduce waste by recovering and recycling surface oil from finished product, extending oil life and reducing replenishment frequency. These combined resource-management approaches demonstrate how water, energy, and heat waste can be sharply reduced with properly integrated system design.

Steam peeling is another critical point of resource loss - and one of the loudest and most odor-intensive emissions on a production line. Tummers, working with Solutherm, has developed the E^{2}E-Condenser, a system that captures and condenses steam-peeler exhaust, converting a noisy, energy-rich emission stream into quiet, reusable heat. The condensed energy can then be applied to blancher pre-heating or cleaning-water heating. The E^{2}E-Condenser is engineered to maintain equal or lower back pressure compared with conventional exhaust systems, preserving peeling efficiency. Typical return-on-investment ranges from one to four years depending on plant capacity and local energy prices. Processors adopting this technology also benefit from reduced odor impact, quieter operation, and improved compliance with environmental permitting.

REDUCING BY-PRODUCT WASTE THROUGH VALORIZATION AND PROCESS CONTROL

The second major category of waste in potato processing derives from peels, pulp, fines, dissolved solids, off-spec potatoes, and other organic residues. Industry estimates place the total volume of by-products at 12 to 20 percent of all potatoes entering a processing line. These materials have traditionally been treated as disposal burdens, but they increasingly represent valuable feedstocks for secondary industries.

Raw pieces and raw pulp originate mainly from peeling and cutting. These can be separated by fine screening or settling and redirected for animal feed, starch recovery, or fermentation. Cooked pulp, often released during washing or handling after thermal processes, disperses into wastewater and must be captured using well-designed clarifiers to prevent system overload. Dissolved solids such as solubilized starch, proteins, sugars, and amino acids can only be removed through biological treatment or separated for valorization when process conditions permit.

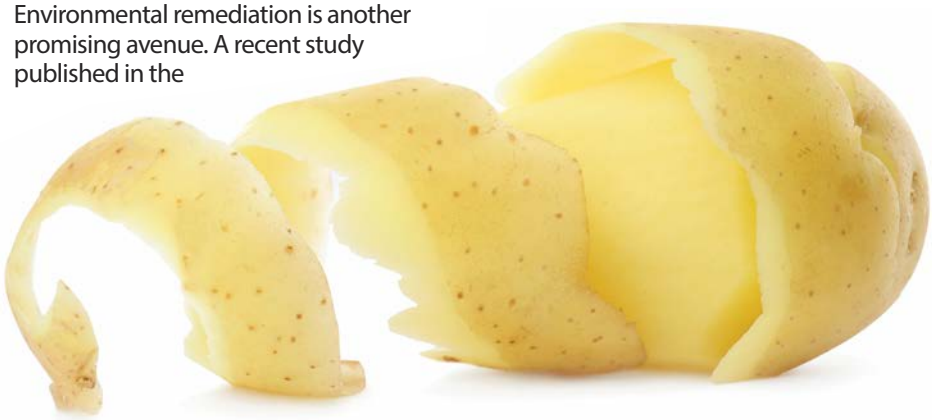
Potato peels, in particular, have drawn scientific interest due to their high levels of phenolics, chlorogenic acid compounds, dietary fiber, and minerals. Peer-reviewed studies confirm their suitability for functional food ingredients and nutraceutical applications. More advanced valorization models are emerging as well. Under a Canadian programme known as wasteCANcreate, potato peels are converted through precision fermentation into biodegradable plastics and nylon-like fibers, offering a pathway to industrial-scale biopolymer production.

Environmental remediation is another promising avenue. A recent study published in the journal Ionics demonstrated that waste potato peels can act as effective bio-adsorbents for removing heavy metals and industrial dyes from water. The research shows strong affinity for mercury and various anionic dyes, with adsorption capacity increasing at higher temperatures. This suggests a scalable, low-cost filtration medium that repurposes processing waste while addressing water-treatment challenges.

More conventional waste-reduction pathways also remain highly relevant. Anaerobic digestion converts potato pulp and sludge into biogas, composting provides soil-amendment material, and unmarketable potatoes can be diverted to starch plants or ethanol production. The unifying principle across these strategies is the treatment of by-products as recoverable assets rather than liabilities.

INTEGRATING WASTE REDUCTION INTO PLANT-WIDE OPERATIONS

The most successful processors now treat waste reduction as an integrated engineering and operational discipline. This includes detailed water and energy mapping across the entire plant, targeted interventions in high-loss zones, real-time monitoring of oil quality and heat flows, and careful segregation of by-product streams to maximize valorization potential. When water and heat are viewed as production assets, and peels and pulp as valuable co-products, waste reduction becomes both technically achievable and economically compelling. These proven technologies and approaches position the potato-processing sector to significantly reduce waste, stabilize operating costs, and improve long-term competitiveness. •



Hydrocutting and Urschel Knives

Alan Major

Hydrocutting employs pressurized water to shoot potatoes through a knife block comprised of sharp blades. The style of knife, usually crinkle or flat, and configuration of the head controls the type of cut usually wedges or strips. The benefit of hydrocutting is the massive volume of potatoes that can be processed efficiently and quickly. Urschel manufactures a wide range of popular knife block configurations in both 3" (76.2 mm) and 4" (101.6 mm) diameters. Urschel sales of waterknife heads continue to exceed expectations.

By Expert Alan Major, Chief Sales Officer

Another benefit of a hydrocutting system is the ability to swap out knife blocks or waterknife heads quickly to change the cut style or as knives become blunt. Waterknives should be razor sharp to provide the best end-product. With Urschel expertise in knife manufacturing, Urschel waterknife heads are both ruggedly durable while maintaining incredible sharpness at the blade edge. Hydrocutting is popular for fries and wedges. Potatoes should be presorted and categorized in order to promote controlled production of SKUs. Each inlet should be assigned a consistent, defined agenda based on presorted potatoes in order to produce the most consistent yield.

Pulse Electric Field treatment may also be employed to promote smooth, even cuts. Depend on Urschel knife blocks to support hydrocutting efforts.

CUTTING MACHINERY

Urschel has been fortunate to grow alongside the potato processing industry to continue to meet the needs of this constantly changing market. Urschel supports processors with hydrocutting through manufacturing precision, durable waterknife heads. Urschel also supports processors globally by manufacturing precision, high-capacity potato cutting machinery. While hydrocutting works well for some products and processors, other processors prefer the versatility and flexibility Urschel cutting machinery delivers. In the strip cutting/french fry/dicing area, many Urschel dicers are available depending on customer objectives. The DiversaCut 2110A® Dicer (DCA), by Urschel, is primarily the go-to machine for dices and crinkle french fries. The machine provides exacting cuts at high capacity. The DCA is manufactured for rugged production environments. Customers appreciate the long runtimes the machine delivers. Ease of use is another feature, noted by many processors. Handled, built-in circular knife carriage, removeable, slide-in slicing knife, and dial-in slicing contribute to a smooth flow of operation. Processors view this as a reliable, dependable machine that fits their production requirements. The DCA may be outfitted with either a 5 or 10 HP (3.7 or 7.5 kW) motor up to 90 hertz with supported heavy-duty components/gearing to obtain unsurpassed capacities. The DCA provides slices, dices, or strip cuts, so a 1-, 2-, or 3-dimensional cut compared to hydrocutting systems. Most potato processors will not need to run at such high speeds/capacities because the rest of the line may not be able to keep up with the product coming off of the Urschel machine, but this option is available for some of our leading, 'super processors' who employ multiple lines and partner with Urschel to keep their lines running smoothly.

For efficiency in terms of price point, small-to-medium processors may benefit from the DiversaCut Sprint® or Sprint 2® Dicers. Both offer smart, compact cutting zones for optimal dices and strips as lower cost alternatives for processors with one-, two-, or three-dimensional cutting options, along with many of the same added benefit built-ins as the larger volume DiversaCut 2110A. Oftentimes, processing houses begin with smaller machines, such as one of these, to deliver volumes of precise cuts to their customers. As the processing house gains a positive reputation it either continues to build a number of small lines, or upgrades to larger equipment via trade-in opportunities. Many processors choose the DCA or smaller Sprint 2 to fit into their production line and think a three-dimensional machine fits their objectives and product SKUs more effectively than a high-volume hydrocutting system.

The Model CC remains the preferred potato chip slicer among processors worldwide, outselling all competitor brands by a substantial margin. In many countries, this slicer is responsible for the largest percentage of the market of all high capacity volume, commercially processed potato chips. Hydrocutting systems are not able to deliver consistent, thin slices required for chip manufacturing. Introduced by Urschel in 1959, the original has undergone vast improvements throughout its history, while the operating principle has withstood the test of time. This slicer was created specifically for the commercial potato chip industry. The 'CC' originally stood for 'Chip Cutter'. Urschel recently introduced the patented RockRepeller™ Impeller, exclusively designed by Urschel to assist Urschel CC Slicer customers to increase line flow rates and increase overall cost-savings. The machine also shreds potatoes for hash browns, slices for thicker potato products, and julienne strips/sticks offering versatility not found in hydrocutting. The CC is

viewed as an integral part of the potato chipping processing line. Processors prefer this slicer because of the precision slices that equate to even fry times to maximize profits. Both regional chippers and the bigger, global companies purchase this slicer for ease of use to efficiently process quality cuts with minimal maintenance. The CC has a new laser frame – a new bold, improved design that delivers increased sanitation and flexibility.
A new machine, the CCLL (Chip Cutter Large Lattice) Slicer produces high capacity, intricate lattice potato products that would not be possible in a hydrocutting system.
Related to other types of potato cutting machinery, elongated potatoes are commonly sliced by the E TranSlicer® Cutter for final or precut product and all types of particle size reduction applications via the Comitrol® Processor line, including potato flake applications. Particle size reduction is not available via hydrocutting systems. The abundance of reduction heads and impellers, provided by the Comitrol, contributes to the success of many processors with the ability to reduce down to micro-dimensions. Customers who purchase the Comitrol appreciate the ease of use and value-added SKUs they are able to produce. In a recent expansion, Urschel built a mini-production environment whereby customers may run multi-step processes. This is available at the global headquarters in Chesterton, Indiana, U.S.A.
Things are changing rapidly in the world. Adapting to the marketplace is vital. Customers are always looking for an advantage, whether quality-wise, a unique product, ease of operation for workers, and the comfort level that the supplier will be there when things are not going as planned.
Cutting efficiencies, yields, cost per pound of product is what processors are looking to improve as well as product quality, sanitary aspects, and reduction in manpower and technical expertise required to run the processes and machines for cutting. Whether a processor chooses a hydrocutting system or an Urschel cutting machine, rest assured Urschel global support of sales and service will be there to assist. •

PACKAGING REPORTER

Supporting the global packaging industry

OUT OF THE BOX PACKAGING NEWS

Engineering Resilience: The Strategic Playbook for Global Potato Processors

Future-proofing a potato processing business is no longer about increasing capacity alone. It requires aligning equipment, supply chains and product portfolios so that a factory built today remains competitive under volatile costs, shifting consumer expectations and climate uncertainty.

By Tudor Vintiloiu

With margins pressured by high energy and labor costs on one side, and price-sensitive retail and food-service customers on the other, processors must design operations that stay flexible over decades, not just seasons.

Market growth provides context but not comfort. According to Fortune Business Insights, the global French fries market was valued at USD 17.12 billion in 2024, with a projected rise to USD 26.56 billion by 2032 - growth largely driven by volume, especially in emerging markets, rather than generous price expansion. In a business where costs rise faster than selling prices, resilience and optionality become strategic assets.

EQUIPMENT: DESIGNING FOR FLEXIBILITY RATHER THAN FIXED OUTPUT

The most relevant current example comes from Lamb Weston's long-term investment cycle in the Netherlands. In 2021, the company announced a EUR 200 million project to build a second plant alongside its existing facility in Kruiningen, adding 180,000 metric tonnes of annual capacity. The company described the new plant as "designed to process potatoes with a minimum amount of water and energy" and "the most automated plant in the LW/M network."

By late 2024, the new facility was operational. Lamb Weston reported that it increases annual production capacity by 195 million kilos and integrates "sustainable technologies to advance potato processing and product packaging," including systems that purify and reuse process water. Stephan van Kuik, Senior Vice President and General Manager Lamb Weston EMEA, said the new factory is "state-of-the-art, designed with future generations in mind."

For processors, the lesson is not the specific layout of Kruiningen but the strategic principles embedded in its design:

Automation as risk reduction. Highly automated lines provide more predictable quality, lower labor exposure, better traceability and fewer unplanned stoppages - crucial when labor markets tighten or wages rise.

Utility efficiency engineered into

the process. Plants that recycle heat and water and minimize waste are less vulnerable to future carbon regulations or utility price shocks. The cost of retrofitting such systems later is far higher than building them in at the start.

Modularity and fast change-over capability. Modern lines must switch efficiently between cut sizes, coatings and pack formats. Without that, processors lose the ability to respond to changing customer mixes, food-service trends or retailer demands. The strategic question has therefore shifted. Instead of asking, "What capacity do we need?" processors must ask, "What range of products, costs and regulatory conditions must this asset handle over the next 20 years?"

SUPPLY CHAINS: TURNING AGRICULTURAL RISK INTO STRATEGIC RESILIENCE

Upstream, the pressure is equally real. Climate volatility, long supply routes and concentrated growing regions expose processors to raw-material disruption. Leading companies are now treating agronomy and grower relationships as foundational to future-proofing.

McCain Foods provides the clearest working model. The company defines regenerative agriculture as "an ecosystem-based approach to farming that aims to improve farm resilience, crop yield and quality," and has committed to implementing such practices across 100% of the potato acreage used for its products by 2030. In a company press release, Christine Kalvenes, Chief Innovation & Marketing Officer, stated: "At McCain, farming is at the heart of all we do." President and CEO Max Koeune reinforced the strategy in the McCain Foods Global Sustainability Report: "Agriculture is at the heart of our business, and our commitment to regenerative agriculture is at the core of our sustainability journey."

These are not marketing lines - they are supply-chain insurance statements. Practices such as improved soil cover, reduced tillage, crop rotation and better water management help stabilize yields and tuber quality under extreme weather. For processors dependent on specific dry-matter and size profiles, resilience at farm level protects factory utilization downstream.

European processor Aviko has adopted a similar stance. In its public communications, the company states that "everyone at Aviko is working on sustainability" and that it is pursuing a "future-proof, sustainable chain." It highlights that extreme wet and dry seasons already "have a major impact on the harvest and subsequently on the entire chain," and works with growers on a "future-proof potato crop: profitable and sustainable."

The practical takeaway: Future-proof processors build long-term partnerships with growers, invest in storage and irrigation infrastructure, diversify sourcing regions, and

improve data flows on quality and yields. Spot-market buying cannot secure a stable factory.

CONSUMER PREFERENCES: PORTFOLIO DESIGN AS A STRATEGIC DEFENSE

Demand remains strong globally, but the structure of that demand is changing. North America represents over 43% of the French fries market, and frozen fries hold the largest share thanks to shelf life and convenience, according to Fortune Business Insights. Growth in Asia Pacific, the Middle East and Latin America is driven by QSR expansion and delivery services.

But while these fundamentals support volume, they complicate portfolio strategy. On one end of the spectrum, indulgent loaded fries and premium crisps are booming. On the other, retailers and regulators are pushing for lower-salt, cleaner-label, "better-for-you" products. And consumers increasingly care how their potatoes were grown - one reason McCain placed regenerative farming directly on its packaging and mainstream advertising. These trends reshape equipment strategy. A future-proof line must be able to:

- run multiple cut styles and coatings with minimal downtime,
- support alternative oil systems or lower-fat processes,
- handle a wide seasoning and inclusions platform,
- supply both bulk food-service formats and retail SKUs from shared capacity.

Lamb Weston's new facility embodies this direction: described as a "state-of-the-art factory, designed with future generations in mind," it emphasizes efficient resource use, reuse of heat and water, and reduced emissions - engineering choices that preserve optionality in how the plant can be used over time.

PLANNING AND MARGIN DISCIPLINE: THE INVISIBLE BACKBONE

Future-proofing only works when combined with disciplined planning and a realistic view of cost structure. Lamb Weston's recent restructuring plan illustrates this. Public filings describe a "multi-year restructuring plan aimed at saving $250 million annually by fiscal 2028," including workforce optimization and spending discipline - measures intended to realign costs with long-term market growth rather than short-term fluctuations.

For plant managers, the lesson is straightforward: capital investments must be evaluated not only on payback but on their ability to lower variable costs, reduce waste, improve yield stability and maintain flexibility under different price scenarios. Scenario planning should model weak harvests, softer food-service traffic, regional demand shifts and regulatory shocks. Cash-flow resilience under these scenarios is the true test of whether an operation is future-proof or simply optimized for today.

RECOGNIZING THE LIMITS: WHAT PROCESSORS CANNOT CONTROL

Even the best future-proofed operation cannot eliminate risk. Climate-driven yield shocks, geopolitical disruptions and unexpected regulatory changes can compress margins despite excellent planning.

A 2024 Greenpeace analysis of the Belgian potato chain argued there is "a stark mismatch in value distribution," with farmers not capturing the value created by processors. Whether or not processors accept this framing, the political risk is real: pressure for new pricing models, contracts or environmental rules will likely continue.

Aviko's observation that extreme weather is already "having a major impact on the harvest and subsequently on the entire chain" reinforces the point. McCain's emphasis on collaboration "across the value chain" to achieve a "resilient supply chain and a more sustainable future" points to the same conclusion: processors can mitigate risk, but they cannot eliminate it.

The goal of future-proofing, therefore, is not control - it is bounded vulnerability. The companies that will endure are those that understand which shocks they can absorb, which require flexibility, and which simply must be survived. •

The European Potato Industry: Growing Sustainably, Leading Globally

Europe stands at the heart of global potato processing - and Belgium is its driving force. As a European leader in innovation and export, Belgium processed more than 6 million tons of potatoes in 2024, transforming them into the world-famous Belgian fries enjoyed in over 120 countries. With a workforce of more than 6,700 people and an annual purchase of €1.5 billion in locally grown potatoes, the Belgian potato sector is a vital link in Europe's agri-food chain and a cornerstone of the global food economy.
Yet beyond these impressive numbers lies a deeper story - one of sustainability, circularity, and innovation, where Europe's potato industry proves that responsible growth and global leadership can go hand in hand.

PIONEERING CIRCULAR AND SUSTAINABLE PRODUCTION

The Belgian potato processing industry leads the way in sustainable and circular production. Companies are rethinking every resource they use - especially water. Through advanced systems, they capture, purify, and reuse water within the production cycle, drastically reducing consumption and minimizing waste.
Energy efficiency is equally embedded in daily operations: waste streams such as potato peels are given a second life as animal feed or biomass, ensuring that nothing goes to waste. Thanks to ongoing technological innovation, the ecological footprint per ton of product continues to shrink year after year, allowing Belgian processors to maintain their global leadership through sustainability.

SUSTAINABILITY BEYOND THE FACTORY GATES

Sustainability doesn't stop at the factory door - it begins in the fields. Belgian farmers and processors work hand in hand to promote environmentally friendly cultivation practices.
Through precision agriculture and integrated pest management, the use of crop protection products is minimized. Advanced spraying technology, agri-robots, and drones enable targeted application, reducing input and environmental impact.
Meanwhile, research partnerships, such as with Inagro (West Flanders R&D department for agriculture), focus on developing biological and low-risk alternatives to traditional crop protection methods. Together, they are building a practical "sustainability toolbox" to help growers protect both yields and nature.

FACING CLIMATE CHALLENGES WITH INNOVATION

The sector acknowledges the challenges posed by climate change and intensive cultivation. Droughts, heavy rainfall, and shifting weather patterns directly affect yields. To build resilience, the industry invests in water storage and reuse, climate-resistant potato varieties, and precision fertilization techniques to adapt to future conditions.
Collaboration is key. A resilient, climate-smart potato chain can only emerge through the joint efforts of growers, processors, researchers, and policymakers.

TOWARDS A SUSTAINABLE FUTURE FOR ALL

Everyone benefits from sustainable farming with minimal environmental impact. Farmers receive continuous training in best practices for integrated pest management and proper equipment cleaning to prevent pollution. The results are visible: the use of chemical crop protection products has declined significantly in recent years, and the trend continues downward. Through shared responsibility, innovation, and long-term vision, Belgium's potato processing industry proves that economic success and sustainability go hand in hand. Every fry that leaves Belgian factories carries not just the taste, but the promise of a greener, circular, and resilient future. •

Find more information on
www.belgianpotatoproducts.eu

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Transforming Potato Processing with PEF

Kevin Hill

Over the past decade, Pulsed Electric Field (PEF) technology has revolutionised industrial potato processing. By applying short, high-voltage pulses to raw potatoes, PEF temporarily opens microscopic pores in cell membranes, a process known as electroporation. This subtle alteration makes potatoes easier to cut, reduces oil absorption, improves texture, and enhances sustainability.

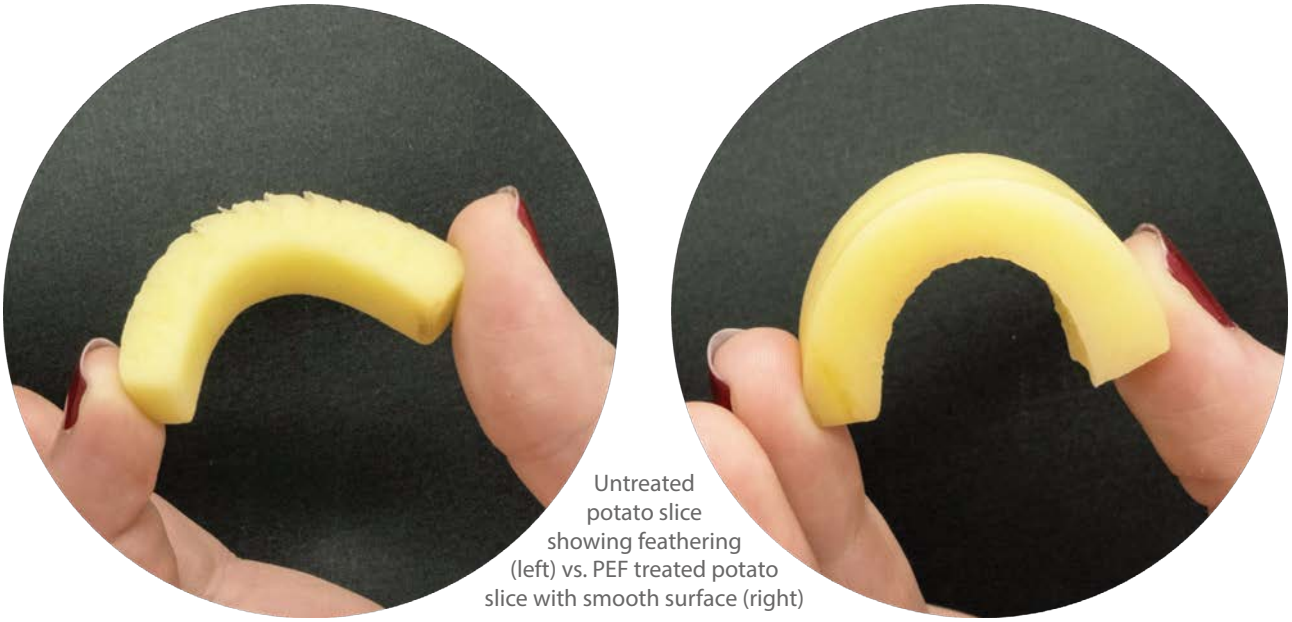
By Kevin Hill, Application Support Manager at Elea Technology GmbH, Germany

Elea PEF Advantage Industrial Belt System in Potato Processing Line

Today, hundreds of industrial PEF systems operate 24/7 worldwide, delivering consistent high-quality fries and chips while reducing energy and water use, lowering CO_2 emissions, and increasing yield. Read how the technology benefits both the environment and profitability.

HOW PEF WORKS

PEF is a non-thermal process that applies short electric pulses to increase cell membrane permeability without cooking the product. Untreated potatoes have rigid cell walls, making them prone to feathering and breakage during slicing. PEF softens the cellular structure, enabling cleaner cuts, smoother surfaces, and uniform fry lengths, while preserving natural colour, flavour, and nutrients. This approach improves mechanical handling, reduces equipment wear, and allows processors to achieve higher yields and superior product quality without compromising the intrinsic qualities of the potato.



Untreated potato slice showing feathering (left) vs. PEF treated potato slice with smooth surface (right)

KEY BENEFITS FOR PROCESSORS

Cleaner Cuts and Enhanced Texture
By reducing the force required for slicing by up to 50%, PEF produces smoother surfaces and fewer fractures. This consistency improves fry uniformity, increases crispness during frying, and lowers maintenance costs on cutting equipment.

Reduced Oil Uptake
Frying oil absorption can drop by up to 10%, producing lighter products. On industrial lines, this can translate into hundreds of tonnes of oil saved annually, lowering both costs and environmental impact while creating healthier snacks.

Higher Yields and Lower Waste
Precision cutting leads to yield improvements of up to 2%, corresponding to nearly 1,000 tonnes of additional potato yield per line annually. Reduced raw material loss contributes directly to profitability and operational efficiency.

Energy and Water Efficiency
PEF pre-treatment allows processors to achieve up to 90% savings in both energy and water usage, representing a significant environmental and economic advantage. Lower energy consumption also reduces CO_2 emissions, supporting sustainability initiatives and regulatory compliance.

Innovation and Product Flexibility
Electroporation creates structural flexibility that enables new product designs, from extra-long French fries to novel chip textures. PEF opens possibilities for creative, high-quality products that were previously unattainable with mechanical or thermal methods.

SCALING FROM PILOT TO INDUSTRIAL PRODUCTION

Compact Systems for R&D and Small Lines
Smaller PEF systems like the PEF Advantage B Micro integrate generator and treatment belt in a single unit, processing up to 1.7 tonnes per hour. They offer intuitive control, straightforward cleaning, and easy installation, making them ideal for research, pilot testing, or niche production.

Large-Scale Industrial Systems
For high-capacity operations, belt systems can process up to 100 tonnes per hour, operating continuously with customised belts, generators, and process controls. These installations demonstrate the technology's reliability and adaptability for major snack and fry plants.

AI AND SMART AUTOMATION

The latest generation of PEF systems is beginning to incorporate artificial intelligence to optimise processing and maintain consistent product quality. PiCon, an inline

Elea PEF Advantage B Micro System - smallest all-in-one industrial PEF system for 1.7 t/h

monitoring system currently under development, is being designed to be installed on new lines or retrofitted to existing installations. Using sensors and advanced analytics, it will continuously assess raw potato condition and treatment intensity by 'listening' to the cutting process, automatically adjusting pulse parameters where required. When fully developed, this smart automation is expected to help reduce variability, prevent over- or undertreatment, minimise energy and raw material waste, and reduce the need for manual intervention. By integrating seamlessly into production lines, PiCon aims to support more efficient, data-driven, and reliable operations in line with Industry 4.0 principles.

SUPPORTING CONTINUOUS IMPROVEMENT

Portable tools complement full-scale systems by helping processors measure, validate, and optimise PEF treatments in R&D or production settings:

- **Cut Control** quantifies slicing force, guiding ideal treatment intensity.
- **PEF Control** measures cell disintegration to support processes such as drying, infusion, or sugar extraction.

These mobile systems allow rapid testing and optimisation, facilitating continuous improvement without disrupting industrial operations.

SUSTAINABILITY IN PRACTICE

PEF technology provides measurable environmental benefits. Globally, Eleas 300 installed PEF systems already deliver significant sustainability gains: up to 90% energy and water savings, annual total CO_2 reductions of around 920,000 tonnes, yield improvements of nearly 1,000 tonnes per line, and reduced frying oil consumption. These efficiencies support corporate sustainability goals and lower operational costs, demonstrating that high-quality production can align with environmental responsibility.

PiCon 'listens' to the cutting process and adjusts PEF treatment intensity automatically

CONCLUSION

From compact pilot systems to 100 t/h industrial lines, PEF technology has proven its versatility, scalability, and impact on quality, efficiency, and sustainability. With up to 90% reductions in energy and water usage, CO_2 savings, lower oil consumption, and nearly 1,000 tonnes of additional yield per line, PEF represents a transformative solution for modern potato processing. By combining precise mechanical improvements with AI-driven automation and robust sustainability benefits, this technology helps manufacturers deliver consistently high-quality products while protecting resources. For processors aiming to innovate, optimise, and future-proof their operations, PEF has become an indispensable tool in the modern food industry. •

Elea Technology GmbH systems are installed worldwide, enabling higher yields, lower energy use, and premium-quality fries, chips, and dried potato products. For more info visit ***www.eleapef.com****.*

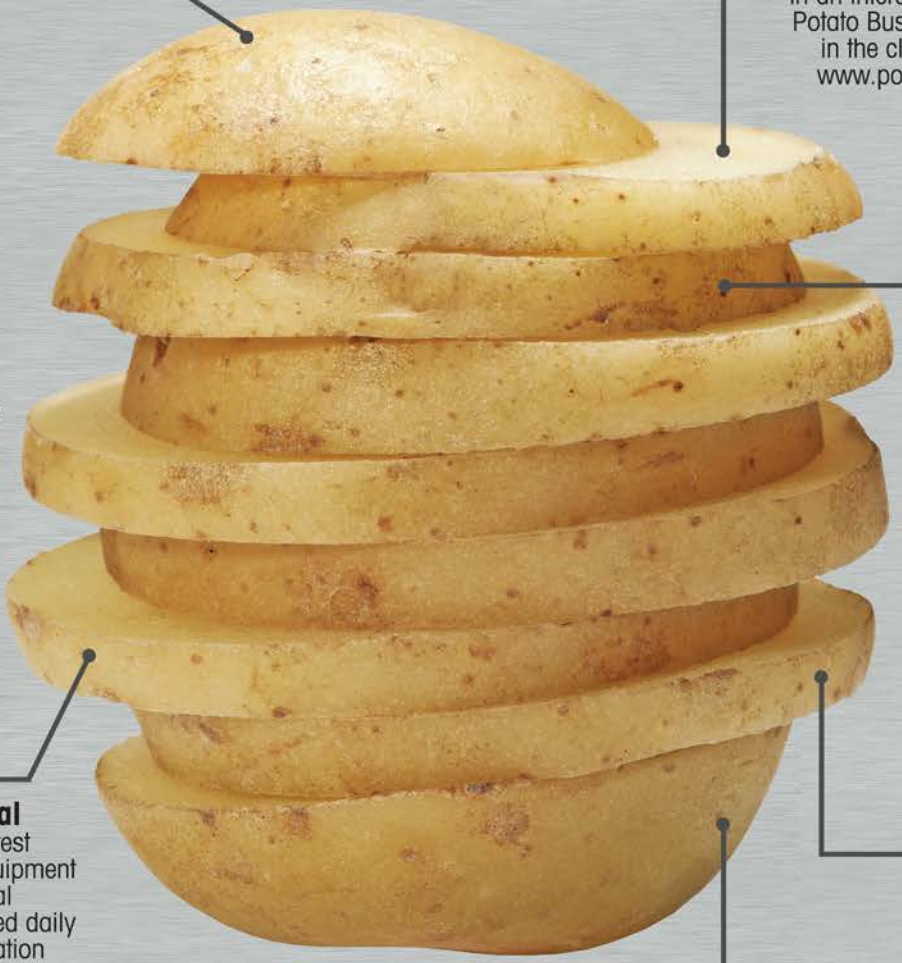
It's all about POTATO

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.

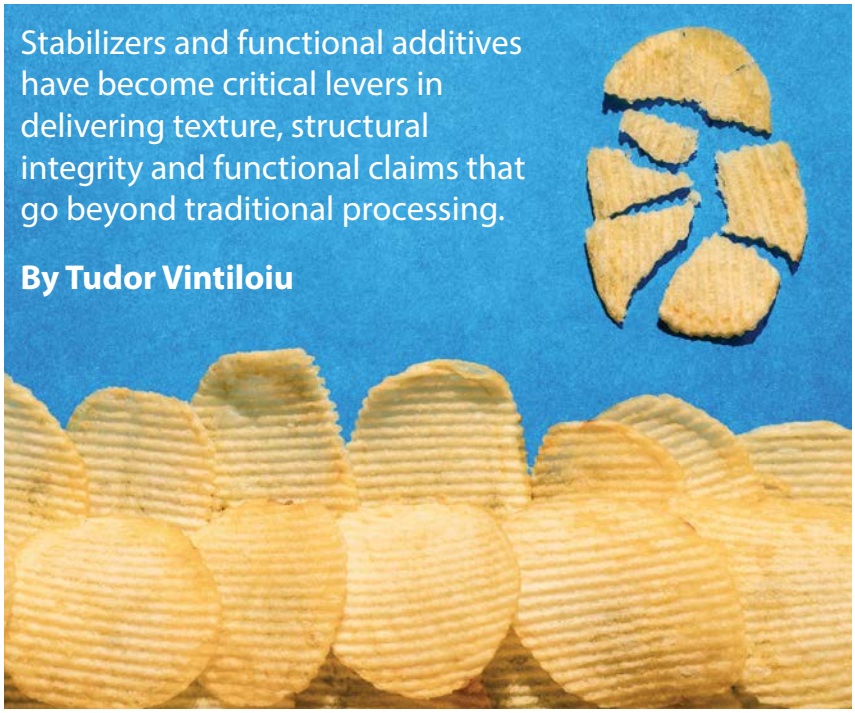
E-BLAST

- 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

A COMPLETE COMMUNICATION PLATFORM

Advanced Starch Engineering Targets Adhesion and Crispness in Fry Coatings



Stabilizers and functional additives have become critical levers in delivering texture, structural integrity and functional claims that go beyond traditional processing.

By Tudor Vintiloiu

In potato flakes, crisps, snack chips, frozen fries and starch-based ingredients, the latest developments point to three intersecting trends: advanced starch-modification technologies, valorization of potato-derived fiber and protein fractions, and emerging interfacial/colloidal stabilizers designed for high-performance and clean-label systems.

ADVANCED MODIFIED POTATO STARCH AS STRUCTURAL STABILIZER

Historically, native potato starch offered excellent thickening and gelling properties thanks to its high amylopectin fraction, yet it has limitations: retrogradation, syneresis (especially in frozen or chilled foods) and limited freeze–thaw stability. According to a specialist review, the use of modified potato starch "through chemical or physical modification [...] improves viscosity stability, freeze–thaw resistance and clarity" (Modified Potato Starch, InGreland, Sept 2025). In potato processing operations this means modified starch derivatives can better stabilize rehydrated flakes, frozen-fries coatings or snack batters where textural retention and moisture-oil dynamics matter.

Recent peer-reviewed work highlights microbial α-amylase-mediated modification of potato starch as a next-step technology. According to Zinck et al. (2025), a study exploring seven GH13-family microbial α-amylases showed that tailored enzyme systems can yield potato-starch fractions with altered molecular weight profiles and modified pasting behavior, allowing more precise functional starch specification. Additionally, a June 2025 study found that rice-bran lipase treatment ("RNE") on potato starch altered solubility and swelling behavior, effectively rigidifying the granular architecture - potentially useful for high-clarity, low-oil uptake snack applications.

In process terms, these advances allow formulators to switch from "one size fits all" modified starches (e.g., cross-linked or acetylated) to context-tuned potato-starch derivatives defined by enzyme choice, modification conditions and granule architecture. The benefits: better freeze–thaw stability, improved adhesion in fry coatings, higher yield in flakes with less oil uptake or chewing-loss in finished snack products. The drawback remains higher raw material cost, potential regulatory / labelling complexity (depending on modification class), and the need for internal process trials to validate new starch functionality under plant scale conditions.

INTEGRATION OF POTATO-DERIVED FIBER AND PROTEIN FRACTIONS

A second major development centers on utilizing potato by-products (peel, pulp, residual fiber from starch extraction) as functional additives and stabilizers. According to Vescovo et al. (2025), potato peels are "a significant agro-industrial by-product with rich composition of bioactive compounds, including dietary fiber and essential minerals" and their valorization opens functional-ingredient pathways. PMC These fiber fractions are being trialed in potato-based formulations not only for cost efficiency and waste-minimization, but for their inherent functional character: water-binding, oil-uptake reduction, improved dough or snack matrix stability.

Even though earlier work dates back (Soral-Śmietana et 2003) showing potato-fiber preparation enhanced swelling capacity of starch granules when added to wheat flour, journal.pan.olsztyn.pl the renewed interest for potato processors is that the source is "in-house" (potato peel/pulp) and can contribute to clean-labelling claims ("up-cycled potato fiber" rather than synthetic hydrocolloids). In a snack chip context, adding defined potato fiber fractions can reduce oil uptake by raising matrix viscosity and reducing pore formation during frying; in rehydrated flakes or mashed potato ingredients the fiber can improve water retention and reduce dehydration-shrinkage. In addition,

potato proteins are also under exploration: a 2024 review by Bashash et al. pointed to the emulsifying capacity and stability of potato proteins as emerging functional-ingredient opportunities (with relevance for coatings and snack seasonings).
For processors, the takeaway is that functional additive strategy now includes internal material streams rather than only external hydrocolloid suppliers. A cost-benefit analysis must address: the availability and consistency of fiber/protein residue streams, the need for upstream purification or drying, the impact on sensory/mouthfeel, and process compatibility (dispersion, hydration, mixing energy).

INTERFACIAL AND COLLOIDAL STABILIZER SYSTEMS – THE CUTTING EDGE

Beyond bulk matrix stabilization (via starch/fiber), the frontier lies in interfacial and colloidal stabilizers that manage oil–water interfaces, flavor or color carrier systems, or snack seasoning adherence. While not yet dominant in potato processing, academic research is pointing in this direction. For instance, the use of nanocellulose or polysaccharide surfactant systems is gaining traction in food-grade emulsions and coatings. According to Fatima et al. (2024), modified starch-based biodegradable systems (often for packaging) demonstrate the feasibility of using starch derivatives for advanced interfacial control.
In practical terms, a snack chip manufacturer might incorporate a potato-derived protein or modified starch microparticle as an emulsion stabilizer for flavor oil droplets in a seasoning blend - thus improving adhesion and reducing flavor migration or oil bleed. While such applications are still emerging, processors aiming for premium snack lines with extended shelf life, lower oil migration and high crispness retention should monitor these additive classes.

PRACTICAL IMPLICATIONS AND COST-BENEFIT FRAMING

From a technical operations vantage point, additive strategy in potato processing must be evaluated across multiple axes: functional performance (freeze–thaw, oil uptake, adhesion), regulatory/labelling impact (clean-label, allergenicity), integration cost (ingredient cost, process adaptation), and marketing alignment (plant-derived, circular-economy, up-cycled). For example, modified potato starch offers superior functional performance (e.g., viscosity retention, adhesion), but demand higher cost and may require validation for specific modification classes. By contrast, potato-derived fiber/protein fraction additives may offer dual benefit of functional performance and cost savings but require upstream supply-chain management and process adjustments. In the frying snack sector, the use of internally derived potato fiber could reduce oil uptake by a measurable margin (studies on other matrices show 3-10 % oil uptake reduction) and support a "reduced-oil" claim. In flakes or mash ingredients intended for rehydration or infant-food intermediates, using modified potato starch with high freeze–thaw stability means fewer quality defects in frozen storage or cold chain transit. Premium snack innovators should also evaluate emerging interfacial stabilizers, perhaps initially in pilot lines, as a differentiation lever for browning control, crisp retention, or flavor shelf-life.

OUTLOOK AND RECOMMENDATIONS

For decision-makers in potato processing plants (whether flakes, fries, snack chips or starch ingredients) the following strategic priorities arise:

- Conduct an audit of current stabilizer/functional additive portfolio: identify native vs. modified potato starch usage, presence of external hydrocolloids, and any by-product fiber/protein additive usage.
- Launch pilot trials of next-generation potato starch derivatives (for example enzyme-modified or RNE-treated) in applications where freeze–thaw stability, adhesion or oil-uptake control is critical.
- Explore internal by-product streams (peel, pulp, starch-extraction fiber) as functional additive sources: assess composition, cost, required processing/drying, and trial in product matrices for moisture retention, oil uptake, texture modification.
- For premium product lines (e.g., high-quality snack chips, clean-label rehydrated flakes, fortified mash ingredients) monitor and engage with emerging interfacial stabilizer technologies (polysaccharides, nanocellulose, potato protein emulsifiers) for pilot adoption.
- Integrate inclusion of new additives with marketing claims (plant-derived, circular-economy, clean label) and regulatory/label-compliance checks (especially relevant in EU/US).
- Hybridize formulation efforts: combine potato-derived fiber with modified potato starch in a layered additive strategy (bulk stabilizer + interfacial modifier) to optimize cost-performance ratio.

In summary, the stabilizer and functional-additive landscape in potato processing is evolving from generic hydrocolloid approaches toward ingredient systems derived from potato feedstock (starch, fiber, protein) and advanced modification technologies. Processors who align their additive strategy with internal raw-material streams, performance-specifications (freeze–thaw, oil uptake, adhesion) and clean-label marketing stand to gain both operational robustness and market differentiation. •

2025 In The Rear-View: How Shifting Trade, Capacity, and Compliance Will Shape the Potato-Processing Market In 2026

Europe's potato processors are exiting 2025 with a mix of operational resilience and commercial pressure. Dutch plants ran steadily through the autumn, yet Northern Europe's traditional export engines encountered tougher lanes - especially to the UK and across Asia, where India and China expanded their frozen-fries footprint. North America's structure remains a source of stability, with Canada's exceptionally high processing share anchoring volumes and value.

By Tudor Vintiloiu

In policy, the WTO's late-October ruling in the EU–Colombia fries dispute is set to force a rapid reset in 2026, removing a persistent trade drag.

NETHERLANDS: SOLID FACTORY RHYTHM, HARDER EXPORTS

On the factory side, 2025 closed with the Netherlands still demonstrating reliable throughput. In September, Dutch processors used roughly 302 thousand tonnes of raw potatoes to produce around 141 thousand tonnes of par-fried fries and 25 thousand tonnes of other potato products, a conversion ratio consistent with seasonal norms. The monthly series confirms that line utilization remained firm into the harvest window rather than collapsing under price or demand shocks - a useful indicator for capacity planning and raw procurement going into Q1.

Export dynamics, however, were more nuanced. Market commentary and data analyses through the year point to intensified competition from Asia - specifically from Chinese and Indian exporters - into destinations that used to be reliable for Benelux shippers, such as Japan, the Philippines, Thailand and other Southeast Asian markets. That does not imply a uniform retreat for Dutch exporters; rather, 2025 looked like a year where lane selection mattered more than usual. Plants that were able to flex volumes toward resilient demand in the Americas or within a subset of EU-27 neighbors found it easier to preserve line time and margins. The headline for 2026 in the Netherlands is therefore not about capacity risk; it's about commercial agility and portfolio management in a more crowded global marketplace

BELGIUM AND THE UK: BIG NUMBERS REMINDER

One datapoint that framed 2025 discussions about British demand came via VLAM's market communications: Belgium shipped just under 500,000 tonnes of potatoes to the UK in 2024 (primarily frozen products). That figure is important context for 2025 because it highlights the sheer scale of the UK as a buyer - and how even moderate year-on-year changes in British intake can ripple back through Benelux processors' order books. For editorial accuracy, it's also a reminder that apparent "losses" in one lane must be measured against multi-year baselines: the UK remains a volume anchor. In 2026, watch for UK buyers to keep trading off price, quality, and reliability under persistent inflation headwinds and freight normalization - conditions that favor efficient, multi-plant suppliers with credible service levels.

GERMANY: DEMAND MIX SIGNALS

While Germany's official statistics offer a precise view over longer intervals, 2025's clearest take-away for planners was the apparent divergence between demand for traditional fries and thinner orders for certain snack formats. Several industry monitors reported firmer momentum in fries than in chips through H1, a pattern consistent with household trade-

downs and away-from-home normalization at value-oriented operators. For 2026, treat that as a provisional signal rather than a permanent shift: energy prices, sunflower/palm oil spreads, and retail promotional calendars will still steer snack SKU rotations quarter by quarter. Where it matters is in plant-level SKU scheduling, packaging line flexibility, and procurement hedging rather than in any structural repositioning.

CANADA: STRUCTURE AS AN ADVANTAGE

Canada's processing structure was once again a pillar of stability in 2025. Roughly 68% of the 2023 Canadian potato crop went into processing (with fresh and seed representing the balance), one of the highest processing ratios among major producers. The export profile is correspondingly concentrated: processed potato products - chiefly frozen fries - dominate Canada's outbound value. Those facts remained true as 2024/25 unfolded, and they set the baseline for 2026 capacity and contracting. For European readers, this is a useful counterfactual: where Benelux depends on complex cross-border sales portfolios, Canada leans on an integrated processing ecosystem tightly wired to North American demand centers. The implication for 2026 is that Canadian plants will continue to run with relatively predictable raw intake and outbound flows, while currency and freight will do most of the work in smoothing marginal competitiveness.

OCEANIA: NEW ZEALAND'S EXPORT PULSE REAPPEARS

New Zealand's processed-potato export reports throughout 2025 pointed to a gradual recovery in volumes and unit values. Monthly reporting by Potatoes NZ showed a consistent year-to-date lift in outbound tonnes versus 2024 during mid-year, with the organization's standard tables (tonnage, value, average $/t) reflecting healthier logistics and improved order books from regional buyers. Beyond the headline of "up year-to-date," the important 2026 angle is the sustainability of mix: which SKUs (cut styles, coatings, par-fried specs) saw the stickiest gains, and how that aligns with fryer capacity settings and oil management across New Zealand plants. Readers planning 2026 supply should align SKU demand signals with fryer program changeovers and pack-line availability - small mis-timings can erode the margin benefits of better export pricing.

ASIA: CHINA AND INDIA MOVE UP THE TABLE

Perhaps the most consequential competitive story of 2025 was the acceleration of Chinese and Indian frozen-fries exports into Asia and parts of the Middle East. Multiple trade monitors chronicled China's growth into top-10 exporter status and India's step-up, with lanes into Japan, the Philippines, Thailand, Indonesia, Malaysia and Gulf markets showing renewed activity. Two dynamics are at work here for 2026 planning. First, production cost deltas - labor, energy, cold-chain, and currency - continue to enable sharper pricing on certain specs and pack sizes. Second, regional proximity and trade agreements reduce landed-cost variability, allowing Asian buyers to allocate more volume to nearer suppliers without sacrificing continuity. For European processors, this is not a binary "in or out" market condition; it's a prompt to differentiate through cut quality, coating technology, frying performance, and service, while choosing battles on lanes where European reliability and food-safety credentials still command a premium.

POLICY: A CLEAR WIN FOR EU EXPORTERS IN COLOMBIA

On 23 October 2025, the WTO circulated a compliance panel report finding that Colombia remained inconsistent with WTO rules in its anti-dumping duties on frozen fries from Belgium, Germany and the Netherlands. Neither party appealed within the deadline, and the Dispute Settlement Body can adopt the report at its 24 November 2025 meeting. In practical terms, that points to the removal of the current anti-dumping duties without delay once adopted, clearing a multi-year headwind on EU shipments into Colombia. For 2026 planning, treat this as an actionable upside: sales teams can re-open the conversation with Colombian buyers on EU specs and pricing, while legal and logistics teams prepare documentation and pre-position stock to capture early-year windows. The broader lesson is that compliance-risk discounting - baking policy friction into price and service agreements - remains essential in Latin America and beyond.

THE EU–MERCOSUR QUESTION: MARKET ACCESS MEETS MARKET REALITY

The recurring question of EU–Mercosur ratification resurfaced in late 2025. Superficially, it looks like an opportunity for Mercosur-area

processors (Brazil, Argentina, Uruguay, Paraguay) to expand exports into the EU on improved terms. The reality is more complicated. Over the last decade, Latin America has added capacity under multinationals that already operate to high standards (Lamb Weston, Simplot, McCain), but the EU's regulatory acquis - agrochemical restrictions, environmental reporting, residue limits, packaging and labeling rules, and digital traceability - is now a de-facto gatekeeper for market access. In short, market access is not the same as market readiness. For 2026, European buyers will continue to rely on suppliers that can evidence conformity across these domains at scale. Mercosur supply will grow, but shipments that clear EU technical requirements consistently are likely to be the subset manufactured to global-major protocols, not the entirety of local capacity. That narrows the near-term impact of any nominal tariff preferences on EU shelf availability and pricing.

PRICES: SOFTER, NOT COLLAPSED

A recurrent phrase in 2025 summaries was "price normalization." Export price indicators did soften from 2024's peaks as raw costs, freight, and oil markets moved off extremes and buyers fought inflation. But claims of a wholesale collapse to extraordinarily low average export unit values are not supported by primary data. The credible base case for 2026 is further normalization rather than a crash: energy and labor costs remain structurally higher than in the pre-pandemic period, and integrated processors will defend value through quality, service, and contracts rather than chasing spot volatility. Buyers should budget on a modestly softer but still elevated cost floor, particularly where certification, ESG disclosures, and retailer compliance programs add non-negotiable overheads.

2026 OUTLOOK: FIVE PRACTICAL PLAYS

1) Protect EU Capacity With Precision In Lanes. With China and India intensifying in Asia and selective Middle East lanes, European processors should identify the routes where their quality, service, and compliance deliver price realization - often the UK, selected EU-27 retail and foodservice programs, and North American contracts that value reliability and traceability.

2) Use The WTO Colombia Decision To Re-Open LATAM. Assuming adoption on 24 November 2025, removing duties in Colombia will re-price the lane. Close quickly with retailers and QSRs that paused EU formats; confirm customs codes and documentation standards early to avoid January bottlenecks.

3) Double-Down On Fryer And Coating Flexibility. The competitive frontier in 2026 will be in cut precision, coatings, and oil program management - not just in tonnage. Plants should retain the ability to swing between 7-mm/9-mm/11-mm and specialty coated SKUs with minimal downtime, and packaging lines should handle short runs economically for retailer programs.

4) Lock Raw And Energy Prudently. Even with softer indicators, volatility hasn't vanished. Hedging strategies that secured 2025 margins - forward energy, oil spreads, and contracted raw tonnage - still apply. The goal is to ensure line stability for core customers without over-committing to speculative spot opportunities.

5) Keep Compliance As A Feature, Not A Cost. ESG reporting, residue compliance, and traceability are increasingly monetizable with retailers and QSRs under brand-risk pressure. Treat conformance and auditability as value propositions that justify premium pricing in markets where low-cost entrants cannot easily replicate them.

BOTTOM LINE FOR 2026

The data-anchored story from 2025 is one of operational steadiness meeting a more competitive trade map. Dutch processors showed they could keep lines busy; Belgium's UK scale remained a reality check; Canada's structure delivered predictability; New Zealand's exports recovered; China and India advanced into regional demand; and the WTO handed EU exporters a concrete win in Colombia. None of these signals implies a dramatic re-write of the industry's fundamentals for 2026. Rather, they confirm that the winners will be the processors who match dependable plant performance with sharper lane choices, tighter SKU discipline, and credible compliance. If there was a theme in 2025, it was that discipline pays. In 2026, it will again. •

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Keen to Be Clean

Jonathan Thomas

More and more consumers throughout the world are now opting for food and beverages carrying the description 'clean label.' For most, this term is synonymous with a lack of artificial additives and ingredients, with manufacturers either having replaced them with natural equivalents or kept ingredient lists as short as possible.

By Jonathan Thomas

It is largely for this reason that the term 'clear label' is also sometimes applied, as 'less is more' is what consumers are demanding from manufacturers. This trend has been evident of late in markets such as potato-based snacks and frozen potato products. According to Persistence Market Research, the global market for clean label food ingredients was worth USD52.5bn in 2025. This figure is forecast to grow by an annual average of more than 7% in the period leading up to 2032, reaching a value of almost USD85bn. The European region accounted for a leading 40% of global market value in 2025, due mainly to the existence of stringent regulations governing what ingredients can be used in food and beverages, as well as the increasing consumer trend away from ultra processed foods (UPFs), although North America is experiencing the fastest growth at present. The market's largest sector is bakery goods, which accounted for a 35% share in 2025.

The US-based company Ingredion (which supplies a range of ingredients to the global food industry) has also conducted research regarding the concept of clean label, surveying the opinions of around 14,000 people in 29 countries. One of the key findings was that although cost remains a key purchasing consideration, consumer behavior is being influenced to a greater degree by health goals, lifestyle choices and personal values. The research found that many consumers would pay up to 20-30% more for food and beverages making health and clean label claims, with levels of willingness especially high amongst millennials and Generation Z consumers. Furthermore, many people appear to be trending away from food ingredients they do not recognize or understand.

According to a 2023 report on the subject by FMCG Gurus, almost 80% of consumers like to see the claim '100% natural' on food packaging. Some of the most important attributes associated with clean label products include naturalness (mentioned by 68% of respondents), the presence of recognizable ingredients (mentioned by 63%) and knowing the origins of ingredients (mentioned by 61%). The future appears bright for the clean label sector – the Ingredion research predicted that these products should account for up to 70% of overall product portfolios for food and beverage manufacturers by the end of 2026, up from 52% in 2021.

One of the main issues facing the industry at present is that 'clean label' is a term which, although used with increasing frequency, lacks a specific legal definition. Although a strong overlap exists with other health claims such as 'natural', 'organic' or 'free from', the absence of any legal definition means there is a strong emphasis upon consumer trust, with the result that food and beverage manufacturers marketing their products as clean label need to be truthful and transparent regarding the provenance of their ingredients. If the term clean label is applied, consumers will often expect this to be backed up with scientific evidence.

From a supply perspective, the global market for clean label ingredients is dominated by the world's leading manufacturers of food additives. Many of these are especially strong in sectors where the presence of artificial ingredients has diminished, examples of which include flavors and colors. Leading suppliers of clean label food ingredients include Cargill, Ingredion, Tate & Lyle, Kerry Group, Sensient Technologies, Corbion and ADM.

Although the global market for foods positioned on a clean label platform is projected to continue expanding, various barriers do exist for manufacturers considering introducing natural additives and ingredients into their products. One of the most significant is the relatively high cost of natural ingredients compared with their synthetic or artificial counterparts, which can adversely impact upon margins. On a related note, the availability of certain natural ingredients may vary, as many are sourced from fruits or vegetables. This means that supply can be compromised by weather or climate patterns, such as droughts or poor harvests.

The removal of artificial ingredients from foods can also compromise their functionality. One of the best examples is artificial preservatives, which are most frequently used to extend the shelf-life of food products and one of the most common targets for reduction or elimination by manufacturers. Without preservatives, food is likely to spoil at a faster rate, thereby increasing the likelihood of wastage, which does not sit well with claims relating to sustainability and ethical strategies.

Other potential obstacles to future market growth include regulatory hurdles governing what can and cannot be used in food manufacture, as well as consumer skepticism questioning how 'natural' some of the ingredients in their foods truly are.

POTATO-BASED SNACKS

Potato-based snacks are increasingly eschewing artificial additives and ingredients in many parts of world, especially in sectors such as flavors, colors and preservatives. Snack foods such as potato crisps and chips have frequently attracted a negative press from the health lobby, thereby placing greater pressure upon manufacturers to improve the nutritional profile of their products. The removal of artificial additives and ingredients has been one of the most popular and widely used methods of addressing these criticisms, with the result that many brands are now being positioned on a clean label platform.

Research published in the journal Appetite in 2025 illustrates the increasing significance of clean label products within the snack foods market. This found that nutrient warning labels on potato crisps and chips was a major influencer on consumer choice. It also found that labels highlighting excessive quantities of ingredients such as sodium or saturated fats would put consumers off purchasing.

Market leader PepsiCo was responsible for one of the most significant recent developments,

having announced in June 2025 that it was to remove artificial additives from its Lay's range of potato chips. This represents the brand's largest revamp in its 100-year history, with artificial flavors and colors expected to represent the most significant casualties. Additionally, PepsiCo plans to replace seed oils such as canola and soy with olive or avocado oils during the manufacturing process for some of its snack foods. PepsiCo is also emphasizing the quality of its products during the brand's relaunch, as well as focusing upon its agricultural partnerships with over 300,000 potato farmers in 60 countries worldwide. Elsewhere, the company's Walkers range in the UK is now free from MSG and artificial colors and preservatives. At around the same time as the Lay's relaunch, US rivals Calbee America Inc. launched a new range of organic potato chips under the Weston's Family Farms brand. Developed in partnership with Gold Dust & Walker Farms, the chips were launched in Sea Salt, White Truffle and Sea Salt & Vinegar flavors. Aside from being clean label, the chips were also promoted as organic and gluten-free. Another US-based manufacturer which is addressing the trend towards healthier products is Deep River Snacks, whose potato chips combine bold flavors with a lack of artificial ingredients. Its chips are kettle cooked and marketed as gluten-free. Most of the natural flavors being incorporated into the manufacture of potato-based snacks are derived from a food source. Extracts that mimic original flavors are popular (e.g. cheese, onion and vinegar), as well as various herbs and spices, examples of which include paprika, black pepper, cumin, turmeric and coriander. Paprika and turmeric are also widely used as food colorants, providing red-orange and yellow shades respectively. Other natural colors worthy of mention in this category include annatto (which provides a reddish-orange hue) and anthocyanins (which are derived from foods such as red cabbage and purple carrots). These provide color shades ranging from red to pink to purple.

FROZEN POTATO PRODUCTS

The trend towards clean label foods has also been apparent within the global market for frozen potato products and this represents a key growth driver at present. In most instances, this has taken the form of leading industry suppliers making active efforts to improve the perceived healthiness of their products, as part of a wider sustainability and environmental strategy. Traditionally, artificial ingredients such as preservatives, flavorings and stabilizers have been used in the manufacture of products such as frozen chips and French fries, for reasons such as improving texture and enhancing taste. However, this situation has changed in recent years, with many products now incorporating far fewer ingredients.

One area of NPD in recent years has been the development of French fries or chips featuring an extra crispy coating. This has been partly driven by the expansion of the food delivery market as evidenced by the success of operators such as Uber Eats, Deliveroo and Just Eat – this has led

to the introduction of brands such as SuperCrunch by Aviko, which feature a unique crispy coating to keep the fries hotter for longer periods. This has increased demand for modified starches, which are often applied to create a protective layer that reduces oil absorption and maintains internal moisture levels, while they are also used for applications such as coatings and batters.

However, modified starches are widely regarded as artificial additives, even though they are derived from natural products such as potatoes, corn and wheat. In instances such as this, the challenge is therefore to balance clean label demands with the need to develop innovative tastes and textures. Clean label starches are therefore now emerging which deliver the functionality of their modified counterparts, while at the same time satisfying demand for natural ingredients.

Market leader McCain strives to use simple ingredients within its frozen potato products, having implemented a Global Clean Ingredient Policy. This has been developed according to government guidelines, recommendations from non-governmental organizations (NGOs) and customer requirements, and has thus far incorporated the removal of artificial flavors and colors. Major markets such as the UK, Australia and India are already 100% compliant with its clean-label target, while efforts continue elsewhere in the world. According to the 2024 version of the company's Sustainability Report, recent developments have in this area have included the following examples:

- Phosphate additives have been removed from its Bruxelles brand of potato waffles in Europe;
- Artificial ingredients have been removed from its battered French fries and oven croquettes in several European markets;
- Artificial ingredients have been removed from coatings in various appetizers in the North American market;
- The preservatives BHA and BHT have been removed from its potato flakes in Argentina;
- Artificial colorings have been removed from its Cross Trix brand of French fries in China.

Aside from its clean-label commitments, McCain is also striving to improve the nutritional profile of its portfolio (e.g. via reductions in sodium levels) and adopt more ethical sourcing policies (e.g. moving towards sustainably sourced palm oil). It also aims to introduce regenerative agricultural practices throughout its potato production facilities by 2030. This is largely focusing upon the restoration of soil organic matter, as well as enhancing biodiversity and encouraging potato farmers to use pesticides with a lower environmental impact. As of 2024, 71% of McCain's total potato acreage worldwide was described as 'onboarded' and 24% as 'engaged.'

Elsewhere, Aviko is also pursuing a strategy geared towards improved sustainability. It has committed to ensuring transparency of its ingredients, while it also tries to minimize the use of additives within its products. As an example, it uses spices such as turmeric and paprika extract as coloring agents, rather than artificial varieties. In a similar vein, Lamb Weston now claims that its products are free from artificial colors and flavors within the European region. These have been replaced with natural alternatives such as annatto and onion powder respectively. •

Getting Storage Right: Post-Harvest Priorities For Potato Managers

As harvest concludes across Northwestern Europe, storage facilities become the front line in determining crop value. The 2025 season delivered generally healthy yields, but weather variability and maturing crops have left store managers facing a delicate balance: preserving quality while avoiding early spoilage.

By Tudor Vintiloiu

According to industry specialists, careful control during the first few weeks in store will define whether that balance is achieved.

THE CRITICAL EARLY STAGE

At the start of the storage cycle, two processes dominate: drying and wound healing. Both are essential to long-term quality. "The field quality looks very good," notes Frank van der Linden, Senior Agronomist and Storage Specialist at Omnivent B.V., in the company's Storage Advice Potatoes 2025 bulletin. Yet, he cautions that the physiological age of many lots - accelerated by drought stress - makes them more vulnerable to bruising and infection. "Damp soil and rotten tubers should be dried as quickly as possible to ensure long and trouble-free storage," he advises.

Omnivent recommends beginning with full-capacity ventilation and, when necessary, using gentle heat to reduce relative humidity so that outside air remains effective for drying. Van der Linden warns against allowing tubers to cool too soon, as incomplete healing can lead to Fusarium or soft rot later in the season. His guidance sets the minimum temperature for wound healing at 10°C, ideally 12–15°C, for about 7 to 14 days. At these levels, the skin closes small wounds, creating a barrier against pathogens. Once the product is dry, cooling should proceed slowly - about 0.5°C per day for processing potatoes

and 0.3 °C per day for seed lots - until the final temperature is reached in early December. Cooling too quickly, Omnivent notes, risks condensation and quality loss.

LESSONS FROM 2025 WEATHER PATTERNS

The season's weather created uneven field conditions: some lots were lifted dry, others after rainfall, leaving variable moisture levels at loading. These differences call for flexible ventilation control.
Storage technology provider Tolsma-Grisnich B.V. advises operators to base ventilation decisions on dew-point differentials rather than fixed hourly programs. The company's guidance stresses "smart ventilation" that uses real-time data on air humidity and crop temperature to prevent re-wetting. In practical terms, this means alternating between outside-air and recirculation modes as weather shifts. This approach mirrors Omnivent's recommendation to maintain a small but positive dew-point difference (outside air slightly drier than the product) during the drying period. Such precision helps managers avoid moisture fluctuations that can promote soft rot or silver scurf.

UNIFORMITY AND AIRFLOW CHECKS

Temperature uniformity remains a fundamental requirement in any type of storage, whether bulk or box. Omnivent advises completing loading within a single day whenever possible; if not, partial loads should be ventilated between batches to equalize internal temperatures.
Before continuous operation, stores should undergo a full mechanical inspection: ducts and shutters must seal properly, fans should deliver even airflow, and no cold or dead zones should remain. Even a small air leak can unbalance pressure and cause moisture pockets. While modern climate computers automate many adjustments, physical verification - using smoke or simple airflow meters - remains best practice.

MANAGING RELATIVE HUMIDITY

Omnivent's 2025 recommendations call for maintaining around 85% RH during wound healing and then raising it to about 95% for the holding phase. Higher humidity at lower temperatures minimizes shrinkage without risking condensation.
Publicly available storage guides often recommend slightly higher humidity (90–100%) throughout, but Omnivent's parameters are optimized for its system configurations and European conditions. Regardless of the chosen settings, the key is stability: rapid fluctuations in humidity or temperature create stress in tubers and accelerate sprouting.

SANITATION AND DISEASE VIGILANCE

While 2025's crop entered storage in generally good health, vigilance remains crucial. Pathogens such as Fusarium and Pectobacterium can multiply rapidly under moist conditions. Technicians should inspect piles frequently during the first two weeks, removing any suspect pockets of dampness or decay. Between seasons, thorough sanitation of ducts, walls, and ventilation components should be standard procedure. Disinfecting with approved agents before loading a new crop eliminates lingering inoculum and ensures consistent air quality.

POST-CIPC SPROUT CONTROL

The European potato sector continues to adapt to life without chlorpropham (CIPC). Most processors and growers now rely on ethylene or spearmint-oil-based treatments such as Biox-M. Both require stable, dry product and airtight conditions to work effectively. Ethylene systems deliver continuous low-dose gas to suppress dormancy, while essential-oil applications are periodic and depend on even distribution through the air system. Timing treatments too early - before the crop temperature and humidity are stable - can reduce efficacy. For many managers, the best results come from waiting until mid-December, after the cooling curve has stabilized, to begin sprout-control cycles.

CALIBRATION AND MAINTENANCE

Mechanical reliability is just as important as biological management. Before sealing the store, every temperature and humidity sensor should be verified. Slight sensor drift can mislead control systems, causing inappropriate fan or heater operation. Manufacturers typically recommend at least one calibration per season. Fan bearings, valve actuators, and heater elements should also be inspected before continuous use. A single jammed damper can skew airflow and undo weeks of careful drying. Preventive maintenance, even if it delays loading by a day, pays back through consistent temperature and reduced losses later in storage.

HOLDING QUALITY THROUGH SPRING

Once the crop is fully cooled, the goal shifts to maintaining dormancy and minimizing losses until delivery. Most stores stabilize by January, but continuous monitoring remains vital. Periodic airflow tests and temperature mapping detect hidden imbalances before they lead to spoilage.
Van der Linden closes his advice with a reminder that timing and vigilance outweigh any single technology: "Don't wait too long to ask for advice. The sooner you check your settings and your product, the more control you'll have over the months ahead." His message encapsulates the practical mindset required for this season - steady, data-driven management through the early phases, followed by disciplined observation through spring. •

2026 FEATURE PLANNING

1 JANUARY/FEBRUARY
Ad closing 14.01/Publishing 28.01

FRUIT LOGISTICA SPECIAL EDITION

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
- PEF Applications and Advantages

Spotlight
- Raw Product Handling

Markets
- Eastern Europe

Products
- Freshly Packed Potatoes: Delivering Quality from Field to Shelf

Ingredients
- Salt

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

Trade shows: Fruit Logistica, 04-06 February 2026

2 MARCH/APRIL
Ad closing 09.04/Publishing 23.04

FRUIT LOGISTICA SPECIAL EDITION

Key Exhibitors Road Map and Event Agenda

Processes
- Cutting Accuracy and Equipment Reliability
- Process Monitoring

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

Spotlight
- Smart Production/IoT/Industry 4.0

Markets
- North America

Products
- Specialty Potato Products: Catering to Gourmet and Niche Markets

Ingredients
- Better for you/Clean Label

Storage Special
- Automated Climate Control
- Sensors and Data Gathering

Trade shows: Interpack, 07-13 May 2026

3 MAY/JUNE
Ad closing 20.05/Publishing 03.06

SNACKEX SPECIAL EDITION

Key Exhibitors Road Map and Event Agenda

Processes
- Efficient Freezing Technology
- Starch and By-products Processing

Expert View
- Complete Lines for Processing, Cutting and Hydrocutting
- Batch vs. Continuous Frying

Spotlight
- Food Safety

Markets
- APAC/ANZAC

Products
- Chips and Crisps: Meeting Consumer Cravings with New Flavors & Formats

Ingredients
- Frying Oils

Storage Special
- Power Saving and Sustainability
- Disease Management

Trade shows: Snackex, 17-18 June 2026

4 JULY/AUGUST
Ad closing 12.08/Publishing 26.08

POTATO EUROPE SPECIAL EDITION

Key Exhibitors Road Map and Event Agenda

Processes
- Conveying Systems and Belts
- Seasoning & Coating

Expert View
- Drying Technology Advancements
- Remote Maintenance and Customer Service

Spotlight
- Supply Chain Management & Logistics

Markets
- South America

Products
- Potato Flakes: The Unsung Hero of Convenience Foods

Ingredients
- Seasonings for Chips and Fries

Storage Special
- Storage Challenges and Cost-saving Solutions
- Handling Potatoes to & from Storage

Trade shows: PotatoEurope, 09-10 September 2026

5 SEPTEMBER/OCTOBER
Ad closing 16.10/Publishing 23.10

INTERPOM SPECIAL EDITION

Key Exhibitors Road Map and Event Agenda

Processes
- Blanching, Frying
- PEF Systems

Expert View
- IQF Freezing for French Fries
- Pulsed Electric Field (PEF) Processing

Spotlight
- The Road to Sustainability

Markets
- Western Europe

Products
- Frozen French Fries: The Everlasting Favorite in Foodservice & Retail

Ingredients
- Batters/Coatings

Storage Special
- Storage Design and Construction
- Potato Monitoring & Quality Assurance

Trade shows: Interpom, 29 November – 01 December 2026

6 NOVEMBER/DECEMBER
Ad closing 11.11/Publishing 25.11

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

Expert View
- Sustainability in Production
- Conveying And Product Transport

Spotlight
- Increasing Production Capacity
- Future-proofing Processing Operation

Markets
- Global Market Predictions for 2027

Products
- Extruded Potato Snacks: Shaping the Future of Healthy Snacking

Ingredients
- Stabilizers/Functional additives

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

Trade shows: Preview of 2027 Event Calendar


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