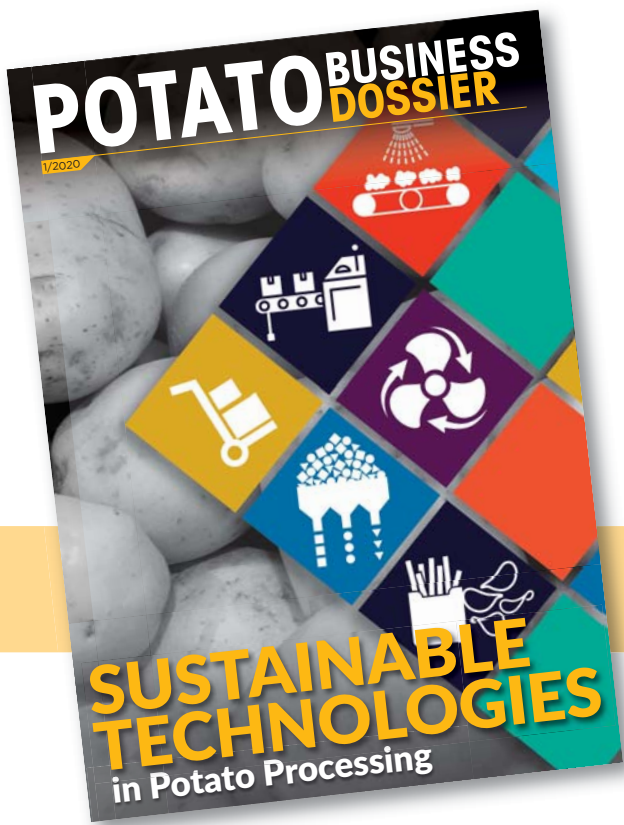


POTATO BUSINESS DOSSIER

1/2020

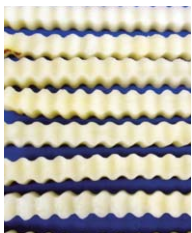


SUSTAINABLE TECHNOLOGIES in Potato Processing



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ISSUE 1 - 2020



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Choosing the Best Option

Equipment Matters More than Ever!



DAN OREHOV
managing editor

COMMENT

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t a time when the COVID-19 pandemic is creating a great deal of problems for the potato industry, whether growers or processors, it becomes apparent just how important machinery is for this segment. Attributes such as reliability, flexibility, durability, efficiency, are synonymous with modern potato processing equipment.

A handwritten signature in black ink, appearing to read 'Dan Orehov', written in a cursive style.

This is something applicable to all areas of the industry, from proficient cutting equipment that minimizes food waste, to intelligent packaging that helps processors track and trace their products movements throughout the supply chain.

In this edition of the Potato Business Dossier, several processing areas are addressed, including the above-mentioned, but also the benefits of choosing the right handling or conveying system for your business, the advantages of pulse electric field systems in potato processing, while also tackling the various innovations in washing equipment and the overall sustainable features that manufacturers take into account, when researching, developing and designing machinery for the potato processing industry.

I hope you find this edition of the Potato Business Dossier interesting and should you wish to send feedback, please feel free to do so at dan.orehov@trade.media.

Stay safe! ■



Attributes such as reliability, flexibility, durability, efficiency, are synonymous with modern potato processing equipment.



INNOVATION IN CUTTING, PEELING, SLICING

New Shapes Continue to Be Developed

The versatility of the potato seems ever expanding. Globally, based on volume, all types of fries, wedges, and tator tots lead the way, and involves strip cutting, dicing, segment cutting, and granulating equipment.

By Mike Jacko, VP of Applications New Product Innovation at Urschel

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large segment, based on volume, is the slicing of potatoes for crisps/chips. This area continues to grow with the invention of new flavors, implementation of new shapes, and

growth of the snack market. Aside from the aforementioned segments, other markets include dehydrated/flour potatoes, canned potatoes of slices/dices, potatoes reduced to implement into frozen meals, milled potatoes used in the baking industry, and freshly cut potatoes (routinely sweet potatoes) with the current vegetable noodle/rice trends that are then either frozen or available in the fresh salad aisle of grocery stores.

THE BEST-SELLERS

Urschel has been fortunate to grow alongside the potato processing industry to continue to meet the needs of this dynamic market. In the strip cutting/french fry/dicing area, many Urschel dicers are available depending on customer objectives. However, 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 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 95+% of the market of all high capacity volume, commercially processed potato chips. 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'. The machine also shreds potatoes for hash browns, scallops, and julienne strips/sticks. 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.

Related to other types of potato processing, elongated potatoes are commonly sliced by the E TranSlicer® Cutter for final or pre-cut product; Urschel supplies watergun heads for wedge cutting operations, and all types of particle size reduction applications via the Comitrol® Processor line. 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 appreciate ease of use and refined cutting principle.

NPD IN CUTTING EQUIPMENT

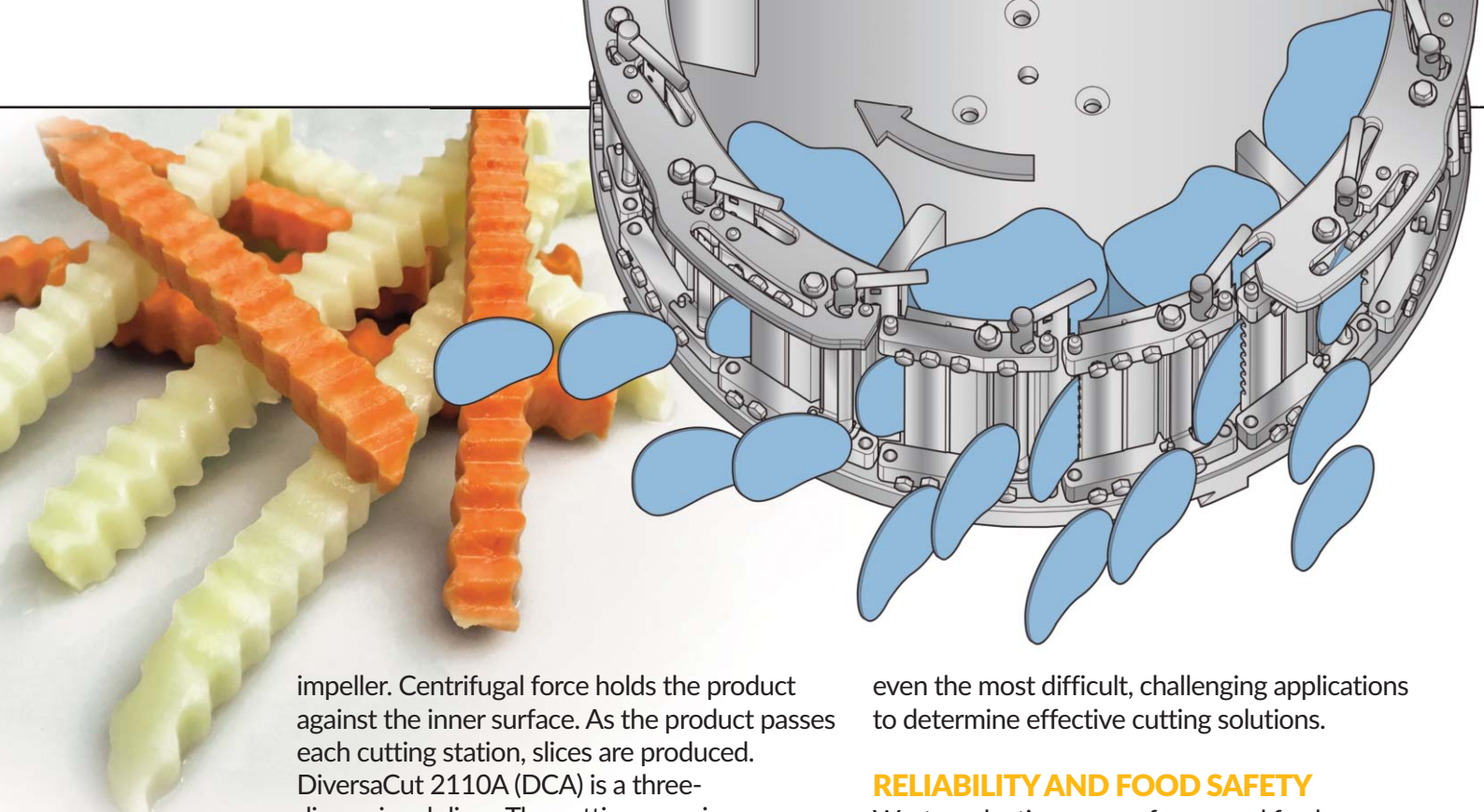
Slicing and dicing shapes continue to be developed, as marketers push to stand-out. Deeper grooves, deeper crinkles. More and more research into reduction of scrap based on characteristics of different potatoes – longer fries, shorter, stubby fries. Along with new shapes, processors still want to increase volume and reduce labor costs. One of the latest advancements is the MicroAdjustable® SL-14 Slicing Head. It offers 14 cutting stations, in place of the standard 8, and can be outfitted to Model CC's already in the field. We have received an amazing amount of orders, and our customers are blown-away by how well this new innovation works in their lines. So many benefits, without the expense of a new machine, and cost savings in terms of reduced labor and time to changeover knives. Increased output by simply changing to a 14-station head. Urschel is known for developing new machines and working closely with customers, and, as an engineering-driven company, we also expand and continue to add more versatility to our existing machinery. The DiversaCut provides a different approach to cutting with an increasing amount of dices and crinkle strip cuts. Deeper crinkle ridges present even more cut potentials for processors.

VARIOUS MODELS PERFORM DIFFERENTLY

Model CC Operating Principle: it is a centrifugal slicer. Cutting action is based on a rotating impeller and a fixed, stationary cutting head. Different heads may be set-up to create different shapes and types of cuts, including shreds and granules. Product is delivered to the feed hopper assembly and enters the rotating



Cutting efficiency, yields, cost per pound of product is what processors are looking to improve, as well as product quality and sanitary aspects.



impeller. Centrifugal force holds the product against the inner surface. As the product passes each cutting station, slices are produced. DiversaCut 2110A (DCA) is a three-dimensional dicer. The cutting zone is engineering to be compact to keep product moving throughout the cutting area in a positive direction, promoting the most precision cuts. Product delivered to a feed hopper enters a rotating impeller. Centrifugal force holds the product against the inside of the case. Impeller paddles carry the product past the slicing knife, to make the first cut. An adjustable slice gate at the top of the case determines the slice thickness. Slices pass between the slicing knife and stripper plate, then enter the circular knives, where they are cut into strips. The strips pass directly into the crosscut knives where the final cut is made. Strip cuts are produced by removing either the circular or the crosscut knife spindle. Slices are produced by removing both of these spindles.

IN-HOUSE MANUFACTURING

As the global leader in food cutting technology, one of Urschel's core markets continues to be potato processing. The company is proud to be part of the historical evolution of the commercial potato chip market, and looks forward in continuing to assist potato processors around the world in all aspects of potato reduction. Manufacturing in-house means Urschel is able to craft cutting solutions from drawings to realization in the marketplace. With offices all over the world, we continue to learn effective cutting techniques of all different types of foods, that we can then apply to the potato processing arena. Our Product Test Cutting Facilities are ready to assist with

even the most difficult, challenging applications to determine effective cutting solutions.

RELIABILITY AND FOOD SAFETY

Waste reduction comes from good fresh raw material, efficient machines with sharp knives in them, that have the correct auxiliary equipment, sheet metal and guarding so not to damage good product being conveyed thru the processes. The Urschel CC slicer on chips, DiversaCut 2110A on french fries, Comitrol Processor Model 3610 on hash browns all make excellent looking high yield product without much waste.

All equipment, anything that touches the chip, dice, French fry, shred, in a processing plant plays a large role in food safety. Other adjacent equipment can cross contaminate cleaned equipment. No matter how clean or easy to clean something is, the company must have good cleaning practices. All Urschel equipment are made to the highest sanitary standards, all SS construction, easy to disassemble.

To conclude, cutting efficiency, yields, cost per pound of product is what processors are looking to improve as well as product quality, sanitary aspects, the manpower and technical expertise required to run the processes and machines for cutting. Sometimes additional auxiliary sizing equipment, defect removal equipment is required to go with the slicer, French fry cutters, and dicers, so that's a potential added cost. More complicated machines may require higher paid worker, but the trend is to make things easier to set-up and run with lower labor costs. It's all a trade-off. A brand-new machine with worn out knives damaged by rocks will not make a good product. ■

14
cutting
stations are
fitted to the
MicroAdjusta
ble® SL-14
Slicing Head.





AMPLIFY YOUR PRODUCTION WITH the new 14-station Slicing Head

- ✓ MicroAdjustable® 14 cutting station head (SL-14) delivers **nearly twice the capacity** of the standard 8-station head.
- ✓ Micro-adjustability at the turn of a simple screw, and remains stationary in a fixed position throughout production runs.
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Purchase this new slicing head and grow your capacity without the expense of purchasing an additional CC Slicer. Rely on Urschel to deliver innovative cutting components and methods to improve your line.

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The Quest for an Effective, Gentle and Proficient System

Post-harvest cleaning and washing processes are specified dependent on crop type, soil conditions and finish requirements. At the same time, potato processors require equipment able to provide gentle handling, but also efficient enough to minimize downtime as much as possible.

By Dan Orehov



The main challenges surrounding the crop washing process center around maintaining crop quality throughout each process, as well as keeping downtime to a minimum by eliminating

equipment damage and choosing low maintenance systems.

MAIN ATTRIBUTES REQUIRED

Gentle handling is paramount, and it is important that equipment that is specified to separate crop from the soil, stones and debris, is designed to handle crop gently to ensure product quality. By using advanced and automated equipment these processes can be carried out much quicker and more effectively than before, ensuring the process is efficient and productive, whilst maintaining the integrity, and ultimately value of the crop. One example of this at the pre-cleaning stage would be the Tong EasyClean separator, which is designed to effectively grip and remove soil, debris, roots and leaf-matter whilst being very gentle on crop. With the EasyClean the separating process is very effective, yet the quality of the crop is not compromised as crop simply passes over the cleaning shafts. Tong's Auto-Touch HMI control means adjusting the machine to work in different crop conditions and on different varieties is completely automatic. The HMI controls bring greater flexibility to the machine to ensure that the extraction rollers are set correctly to perform effectively and gently in all conditions.

Shelf life is also a key consideration, and maintaining product quality throughout the process is of great importance. Keeping water fresh at each stage of the process, whether in de-stoning, soaking, washing or polishing the crop, can have a significant effect on the finished quality of potatoes; dirty water can contaminate crop which can result in a dramatically reduced shelf-life. Therefore, water-recirculation systems which effectively recycle water during the washing process, are increasingly being incorporated as part of advanced potato washing systems. Water recycling systems not only keep water fresher for longer by removing soil from the water, but also help to reduce water consumption and minimize wear and tear on equipment

that can be caused by soil damage.

Downtime is reduced as the water recycling systems continuously work to remove soil from water, meaning equipment can also run continuously without the need to stop the line and clean tanks out. Tong washing tanks can also be fitted with a full-length auger system, designed to remove mud from the barrel washer tank, extending the usage time and longevity of the water. The tank auger system is simple, requires minimal maintenance and is very effective. This feature ensuring that all debris within the tank is continually accumulated for easy removal. An automatic dump sequence can also be added to Tong washing tanks to ensure continuous running of the washer whilst dirty water is removed from the tank and refilled with fresh water.

Vegetable washing environments are traditionally high-maintenance, with the presence of water in most applications meaning regular maintenance is required to ensure longevity of equipment mechanisms. When it comes to minimizing maintenance and downtime, Tong Engineering is offering a time-saving Diagnostics module as part of its latest pro-series Auto-Touch HMI touch screen control. Available as an option on all equipment, Tong's pro-series controls can be specified as part of the Auto-Touch HMI control system, adding a level of control and system intelligence that brings users advanced system monitoring and reporting. "The idea behind our latest Diagnostics module is to provide the user with continuous system monitoring and reporting, so they can see how their equipment or line is running at any given time, in real time," explains Tony Smith, technical manager at Tong Engineering. "The Diagnostics module is a highly proactive system, that is designed to provide real-time notifications of the status of the line. This includes offering regular notifications of assurance when the line is running efficiently, as well as real-time alerts of any issues that potentially need checking or maintenance for optimal operation. This includes information on emergency stop alerts, motor and inverter loading statistics or areas such as whether a conveyor belt isn't tracking efficiently. By being proactive, any issues can be rectified quickly to prevent further deterioration, meaning downtime and maintenance really is kept to a minimum,



Diagnosis and problem solving are quicker and easier, meaning growers and processors can enjoy more continuous operation and increased productivity of their handling facilities with leading-edge technologies. Edward Tong, Tong Engineering.



Photo: Tong

5.7
liters per
minute of
freshwater
input is
needed by
modern
washing
equipment.

saving time, labor and ultimately costs.” The intelligent Diagnostics module provides users with continuous status monitoring, so that in the event of an issue, the exact location is automatically pin-pointed, enabling quick and easy problem solving and resetting. Any such issues are displayed visually on the touch-screen, allowing users of any level to see exactly where the problem has occurred, for a quick resolution. This feature significantly reduces downtime, removing the guess-work on machine trips and fault-finding. It also means that in a majority of cases, such issues can be resolved without the requirement of an engineer. Working alongside the Diagnostics module is a new Maintenance Schedule module, which

allows the run-time of any machine component to be recorded in terms of running hours or calendar periods, indicating when any part may need to be maintained or changed, making any scheduled maintenance much more efficient. This new feature not only improves the efficiency of maintenance but also allows users to be more pro-active in their maintenance routines, minimizing wear and repair costs whilst saving time.

“The continuous system monitoring that the Diagnostics and Maintenance modules offer, gives operators an exceptionally high level of intelligence about the status of their handling equipment at any given time,” added Edward Tong, managing director at Tong Engineering. “In addition, the latest safety technology that is also incorporated within these new modules enables safe running of parts of the line whilst others are under adjustment or maintenance. Diagnosis and problem solving really are quicker and easier than ever before, meaning growers and processors can enjoy more continuous operation and increased productivity of their handling facilities when embracing the leading-edge technologies that are now available as an option on our latest equipment,” said Tong.

VANMARK ADDS NEW SOLUTIONS

Vanmark, the industrial potato and produce processing equipment manufacturer, has recently introduced two new machines that significantly reduce water treatment costs and usage, from their line of abrasive peelers. These solutions allow potato and produce processors to operate more sustainably. The Water Reclamation System recirculates process water from Vanmark’s Peeler/Scrubber/Washers – reducing water usage up to 90%. The skid-mounted system removes peel waste from process water, collecting it to be sold and avoiding the drain system. Filtered water is then recirculated back into the peeler in a closed loop. It can integrate with and support up to three machines, with each now operating on less than 1.5 GPM (5.7 l/min) of freshwater input. The Waste Separating Auger filters solid waste out of Peeler/Scrubber/Washer process water – reducing waste to the drain system and resulting water treatment costs. Peel waste is removed through a self-cleaning screen and collected to be sold. Its small footprint and ease-of-use allows it to

be implemented quickly without impacting equipment line flow.

“With these water solutions Vanmark continues to drive towards their corporate vision of feeding the growing world – together with potato and produce processors – in a more sustainable and efficient way. Vanmark expertly manufactures industrial potato and produce processing equipment that optimizes in-process storage, washing, peeling and cutting processes,” conclude the company’s representatives.

THE ESSENTIAL STEPS

Post-harvest cleaning and washing processes are specified dependent on crop type, soil conditions and finish requirements. The main steps in the cleaning, washing and destoning of crop are as follows:

Cleaning - the first step in post-harvest crop cleaning is normally soil removal, using a cleaner separator. Soil that remains present within the crop load from the harvesting process is removed prior to grading or washing. In light soil conditions potato processors may choose a coil cleaner which allows loose soil, small stones and clod to pass through the coil shafts whilst crop and larger lumps of soil and stone pass over.

De-Stoning - once the majority of loose soil is removed from crop, de-stoning equipment is popularly specified to ensure stones are removed from crop prior to the washing

process. Using a flume-style destoner where crop enters the water and stones sink to the bottom of the tank where they are removed, minimizes damage to crop caused by stones as well as minimizing damage to equipment that can be commonplace if stones pass through the vegetable processing line.

Pre-Soak - pre-soak tanks are often integrated prior to crop washing systems as the presence of water at the point of reception ensures excess debris, soil and sand separates from the crop within the hopper. This gives the crop a light soaking action, which can be enhanced when crop is left to ‘soak’ in the tank for longer dwelling times.

Washing - Effective and gentle potato washing can be achieved at high capacities with a barrel washer. Popularly integrated with a de-stoner and debris remover for effective removal of all debris and stones before crop enters the barrel, crop is washed as it is submerged in water and transferred through the barrel with a gentle tumbling action as the barrel rotates. High pressure spray bars can be fitted as an option inside the washer barrel to add an additional washing action for an enhanced washed finish. The washer barrel can also be partially or fully rubber pindle or brush lined, particularly effective on heavy soiled crop or for improved washing quality on product with indentations or eyes. ■



Vanmark continues to drive towards their corporate vision of feeding the growing world – together with potato and produce processors – in a more sustainable and efficient way.

Vanmark representatives



Photo: Vanmark

A Sustainable Processing Solution



Consumer interests in healthier and fresher foods have driven much of the interest in advanced preservation methods, such as pulsed electric field (PEF) processing. Pulsed Electric Field (PEF) is a unique nonthermal method of inactivating microorganisms, including many of the common food pathogens, without heating the product to the usual pasteurization temperatures. The destruction or inactivation of the microorganism is achieved by the breakdown of the microorganism's cell membranes during exposure to electric fields.

By Michael Fawcett, account manager, Heat and Control

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While PEF has been widely used across the food industry from juices, wine, olives mainly as a means for sterilisation, preservation and retaining nutritional values, for potato

processors, the use of PEF treatments is for cell disintegration, in place of the preheater operation. In this application, pulsed electrical fields create micro-pores in cell membranes, which enable the loss of primarily of liquid contents such as asparagine and reducing sugars but not starch loss. Structural and textural changes are also realised, reducing wear on cutting blades, increasing line yield and reducing water usage. The benefits of this processing method have seen many food processors across various industries incorporate this technology into their processing lines. A recent report by Technavio (January 2020) stated the global food industry pulsed electric field (PEF) systems market is poised to grow by USD227.52m during 2020-2024, progressing at a CAGR of about 24% during the forecast period.

WHAT IS PEF?

Originally used in the MedTech sector, Pulsed Electric Field (PEF) is now breaking new grounds in the food industry. Pulsed Electric Field (PEF) is a method for processing cells by means of brief pulses of a strong electric field. The electric field perforates the cell walls of the food creating micro holes that allow asparagine and reducing sugars to be washed out of the potato in cold water wash. In most cases, eliminating/reducing the need to blanch in the preparation of products prior to further processing. As blanching can lead to starch loss decreasing yield, by avoiding this step processors minimize the loss. PEF technology aims to offer consumers high-quality foods and is considered superior to traditional thermal processing methods. Potato Processors are finding the benefits of using PEF technology in the production of French fries and potato chips: Lower acrylamide, lower oil content, higher yield, crunchier texture and lower processing costs. In addition to increased food quality, PEF also leads to energy and environmental savings. Potatoes are considered excellent conductors because they are uniformly solid, contain

about 80% water and are rich in potassium. By permeabilizing cell membranes, PEF enables tissue softening resulting in the improved cutting of potatoes, higher product quality and increased process capacity. Through PEF processing osmotic pressure (turgidity) is reduced by permeabilizing the cell membranes which enables cutting at an optimal product texture. French fry processors realize less breakage and shattering, producing longer, thinner French fries with smooth surfaces and sharp edges. This improved cutting is also evident for potato chip manufacturers with smoother surfaces and less coloration. The smoother cuts mean more starch is retained by the potato cells on the surface of the chip that when fried result in crunchier chips. PEF systems are an excellent alternative for blanching. PEF technology not only results in superior cut quality and better drying efficiency, but also improves the leaching of sugars. The pulsed electric field causes tiny pores in the potato cell walls which facilitates sugar leaching. This is good news for public health, because less sugar means less acrylamide formation during the baking or frying of potato products. Furthermore, PEF leads to a significant reduction in the fat content after frying, providing the potential to produce low-fat french fries and chips.

E-FLO™ ELECTROPORATION SYSTEM

Heat and Control partnered with ScandiNova, world-leading provider of solid-state high-power pulse modulators and RF systems to develop the E-FLO Electroporation System. Aside from reducing acrylamide and creating a healthier product, processors using our E-FLO system are finding there are several benefits electroporation can offer to increase yields and offer significant returns on capital investment. These include:

- Reduction in Acrylamide formation: for potato chip processors, one of the initial motivating factors was processors' desire to reduce acrylamide formation that naturally occurs during frying to meet legislative requirements introduced in response to the World Health Organization flagging acrylamide as a possible carcinogen. Processors currently utilizing this technology have also recognized many other benefits through introducing electroporation into their process.



The E-FLO will reduce capital costs for the producer and requires low voltage and minimal maintenance.



PEF technology not only results in superior cut quality and better drying efficiency, but also improves the leaching of sugars.

- Less blanching: during the electroporation process, the tissue of the potato becomes more permeable, reducing the need and amount of time for blanching before cooking. By minimizing or reducing the need for blanching helps avoid starch loss through this process. Yield is increased, while preparation time, water and energy usage are reduced.
- Less wear and tear on slicing blades: slicing thousands of potatoes daily can quickly result in dull slicer blades. PEF processing softens the tissue of the potato, allowing the blades to slice between the cells of the potato rather than through them. This lessens the pressure and friction on your tools, which means less down time and longer equipment life. Also yields are increased as fewer potato cells are ruptured by the knife minimizing starch loss.
- Reduction in oil use: slicing between the cells of the potato also produces a smoother chip



surface. A smoother surface means the chip absorbs less oil, which, in the long run, can significantly reduce your oil expenditure.

- Health Benefits: pulsed electric field treatment can typically reduce the fat content of the final potato by two to three per cent. This is due to increased starch content in the outer cell layers of the potato slices and smoother surface after cutting, which enhances the oil drip-off effect after frying. This creates a more desirable, crunchier premium product.

HOW THE EQUIPMENT FUNCTIONS AS PART OF A PROCESSING LINE

The introduction of the E-FLO and the Pulsed Electric Field Processing treatment of whole potatoes prior to slicing has been instrumental in reducing acrylamide levels in finished potato chips and realizing cutting and textural improvements in French fries. The E-FLO can be integrated into any existing potato line between the peeling and slicing stages of production thus providing invaluable production benefits through the line. It will reduce capital costs for the producer (reduces the need for blanching) and requires low voltage and minimal maintenance, resulting in optimized performance with reduced running costs.

CONSIDERATIONS FOR POTATO PROCESSORS WHEN PURCHASING PEF EQUIPMENT

Given the increasing costs of running a facility, with skyrocketing energy and water costs, processors need to complete their due diligence when investing in significant upgrades to their equipment.

The initial capital outlay can be prohibitive for some processors, however shortening payback periods and the many advantages and cost-savings that happen over the processing life of the equipment is encouraging more companies to invest. Processors should work with a reputable company that will take a holistic view of their manufacturing line to ensure all components are fully integrated, whether a new build or a retrofit into an existing line. They need to consider if the equipment has enough long-term benefits to see a return on their investment, by offering the cost savings achieved through less blanching time, slicing blades staying sharper for longer and oil reduction while still increasing line yield. ■



SOLUTIONS

What do you want to **create today?**



For 70 years our solutions set the standard for yield, efficiency, and safety across a wide range of industries and applications.

Our complete processing and packaging systems produce the highest quality potato chips, french fries and other potato products. With turnkey systems that include potato unloading, storage, electroporation and preparation through to frying, seasoning, packing and inspection.

Whatever your potato product needs, we can meet it with precision and passion.



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Choosing the Best Option

Regardless of where it will be used, customers should be looking for conveying and handling systems that are reliable, durable and low maintenance, therefore reducing total cost of ownership.

By Dan Orehov

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onveying systems for potatoes can be broadly defined by the type of moving surface (flat belt, modular belt, web belt or rollers) and the shape of the

moving surface (flat or troughed). Each variation has different characteristics and will be suited to different parts of a potato line depending on produce and site requirements. Alternatively, for more gentle produce handling or complex layouts, a flume system might be preferred.

TAKE YOUR PICK

As most equipment manufacturers agree, the best conveying systems will be practically invisible. To put this another way, a poor conveying system may under or over-feed machinery, cause damage to produce and bottleneck operations, all of which affects the customer's bottom line. Modern conveying systems are integrated into the lines they feed. Machines and conveyors will automatically be started, stopped or changed in speed or direction to manage produce flow. Interfaces are simple with most conveying systems responding automatically to the logic of the machine they supply or receive from. Safety is critical with isolators on every motor and E-stops that shut lines down in an emergency.

According to Wyma's Managing Director, Andrew Barclay, choosing the right conveying system allows the company to arrange processing equipment that best suits a customer's site and processing needs, in order to optimize delivery of produce to each piece of machinery.

"Wyma has a philosophy of continuous improvement. We constantly challenge ourselves to improve, and we understand that it is not just the upfront cost of machinery, but the total cost of ownership that needs to be considered. Sourcing belt suppliers that provide high quality, long-lasting, fit for purpose belts that can also be delivered on time has been one of our most critical challenges," Barclay says. "Nowadays, there are a large number of companies making conveyors but we manufacture worldwide, so equipment can be delivered to our customers faster, which seems to meet the highly competitive market requirements.

We are also seeing trends where customers are running higher volumes so the conveyors need to meet these capacities and not be a bottleneck," he adds.

Barclay also says that Wyma's Octal range of belt conveyors are cost-effective and our most popular option. This range features a fully stainless-steel construction, food grade belt, and is available in a wide range of widths and lengths to suit. Roller beds provide the least resistance and therefore the lowest power requirement. Slat beds have a slightly higher resistance but fewer moving parts, which subsequently reduces the long-term maintenance requirements. Wyma's Octal Conveyors can also incorporate sweeps for side exit of produce, or a mini-trough shape to keep produce away from the sides of the conveyor, which can reduce skinning.

On the other hand, full troughed conveyors are heavy duty construction with rubber belts and are used where high levels of dirt are present and for high produce throughputs, while web belt conveyors suit wet and/or dirty conditions, where processors want water and dirt to fall through the belt. Rubber molds can be used to gentle handling. Furthermore, modular belt conveyors are most often used for clean produce since they are easier to wash down and are suited to environments where hygiene requirements are higher, while roller conveyors singulate and/ or rotate potatoes. These can be used before electronic graders, optimizing grader efficiency, organic or chemical treatment applications or manual inspection. Lastly, flumes require only a water pump, therefore can be more cost effective and can turn corners with no drops, making them the most delicate handling conveyor system. With the exception of roller conveyors and flumes, all other Wyma conveyors can be elevators, the managing director concludes.

IT'S ALL ABOUT PERFORMANCE

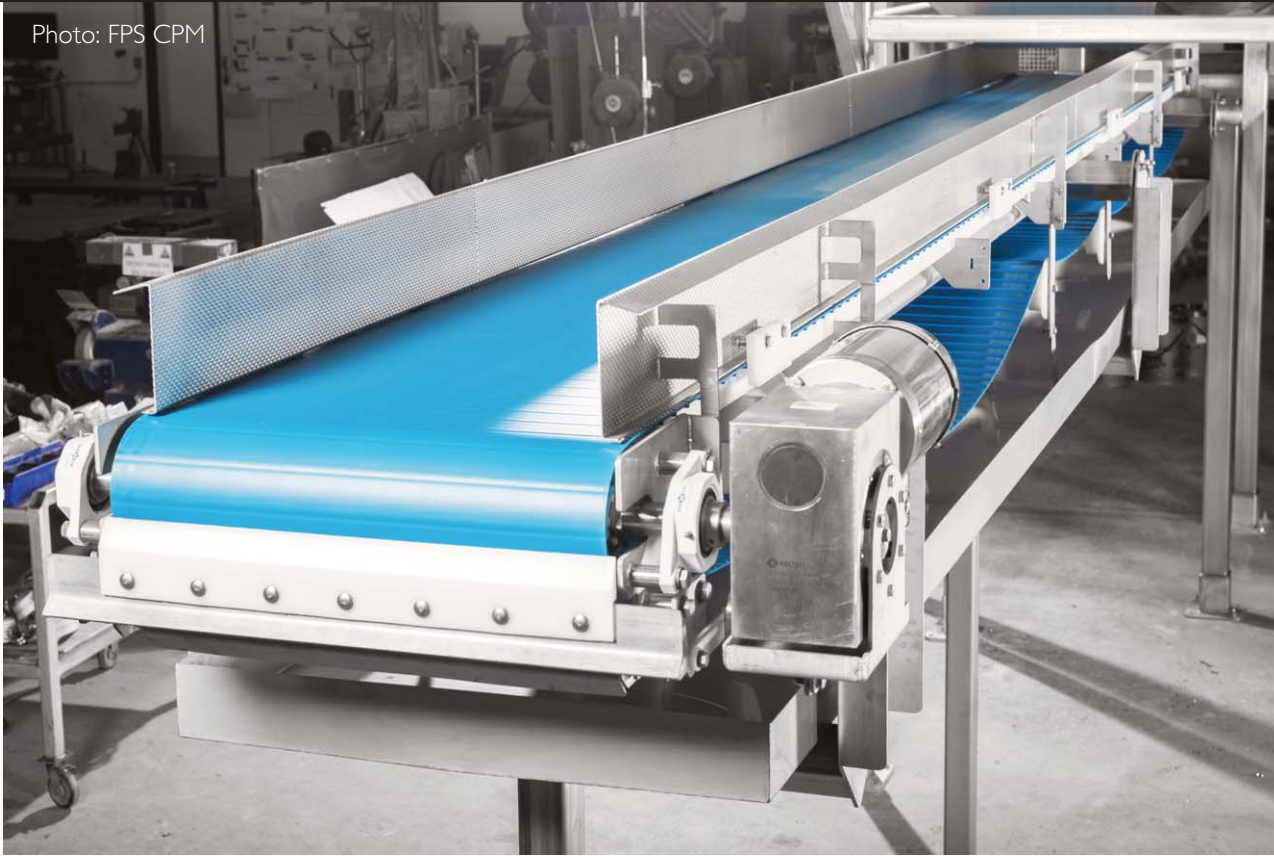
Performance conveying systems in today's potato processing plant should include rugged design to handle the significant production rates normal to the industry. They should also be capable of working at 125% of capacity, as all operations will push the production envelop after installation. Components must be high quality and built



Performance conveying systems in today's potato processing plant should include rugged design to handle the significant production rates normal to the industry.

Andrew Barclay,
Wyma

Photo: FPS CPM



Choosing the right conveying system allows the company to arrange processing equipment that best suits a customer's site and processing needs.
Greg Stravers, PFI

to withstand not only the process environment but also high pressure washing and sanitation. According to Trevor Spinney of CMP Equipment, now part of FPS, the primary categories of conveyors used in potato processing would include belt conveyors (both solid belt, modular belt, and wire mesh belt), vibratory conveyors, and

auger conveyors. The main distinct areas within the potato processing plant which can take different approaches to conveyance include (1) raw receiving, (2) process area (3) packaging (4) box handling and palletizing. "We offer a very robust construction to meet high capacity demands in potato processing with hygienic design principles applied to all components. For the raw receiving area, the past five years has brought a focus on stainless steel construction for conveyors and bins. Our Raw Receiving conveyor is made from 304 SST and was specifically designed to handle dirt, debris, mud, rocks, and moisture normally found in that area of the plant while maintaining an easy to clean and easy to maintain overall design. Rollers can be swapped out on the fly for both carry way and return way allowing for more uptime should a bearing or roller fail during operation," Spinney says. "In the process area and packaging area we utilize solid PU plastic belts like the Thermdrive product offering from Intralox. These belts are very easy to clean and are designed to withstand sanitation chemicals. We incorporate wash down rated motors and gearboxes, gravity scrapers, fold out sides, belt lifts, and removable UHMW carry way rails to allow for ease of sanitation and access to the carry way components. All areas of possible



Photo: PFI

harborage have been eliminated from the product area,” he adds.

In a similar vein, other equipment manufacturers believe that durability is just as important, as potato products are heavy and in high demand, so conveyors must be designed to support these additional weights along with the processing demands. Robustness of design is probably the most important aspect of conveying for the potato industry. Designs that take into account hygienic standards are infiltrating almost all aspects of food processing. For the potato industry it is mostly about hygienic designs that allow for ease of cleaning, which reduces downtime and labor costs related to cleaning.

“Most of the product we current make is engineered to order. Each of our customers has a unique operation and most of the time, one size will not fit all applications. We have the in-house engineering staff to design and build a solution that fits our customer’s processing needs and space. This is our daily

business and even though most of what we do is custom designs, we always work to meet our customer’s needs for delivery and at a reasonable price. We also have R&D staff dedicated to finding and developing new products to add to our line to be able to better support our customer’s needs,” explains Greg Stravers, senior vice president of PFI. “Potato processors are open to replacing old equipment, because they understand the demands for their product. Potatoes are grown to allow processors a supply of product almost all year long, instead of just for a growing season. This has caused the producers to run product through their facilities without much, if any shutdown. That demand has forced them to replace older equipment that could not keep up with those demanding conditions. One challenge that PFI has had to overcome is being able to provide a solution to a customer that has had the same equipment vendor for many years. They customer has come to rely on them to prevent down time



Potato processors demand conveyors that are reliable, sanitary, easy to clean, low maintenance and perform their function flawlessly.



Photo: Wyma Engineering



Price is always important, since processors have to balance costs associated with produce with price and demand for their product.

and it can be difficult to bring in a solution that could work better and more efficiently as from the customer perspective this might seem like a risk,” Stravers adds.

THE BOTTOM LINE

To conclude, potato processors demand conveyors that are reliable, sanitary, easy to clean, low maintenance, perform their function (collect, transfer, distribute, spread, etc.) flawlessly and minimize operator intervention. However, price is always important as well, since processors have to

balance costs associated with produce with price and demand for their product. Still, the long term cost over the life of the piece of equipment is more important, as some equipment might cost more upfront, but when the customer understands the impact on efficiency through reduced down time and length of time the equipment lasts, that should and most of the time will outweigh the initial cost of the product.

Last but not least, potato processors are always looking to reduce energy use, and modern conveyors and handling systems can help, since, in addition to requiring very little energy to power, the effectiveness of these conveyors to evenly feed product to downstream equipment, such as blanchers, fryers, dryers and freezers, improves the effectiveness of those high-energy using systems. Potato processors are installing wider freezers and dryers to increase their line capacities. To match these higher throughputs, wider conveyors are needed, which require careful design analysis so the added stress doesn't push conveyors beyond their structural limits.

Conveyor systems can help potato processors speed ROI by maximizing uptime and minimizing labor. Sanitation, hands-off operation and reliability all contribute to obtaining the desired ROI more quickly. Beyond accelerating ROI, the total cost of ownership over the life of the equipment should be considered in the financial analysis since lower operating costs can offset potentially higher capital costs over time. To optimize the performance of all processing equipment including digital sorters, peelers, cut-ters, blanchers, dryers, fryers, freezers and weighing and packaging machines, the conveyors that feed these systems must be in perfect harmony with that equipment in order to present product in an ideal manner. These infeed conveyors, along with those that collect, grade and distribute, are essential elements in a potato processor's efforts to improve product quality, increase yields and enhance overall equipment effectiveness (OEE). To get the most from these integrated systems, a deep processing knowledge and application expertise must come together with exceptional conveyor selection and equipment design engineering. ■

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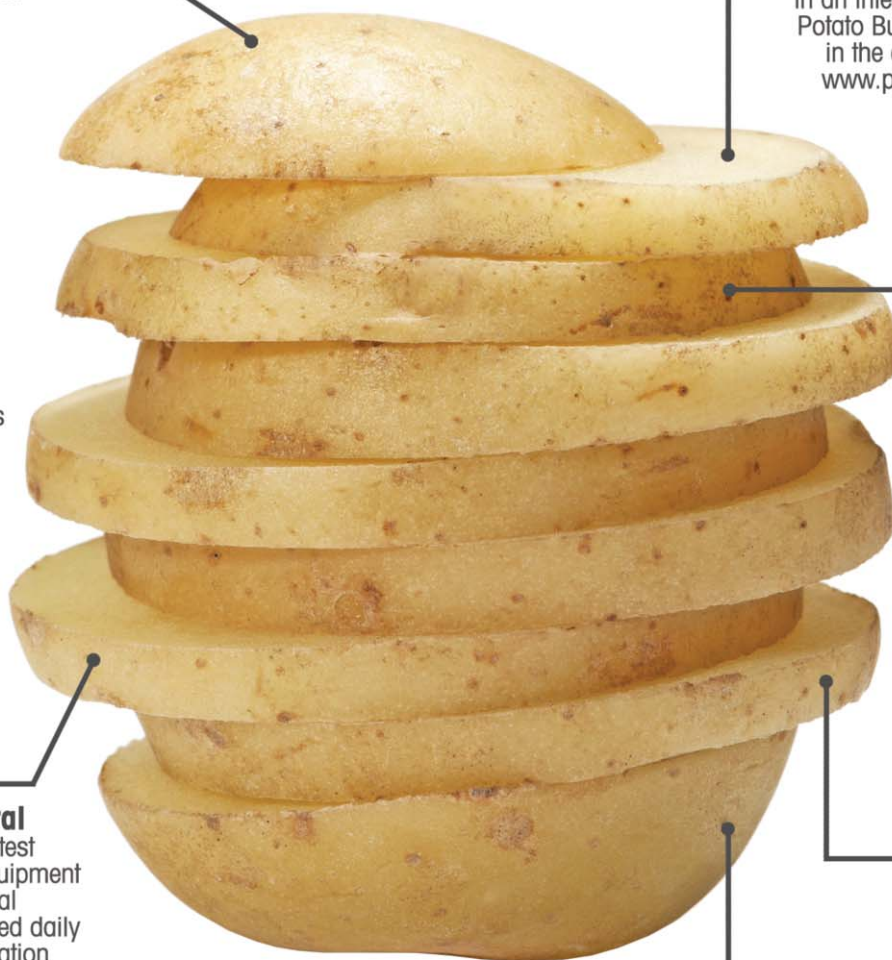
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From breaking news to the latest innovations in processing equipment and potato products, the portal potatobusiness.com is updated daily with the most relevant information for all players in the potato processing and storage industries. Regarded as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



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A COMPLETE COMMUNICATION PLATFORM

Taking Food Safety into Account



The drying step is key to achieving a high-quality product for a variety of process industries. It is of vital importance to keep processing on a uniform and optimized regime for most of the time, maintaining precise parameters needed to achieve a target moisture.

By Dan Orehov

E

xtreme process variations have the potential to impact the safety and the reliability of the process line, as well as the profitability of a company, while drying

tests can be a path to success, according to Aldo De Tuoni, Bühler Aeroglide. "If the product is widely known and the dryer is part of a processing line that has not changed in recent years, the drying equipment has likely been tested numerous times. But for a new process and product, the possibility of drastic changes in processing variables makes testing mandatory. From small scale pilot dryers to state-of-the-art laboratories, a supplier expert in thermal processing will have knowledge of the widest range of technologies." De Tuoni explains. He adds that Laboratory testing helps identify processing challenges and the appropriate technology. For instance, if product sticks to the dryer surface, clumps, becomes brittle and breaks, or produces fine dust, testing will enable the drying manufacturer to design a drying process that will avoid specific problems. It also helps the plant process engineer plan processing equipment needed before and after the dryer. At the same time, product development is probably the most interesting but most challenging experience any research team can face, and brings many questions, according to De Tuoni. How will the product react to heating, cooling, tempering, humid air and agitation? How can the product achieve the desired characteristics? And, is the test product representative of what can be processed in the production line? The answer to this last question is yes, if the exact same technology is designed for production by a reliable manufacturer of thermal processing equipment. But what if a company acquires an old facility or used equipment and needs to adapt the existing equipment to a new product? In this case, the original equipment manufacturer can provide guidance through small scale testing. "For food applications, tests that consider food safety are paramount. Drying, roasting, heating, toasting and tempering, can have a direct impact on food stability. In many

cases, a thermal process acts as kill step destroying potentially harmful microorganisms. Running a test under special conditions, using a surrogate organism identical to the real pathogen in its biological response, can determine the processing conditions--temperature, air velocity, retention time and thickness of the product - necessary to achieve a safe process. From confirming product characteristics and determining precise parameters to scale up, to verifying food safe processing, lab testing is essential. Experienced applications engineers with global state-of-the-art laboratories can provide the expertise needed for drying success," Bühler Aeroglide's representative concludes.

INNOVATION IS HIGHLY IMPORTANT

According to Edwin Langbroek, sales manager, Tummers, the main challenge for processors is to produce a consistent flake quality at the highest possible capacity. With years of experience and lab drum trials, we have developed the perfect drum to make this combination work. He says that Tummers is the leading supplier of truly turn-key dehydration or flake lines, and they can provide the complete processing line, from potato receiving up to packaging and palletizing. The focus of innovation is on capacity and hygiene. Tummers has increased the size of their market leading flake drum by 10% and substantially improved the capacity per square meter, by improving the heat transfer. This combination allows processors to make a significant step up in producing higher capacities on a single drum. The other improvements attributed to Tummers' flake drum is hygiene, with food safety as the main driver, but also enabling longer times between cleaning stops, which further increases the yearly line production. For dehydrated potatoes, or so-called potato flakes, the drum dryer is the only type of process available.

GENERATING HIGH MOISTURE REMOVAL

A high rate of moisture removal depends on good heat transfer of the energy of the steam inside the drum, to the outside surface temperature. In addition, a good evaporation area is needed, which is reached



The average accepted quantity of potatoes that a modern dryer can operate on depends on a wide range of factors, like potato quality, solids content and required flake quality.

Edwin Langbroek, Tummers.



Photos: Tummers



innovative new side shield, which is greatly reducing this leakage. Other areas of improvement on the new Tummers drum are the cleanability of the so-called back shield, the autotrax and the vapour hood. Also, among other attributes, rinse in place is a nice feature, which is incorporated in the new Tummers design, but the main focus in development was to reduce build-up of contamination. With typical cleaning intervals of three to four months, it's more economic to extend these intervals then to shorten the cleaning stop by a few hours.

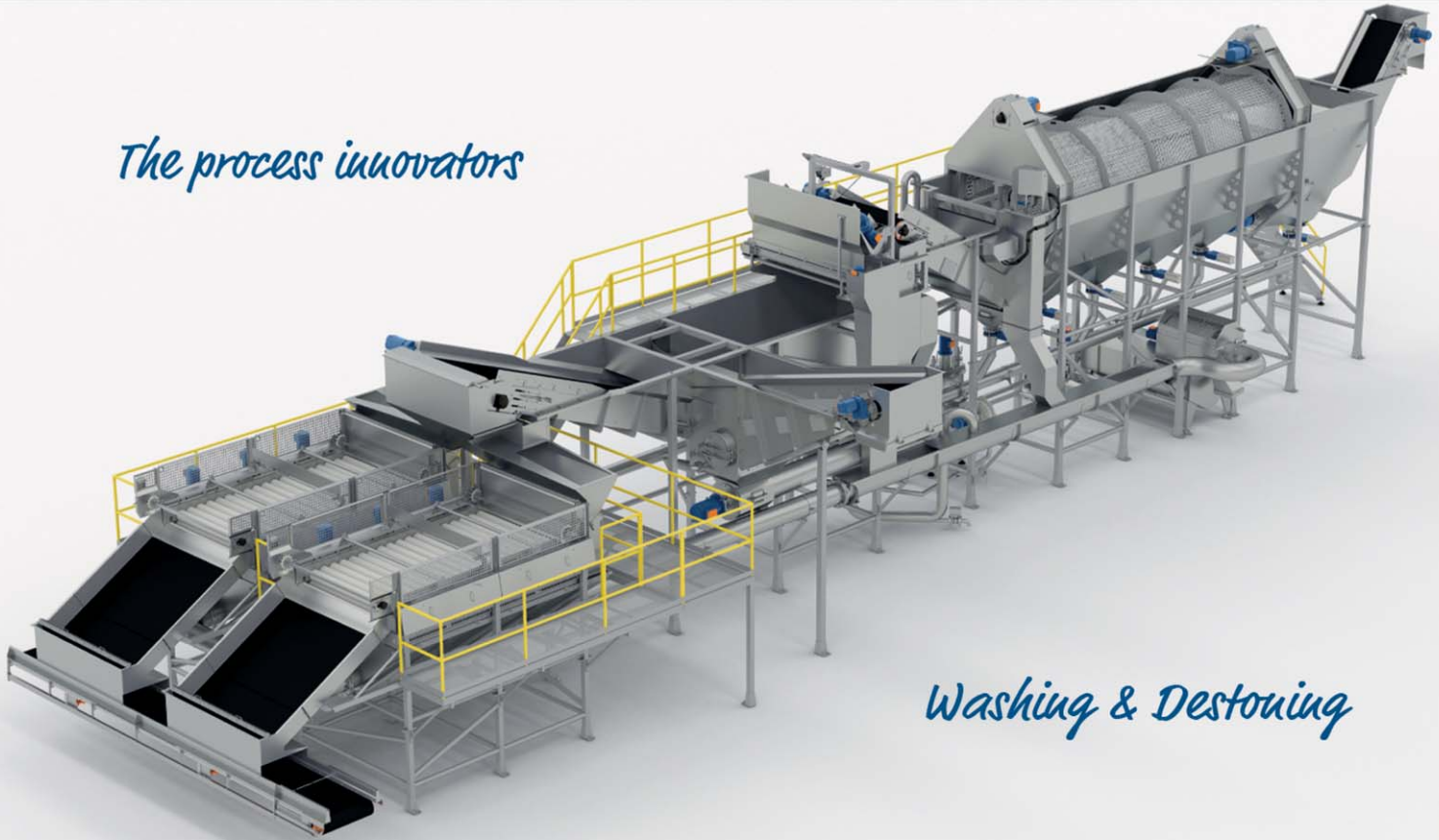
by means of the extremely large surface of the drum. On the other hand, there is a defined balance between running high capacity and high quality, which often counter each other. Based on long years of experience and the in-house laboratory drum trials, they have found the perfect balance between these two features. Regarding sanitation and food safety, the side shields of the applicator rolls generally have some leakage, which is a point for regular cleaning. Tummers has developed an

HOW MODERN DRYERS HELP SUSTAINABILITY EFFORTS

Improving the heat transfer factor of the drum has enabled the company to run at lower steam pressures, which is more sustainable. And Tummers has improved the condensate return system, allowing better usage of the valuable energy which is still in the condensate. Furthermore, the company's drum is prepared for a future installation of a new development that Tummers is working on. With regards to the average accepted quantity of potatoes that a modern dryer can operate on, it depends on a wide range of factors, like potato quality, solids content and required flake quality. Tummers has developed a great tool to calculate the line mass-balance of each different scenario. The company's experts will be happy to go through these details with interested processors. ■



The process innovators



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How Digitalization of The Supply Chain Will Reduce Global Food Waste

The scale of the global food waste problem is staggering. According to reports, 1.6bn tons of food are lost or wasted every year, equating to a total value of USD1.2tn being wiped from the supply chain. With one-third of the total amount of food produced globally being misused, the industry needs to look towards innovation and digitalization to combat this ever-growing trend.

By Dr. Felix Flemming from Tomra Food

T

hrough embracing technology and digitalizing the food supply chain, a move can be made towards reducing the amount of food waste and loss within the

industry. Not only that, but it can also help ensure there's enough resource to sustainably support the future global population. With the UN's Sustainable Development Goals setting a target of halving food loss and waste by 2030, I've looked at how the digitalization of the supply chain could help decrease global food waste.

THE NEED FOR INNOVATION TO REDUCE WASTE

Although food waste is evident across the entire supply chain, the vast majority comes at the very beginning (during production) and at the very end (during consumption). The former of these is more common within developing countries, where the infrastructure is of a poor standard and cannot handle the food thus creating waste, whilst the latter is more pronounced in developed countries with waste being caused by both retailers and consumers. According to the Boston Consulting Group (BCG), the amount of food waste created in the supply chain is set to rise 1.9% from 2015 to 2030. You may think this is a small rise, but when put into perspective with the current 1.6bn tons wasted every year, this figure will increase by 30.4mn tons.

To combat this increase in waste, the food supply chain needs to go under a digital transformation. From production and processing to the retailers themselves, systematic changes are required in food supply chain management to help everyone utilize this precious resource more efficiently and cut back on the amount of waste we're creating as a society.

UTILIZING IOT IN THE SUPPLY CHAIN

Through having better levels of communication across the supply chain, the amount of food waste produced can be reduced. Each aspect of the supply

chain must be in constant contact with one another to ensure our resources are managed efficiently. This is where the Internet of Things (IoT) can support and improve supply chain efficiencies. Based on having interconnected and interrelated systems and processes, IoT allows each aspects of the food industry to have access to key data around the supply, production and management of produce, which can help reduce the amount of waste created. Without the wider adoption of IoT in the food supply chain, the levels of food waste could increase by 50-90% as a result of several combined factors, such as the increase in food demand due to the ever-growing population.

By allowing all stakeholders within the supply chain access to key data shared across integrated systems, processes can be optimized further along in the chain to maximize how the produce is handled. For example, a bad batch of apples with a high percentage of internal browning would require a specific equipment set up and would need to be fine-tuned to ensure the maximum value can be extracted from the apples. It is believed having this connectivity could save the supply chain up to USD60bn in waste. Through having this pre-warning of any information regarding a batch of produce, farmers can not only optimize their yields by reducing the risk of waste, but the other stakeholders can also plan accordingly to try and prevent the cause of waste.

Having this ability to share data through IoT can also help reduce waste from a consumer standpoint. Retailers could use the real-time data in stores to showcase when the produce was harvested or picked and offer insights into the projected "sell by date". This can educate consumers further on how long they have to eat the produce, thus helping reduce food waste through the implementation of technology.

USING INNOVATION TO IMPROVE CURRENT INFRASTRUCTURE

As well as utilizing IoT, the supply chain can also use digitalization to help improve the infrastructure it currently has in place. Cold chain plays a huge role in the



At Tomra, we're committed to creating sensor-based sorting and grading systems to help the supply chain win the battle against food waste.

A CLOSER LOOK AT THE GLOBAL FIGHT AGAINST FOOD WASTE, FOOD LOSS, AND **CREATING A SUSTAINABLE FUTURE FOR FOOD**

GLOBAL FOOD WASTE & FOOD LOSS CHALLENGES



The UN expects **world population to rise by two billion people** over the next 30 years.



According to the World Resources Institute, almost **a 1/4 of food produced for human consumption goes uneaten.**



Rising trends in **food production demand, agricultural land required, food waste generated, and greenhouse gas emissions.**



Agriculture accounts for **126T of CO2 per year. Projected to rise by more than 50% by 2050.**



This level of emissions would represent **70% of the available carbon budget** set out in the Paris Agreement.

FOOD WASTE IS SEEN ACROSS THE ENTIRE SUPPLY CHAIN



TOMRA'S COMMITMENT TO A SUSTAINABLE FUTURE FOR FOOD

WE ARE LEADING THE RESOURCE REVOLUTION

REPURPOSING PRODUCE BECOMES A KEY SOLUTION IN REDUCING FOOD WASTE



5-10% INCREASE IN PRODUCE YIELD WITH TOMRA'S SORTING & GRADING SOLUTIONS



REDUCE FOOD WASTE



HELP TO IMPROVE YIELDS



ACCELERATING TECHNOLOGY THROUGH INNOVATION



MAXIMIZE FOOD RESOURCE PRODUCTIVITY

25% LESS ENERGY OUTPUT WITH TOMRA'S ECO STEAM PEELER



28% less steam output compared to similar machines

UP TO \$90,000 savings per year for production businesses



UNLOCKS THE VALUE OF DATA GENERATED BY OUR SORTERS, ALLOWING OUR CUSTOMERS TO



MAXIMIZE THROUGHPUT OR YIELD



SORT TO TARGET QUALITIES



REDUCE DOWNTIME



REDUCE OPERATIONAL COST

food industry creating waste, mainly due to poor infrastructure – in India, for example, USD14bn is lost every year through poor cold chain facilities. However, implementing innovative and efficient systems can go a long way in addressing the food waste issue – particularly in developing markets. By deploying more advanced cold chain solutions within the emerging markets, which share the data across the supply chain through IoT, it could prevent large-scale food loss and waste. The conditions can also change in cold storage, and temperature affects many sorting technologies, so the ability to link cold storage sensors to packing equipment can enhance performance. But this is nonexistent in many emerging markets, creating poor food storage and transportation conditions early in the value chain that lead to large-scale food loss. Deploying more-advanced supply chain solutions – including cold chain in developing markets – could reduce the problem by USD150bn annually. Investing in efficient sorting and grading systems is a key approach in helping the supply chain reduce the food waste created earlier in the supply chain. We want to know everything about the produce. Everything from the weight and size through to the external properties and defects, and even the internal chemical composition to predict ripeness and longevity. But there are only two points when you can gather information on individual pieces of fruit: when it's picked and when it is sorted. These are the critical data acquisition points. KPIs need to be based around understanding the types of defect types and classes/grades per batch, to help create a complete map and total view of the produce. This, in turn can help build up big data, meaning every batch gives you new insights and allows you build a bigger picture, creating the ability to make even more informed data-driven decisions. Where appropriate, data can be shared and augmented to 'context', such as weather data or geo-tagging. The final step is to layer artificial intelligence to start to understand previously unseen patterns and even more efficient ways of working. Although

these KPIs tend not to be designed to help limit the amount of wasted produce, utilizing sorting and grading technology can automatically support a waste sensitive environment by recovering any produce and reusing it for another purpose, such as cattle feed or pet food. This means that rather than creating food waste, an alternative, more suitable use is found. Lower quality fruits can be used for juices or pulped to become products such as guacamole or apple source, whilst starches can be used for medical



purposes. All of these help us reduce waste and put the lower quality produce to better use.

GOING DIGITAL TO FIGHT FOOD WASTE

With the ever-rising stats around food waste, now is the time for the industry to adopt a more digitalized approach across the supply chain. Implementing integrated and innovative systems will allow all key stakeholders, from field to fork, to efficiently manage food and reduce the risk of waste at loss. Digitalization won't just help from a sustainability aspect, but also help businesses drive their own profitability by improving processes and efficiencies. It becomes the answer to the push-pull paradox for commercial benefit and

combating global food waste. At Tomra, we're committed to creating sensor-based sorting and grading systems to help the supply chain win the battle against food waste. Through our systems, we aim to help food businesses maximize yields and ensure any produce can be recovered and reused, increase productivity with high capacity sorting and provide consistent high-quality food assurance. We also understood that we must take the next steps. Tomra Insight is our answer to connect our sorting and grading systems, extract valuable information on the sorting performance and the produce, and make it transparent to the food businesses. Incorporating this further into a digitalized supply chain will help to close the link from farm to fork in the future. ■

1.6

bn tons of food are wasted every year.



Through embracing technology and digitalizing the food supply chain, a move can be made towards reducing the amount of food waste and loss within the industry.

The Future Is Smart & Multi-sensorial



New packaging techniques combine different materials that enhance the multi-sensorial experience of the consumer. Brands are adopting sensory marketing strategies which can influence consumers' purchasing decisions by using multiple senses like different color, shape, textures, sounds and smell of a pack.

By Dan Orehov

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ood manufacturers are also integrating special functionality into their packaging. With the addition of anti-microbial agents into plastics, packages can respond to bio-switch

and triggers when bacterial growth occurs. This technique increases stability and helps reduce the amount of preservatives added. With the many demands put on food manufacturers from retailers and consumers, smart packaging is providing much-needed solutions that meet the demands and reduce costs. But keeping up with the advances in smart packaging can be a challenge. According to Maria Ferrante, senior director, marketing and communications with The Association for Packaging and Processing Technologies (PMMI), Smart packaging is not just window dressing to attract consumers to a new package – the potential savings it can bring to companies and consumers is real. With key driving forces such as increased safety, brand protection, extended shelf life and compliance with regulations, the demand for smart packaging continues to grow. The 2019 Flexible Packaging Marketing Assessment from PMMI, The Association for Packaging and Processing Technologies, notes that key technology developments, like intelligent packaging, continue to support packaging growth across a broad variety of manufacturing segments. Smart packaging refers to packaging systems with embedded sensor technology and can be used to extend shelf life, monitor freshness, display information on quality and improve product and customer safety. Active packaging and intelligent packaging are two methods to achieve smart packaging. Active packaging enhances functionality such as moisture control, while intelligent packaging incorporates features that indicate status, communicate product changes and other information. And according to research from Smithers Pira, The Future of Active & Intelligence Packaging to 2023, the combined active and intelligent packaging market is forecast to grow at an annual average rate of 5.9%, hitting USD7.56bn by 2023. Ferrante also says that QR codes and Near

Field Communication (NFC) technology are already employable to product against counterfeiting. Since smartphone devices can now read these codes automatically without any downloads, global smartphone owners are now an army of product authenticators – without adding cost or additional technology. Consumers can now be empowered to identify counterfeit products at the point of sale, putting pressure on retailers to ensure counterfeit products do not enter the supply chain in the first place. Companies no longer need to rely on extensive inspection and detection resources; they can rely on the pull from a global enforcement team of NFC-enabled smartphones. This is predicted to be the biggest deterrent against counterfeits. And, once an authentication scan has been carried out, the same outlet can be used to engage with the consumer further.

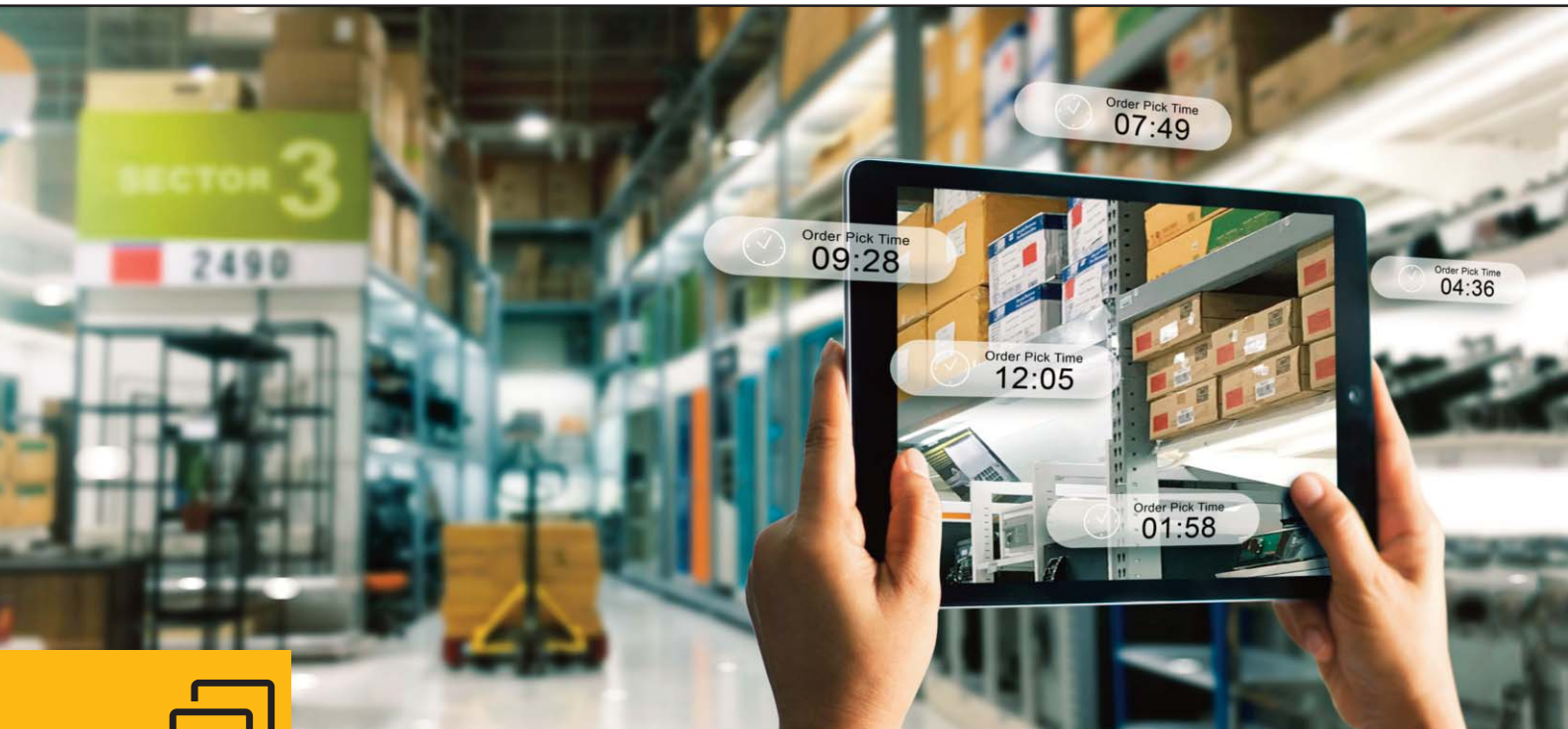
Moreover, manufactures say that “fresh” is the defining factor in growing markets like flexible packaging, according to PMMI's Flexible Packaging Market Assessment. When a “best buy” date expires, or food does not visually look good to the consumer, it goes in the trash. About one-third of the food for human consumption is wasted annually – and intelligent packaging is being employed to help reduce this. Components such as freshness indicators and time-temperature indicators benefit the whole supply chain. Consumer behavior, such as weekly rather than daily shopping, aging populations and more single-person households benefit from the longer life and monitoring options intelligent packaging offers. One example is the use of color indicators within flexible packaging, which lets consumers, distributors and packagers know the ideal consumption period for a food product. These features can offer clear signals about the condition of the product, without the use of arbitrary “best before” labels, minimizing unnecessary waste.

THE IMPORTANCE OF TRACEABILITY

According to tna's Group Marketing Manager, Shayne De la Force, it is important to fully understand what is meant by traceability. This risk-management tool refers to the way in which manufacturers record the movement of products throughout the processing stages, usually through barcodes or RFID tags. It gives them a practical way of



Snacks are benefitting from family units being restricted to staying indoors, creating new opportunities for providers – particularly in the e-commerce space.



Key technology developments, like intelligent packaging, continue to support packaging growth across a broad variety of manufacturing segments.

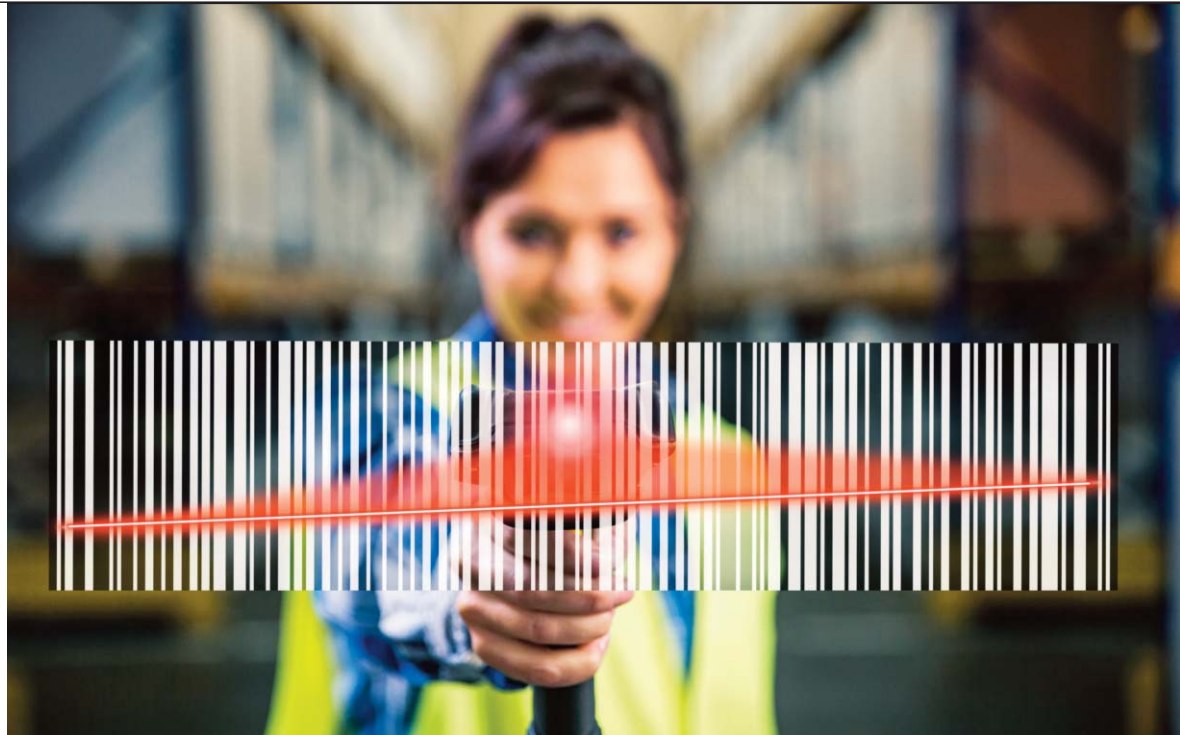
responding to potential issues that can occur in food processing, and is particularly useful in cases where products need to be recalled because of contamination. By employing efficient traceability methods, it is possible to identify the precise date or time and the exact location of any goods which must be recalled. In this way, risks can be identified and traced back to the source to isolate the problem and prevent contaminated products entering the value chain and reaching consumers. It can also save significant amounts of time should product recalls be needed, prevent costly wastage by differentiating between products that are still safe and those that are not, and ultimately help preserve the brand's reputation. Improving traceability throughout the entire production chain allows operators to regain control over product quality and food safety.

AUTOMATION IS A KEY COMPONENT

Food safety can be assured by improving in-line checking throughout the entire processing and packaging line, facilitated by the adoption of a fully integrated control system. Product quality issues can apply to both raw materials and finished products, and are often caused by badly specified, outdated or poorly configured control systems. By integrating systems that can be easily validated, it is possible to obtain essential monitoring data that will satisfy traceability requirements. Detailed and reliable information from as many parts of the production process as possible should therefore be collected and thoroughly evaluated. Good control systems store information from the entire line in a central database, allowing plant managers to filter the data and create configurable reports to demonstrate trends and increase control over the process. Known as a Human Machine Interface (HMI), this machine provides status and production data, enabling operators to monitor any unusual activities and react quickly and efficiently should an incident occur and ensure that production is not affected. Using an effective tracking system to batch monitor any goods-in, control existing stock and keep up to date on products' shelf lives, will help reduce raw material wastage, make inventories more accurate and maintain product quality at all times. In addition, with production tracking software, food processors can monitor and



Photo: tna



record information about their processes enabling them to rectify any issues, and have the documentation available to meet new record keeping requirements. Not only does this speed up production, but it also creates a greater level of transparency and accountability within the manufacturing process. tna's controls and automation capabilities allow full visibility of the entire production line to meet regulatory requirements and achieve efficient and safe processing and packaging.

THE IMPACT OF COVID-19

The emergence of coronavirus (COVID-19) has impacted multiple industries, causing some to come to a complete standstill and businesses to fall into administration. However, the packaged food industry is one of the few areas to experience a surge in demand as a direct result of the pandemic. Although the full impact of the global health crisis is yet to be felt, restrictions on movement coupled with closures in foodservice providers have resulted in consumers increasing purchases and even stockpiling groceries when they can. In addition to the spread of the virus itself, what, where and how consumers buy groceries has significantly changed since the beginning of 2020. Euromonitor's Tom Rees, Industry manager, Food and Nutrition, looks at the short-term impact COVID 19 has had on three key areas within packaged food (home eating, snacks

and dairy), global supply chains and trends within packaged food which are expected to remain post pandemic.

ALWAYS EATING IN IS THE NEW NORMAL

With most restaurants and institutions serving food closed, household culinary skills and available ingredients are the main factors which shape what consumers eat. Food delivery and apps like Deliveroo and Uber Eats still remain open for business, but uncertainty around how COVID-19 can be transmitted has placed more scrutiny on safety and hygiene concerns when other people prepare food. Combined with the global shift of moving all food occasions into the home has acted as a catalyst for consumers to prepare more of their own meals from scratch.

Euromonitor International's 2020 Lifestyle Survey showed 24% of young adults are less confident in their cooking skills, making ready-to-eat products and meal kits popular substitutes. However, prolonged closures and extended quarantine periods will result in more reluctant cooks embracing at home cooking that requires more preparation. Staples like pasta and canned foods are some of the fastest moving products across online and in-person outlets in the short-term. Looking ahead, COVID-19 should prompt consumers to be more health conscious and incorporate more nutritional eating into their diets. Products which claim



Key technology developments, like intelligent packaging, continue to support packaging growth across a broad variety of manufacturing segments.



Plant hygiene is also paramount in the battle to eradicate foreign bodies and avoid environmental contamination concerns.

health benefits like immune-boosting yoghurts have already become popular in Japan. However, financial uncertainty will also see shoppers cut back on premium lines, trading down to discounters and private-label brands.

SNACKIFICATION TREND SHIFTS

Depending on how long periods of quarantine and closures of foodservice providers last, the 'snackification' trend may be affected. This is the blurring of traditional mealtimes, eating on-the-go (or at work) and snack consumption replacing traditional meals in people's everyday routines. Urbanization and busy lifestyles have become the norm and snackification represents how consumers are adapting to change.

That said, snacks are benefitting from family units (including children) being restricted to staying indoors, creating new opportunities for providers -particularly in the e-commerce space. Producers can expand their reach and offer more

diversified and indulgent options using online channels. Looking further ahead, tough economic times will negatively affect foodservice (even as restaurants and others re-open) as consumers will continue having meals at home to cut costs. In this context, ready meals and staple foods will be better positioned than snacks. But categories, such as confectionery, will not necessarily suffer too badly under a recession; as shown during the 2008 global financial crisis. Affordable treats can still survive and thrive under economic instability, as people look for small ways to alleviate the depression of a more straitened existence.

THE FUTURE OF PACKAGED FOOD

According to Euromonitor, there are three scenarios to be expected post-pandemic: **Short-term impact (Q1-2)** - Closures in foodservice providers have moved meal occasions into the home and consumers increase purchases across grocery retailing. Online shopping will become more common; however, supply chains will come under pressure as borders close across the world and the workforce is reduced through infection, self-isolation and travel restrictions. Numerous countries warn of a shortage of agricultural workers, either from home or abroad.

Medium-term impact (Q3-4) - The surge in e-commerce grocery shopping will hold up, as social distancing continues. Even as foodservice starts to return, the shift to eating at home is likely to stay in place to some extent as a result of financial uncertainties and pressures. Buying food for cooking and ready-made meals at home will continue to be prioritized.

Long-term impact (2021 onwards) - Post COVID-19 will see reduced consumer spending power and food choices will be characterized by budget friendly options, discounters being key beneficiaries. Consumers will spend less money on eating out even when foodservice outlets return, and affordable treats will remain popular as consumers compromise on other luxuries. The move towards online grocery shopping will have been jumpstarted and plenty will shop this way, but some consumers will have had poor e-commerce experiences at a time when demand was more than some providers could cope with. ■

POTATO PROCESSING

I N T E R N A T I O N A L

2020 Feature Planning

1 JANUARY/FEBRUARY

Ad closing 10.01/Publishing 24.01

FRUIT LOGISTICA SPECIAL - Key Exhibitors Road Map and Event Agenda

Processes

Pre-cleaning, Washing, De-stoning
Cutting, Peeling, Slicing
Transportation, Product Handling

Expert View

Cutting it to Perfection
Automatic Defect Removers Used in Potato Processing

Spotlight

Potato Varieties for French Fries and Chips

Markets

Western Europe

Products

French Fries

Storage Special

Store Preparation and Hygiene
Drying and Ventilation

Trade shows: LAMMA UK, Potato Expo USA, Global Potato Conclave (India), International Potato Technology Expo 2020 (Canada)

2 MARCH/APRIL

Ad closing 13.03/Publishing 30.03

Processes

Drying and Dehydrating
Sorting, Blanching
Process Monitoring

Expert View

The Optical Sorting Revolution
Advancements in Drying Technologies

Spotlight

Robotization, IoT and Industry 4.0 in Packaging

Markets

Eastern Europe

Products

Classic Chips - Consumers' Favorites

Ingredients

Batters, Coatings

Storage Special

Integrated Storage Management Platforms
Energy Efficiency in Storage

3 MAY/JUNE

Ad closing 15.05/Publishing 03.06

Processes

Frying and Cooking
Oil Filtration, De-fattening, Filtering

Expert View

The Future of Modern Frying Equipment
Pulsed Electric Field

Spotlight

The Latest Reports on Acrylamide

Markets

The US and Canada

Products

Flakes, Pellets and Mashed Potatoes

Ingredients

Best Frying Oils

Storage Special

Humidity and Condensation Control
Cooling and Freezing

Trade shows:

Starch Expo (Shanghai),
European Association for Potato Research Conference (Poland)

4 JULY/AUGUST

Ad closing 10.07/Publishing 27.07

Processes

Conveying Systems and Belts
Cooling and Freezing
Forming and Extrusion

Expert View

Cutting it to Perfection
Traceability and Track & Trace Systems in Processing
VFFS Packaging Innovation

Spotlight

Weather and Its Effects on Potato Crops

Markets

Asia-Pacific

Products

Extruded, Pasteurized and Formed Potato-based Snacks

Ingredients

Salt Reduction and Health

Storage Special

Heating in Storage Facilities
Monitoring and Quality Control

Trade shows: Potato Association of America Annual Meeting, Potato Demo Day (Netherlands), Europat Congress

5 SEPTEMBER/OCTOBER

Ad closing 28.09/Publishing 12.10

INTERPOM PRIMEURS SPECIAL - Key Exhibitors Road Map & Event Agenda

Processes

Batch Frying Equipment
Optical Sorting Innovation

Expert View

Improvements and Advancements in Batch Frying Equipment
Chips Frying Equipment: Investment and ROI

Spotlight

Food Safety Regulations for Potato Processing Plants
Cleaning and Sanitation Updates

Markets

South America

Products

Batch Fried Chips - The Health Trend and Its Influence on Consumers

Ingredients

Flavors and Seasonings for Chips and Fries

Storage Special

Latest Refrigeration Technologies
Sprout Suppressants in Storage

Trade shows: Potato Europe, Pack Expo

6 NOVEMBER/DECEMBER

Ad closing 13.11/Publishing 03.12

Processes

Coating, Flavoring, Seasoning
Conveyors and Conveying Systems
Turnkey Projects

Expert View

Complete Lines for Processing
Innovative Conveyors for Raw and Processed Potatoes

Spotlight

Saving Water, Energy, Oil during Potato Processing
Potato Processing Equipment - Key Suppliers Guide

Markets

Global Market Predictions for 2021

Products

The Future of Potato Snacks 2021

Markets

Processed Potatoes Global Market Trends 2020

Storage Special

Storage Disease Control
Cleaning and Sanitation Updates

Trade shows: Anuga FoodTec 2021



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