



Integrated Peeling & Sorting Solutions

Processed Potatoes

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Every Potato Counts™

TOMRA Food machines are equipped with the latest technologies and designed to process a variety of products based on your requirements. Offering high-value and safe products to your customers is our priority. We take pride in creating a high return on investment for our customers and minimizing waste.

Sorting is Vital

No matter what part of the potato industry you're in, sorting is vital. As a trusted vendor for more than forty years, TOMRA knows the challenges that growers, packers and processors face. That's why we provide you with the best and most comprehensive sensor-based sorting solutions available in the food industry today.



Products

- French Fries
- Chips
- Diced Potatoes
- Wedges
- Slices
- ..and many more.



Benefits

Food Safety

The implementation of sorting technology can significantly reduce the risk of contamination from foreign material. Limiting product recalls and claims, our solutions help to protect your brand and company's reputation.

Yield Maximization

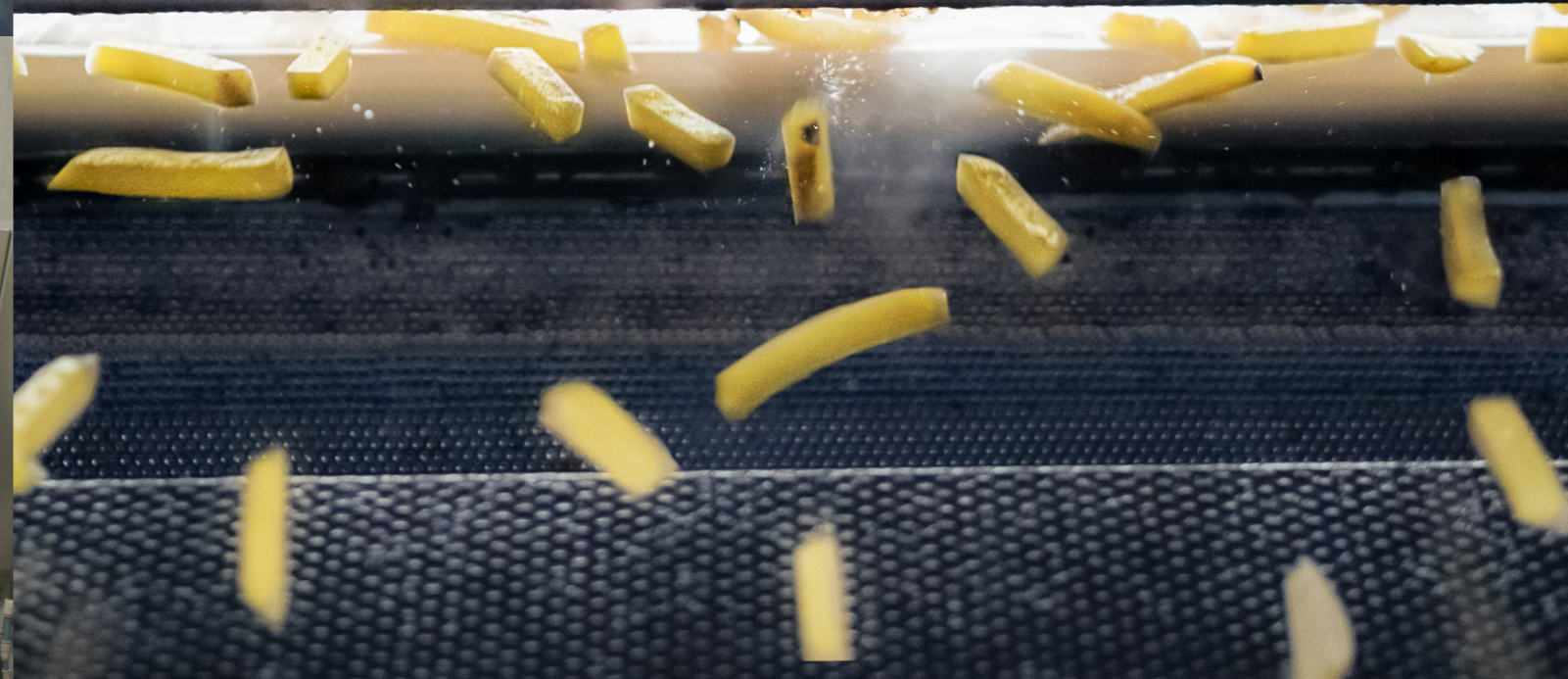
Enhanced product quality not only builds trust and strengthens the relationship with your customer, it also maximizes your company's yield. By effectively removing defects, the delivery of safe and pure food is guaranteed. Furthermore, eliminating costly product recalls undoubtedly increases overall customer satisfaction and reinforces your positive brand image.

Consistent Performance

Stable and reliable performance is key to keeping your factory running smoothly and profitably. TOMRA's solutions offer you the latest in technology and stability during operation. At the same time, our solutions minimize energy usage and significantly reduce waste.



TOMRA's advanced sorting machines inspect billions of individual product pieces per hour, typically recovering 5-10% through higher yields and better utilization. That's equivalent to approximately 25,000 trucks of potatoes per year!



“

We aimed at becoming a world-class enterprise the first day we started. TOMRA has always been one of the world's leading companies when it comes to peeling and sorting, which is highly aligned with SNOWVALLEY.”

CWANG NAN, CEO of Snowvalley Group

“

We will be able to access international markets thanks to the exclusive cutting-edge technology we have bought, such as the latest version of the TOMRA 5B. By using this sorting machine, we know we are offering the best product on the market”

*Hilario Zapata,
Director of Operations at Benis Food*

Technology

NIR Spectroscopy

NIR spectroscopy (NIR) allows the examination of produce using light beyond the visible spectrum, into the near-infrared region. The technology detects features of the produce which are impossible to see by humans with visible light. Thanks to TOMRA's NIR technology it is possible to identify certain chemical and molecular differences and changes on the surface and within the objects being inspected.

Pulsed LED

The combination of a number of different pulses inspecting objects in the RGB and IR spectrum enable the detection of the most subtle color differences. There are numerous benefits to Pulsed LED such as being calibration free, having a long usable life, delivering high resolution and requiring less energy than traditional lighting sources.

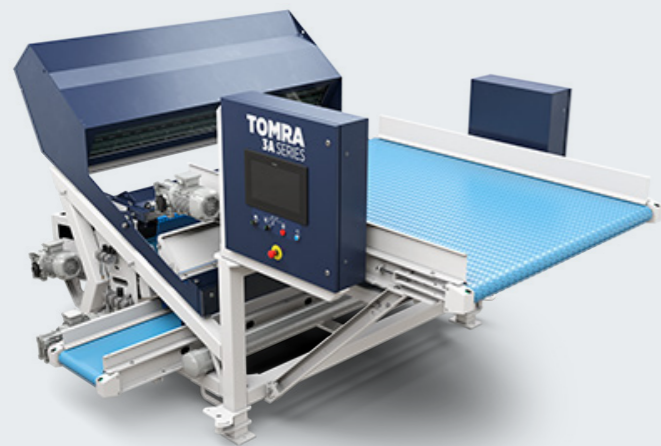
Cameras

Recognition of materials based on color, biological characteristics and shape is guaranteed thanks to the use of specialized cameras. Their capabilities go beyond the visible spectrum and include infrared, ultraviolet and other spectra. TOMRA has developed cameras, exclusively for use in our machines, with adapted spectrum – ideal for optical food sorting.

Lasers

The lasers in TOMRA's machines sort based on color, structure, and biological characteristics. Laser scanning detects contaminants even when the product and the defects are the same color.

Our Sorting Solutions



TOMRA 3A

The TOMRA 3A is specifically designed to sort unwashed potatoes directly from the field. With a robust, durable design capable of processing 100 tons an hour, the TOMRA 3A is powerful enough to meet your high demands for removing foreign material at harvest. The solution is equipped with multi-spectral NIR sensors to enable the detection of soil clods, stones, and foreign material at very high capacities. Newly integrated AI-driven classification improves the sorting of foreign material to help distinguish between soil-covered potatoes and dirt clods with precision. Additionally, color sensors enable the detection and removal of unwanted green potatoes.

The TOMRA 3A helps reduce required operator labor hours and initial training, minimize storage costs, and improve product quality. All of this helps maximize yields and overall productivity.

Equipped with a highly intuitive user touchscreen, the TOMRA 3A makes it easy to monitor the sort and maintain total control over quality. The combination of the advanced technology and extremely wear resistant finger ejectors make the TOMRA 3A a dependable, long term sorting solution.

Sentinel II

An efficient and meticulous sort of washed and peeled potatoes is made possible thanks to the Sentinel II. Meeting the needs of the potato industry, the Sentinel offers a solution for seasonal and year round processors. The customized optical configuration and cost-effectiveness of the machine dramatically increases the already very attractive ROI.

Even at high capacities the sorting performance is guaranteed and all foreign material, discolorations, blemishes and damage are removed from the stream of produce. The user interface provides the operator with live data, diagnostics and maintenance information. Sanitation is simplified and maintenance costs kept low, thanks to the open design.



TOMRA 5A

The TOMRA 5A sorter represents the latest innovation in whole product sorting technology. The machine has improved performance and added functionality to help customers address the increasing demands on the processor for food safety assurance, improved yields and lower running costs. A key feature of the TOMRA 5A is superior foreign material removal, the sorter effectively discards items such as corn cobs, wood, stems, plastics, glass and even stray golf balls. With food safety and quality being a top priority for consumers and processors alike, this innovative machine goes the extra mile to achieve optimum performance. The intuitive Peel to Spec module is available as an add-on to help the 5A form part of an automated, synchronized peeling solution.

Furthermore, the TOMRA 5A has unrivalled potato quality sorting controls. This provides processors with the opportunity to recover product which is not good enough to accept, but at the same time not bad enough to send to waste. The leftover product can be sent to re-peel or trimming lines. It can even be made into alternative end products, such as potato flakes.



Our Sorting Solutions



Our Peeling solutions

Eco Steam Peeler

The reduction of steam times is as crucial today as it has ever been. To meet this need, TOMRA developed the Eco Steam Peeler. With an incredible peeling speed, uniform skin removal and low peel loss this peeler drastically increases your company's yield. Given the major reduction in steam usage and energy savings of up to 25%, the steam peeler was granted the 'Eco' label.

The Eco technology changes the nature of the steam peeling process from fixed steam supply to a new controlled steam management system. The result is a substantial improvement in processing efficiency and a major savings in steam. The vessel is also equipped with a unique parallel motion door. A complete peeling line is equipped with a steam peeler, dry peel separator, product washer, peel scanner and an optical sorter.

Within the steam peeler range TOMRA offers the Orbit, Odyssey and Eco Steam Peeler.

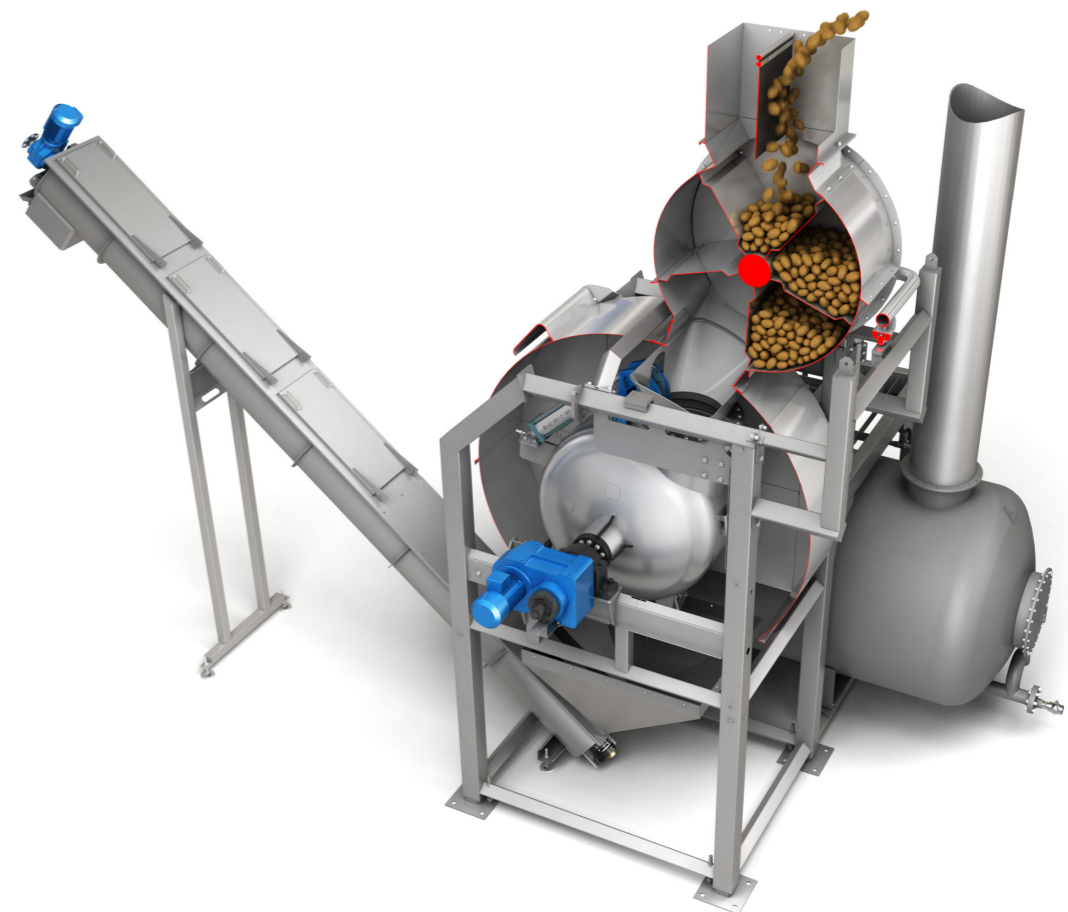


TOMRA 5B

The TOMRA 5B enables food processors to eliminate defects and foreign materials from small, wet, and frozen processed foods – all while maximizing yield and minimizing required operator labour time. A feature rich design enables operators to quickly realize the value of the 5B.

A LED dome and six cameras provide the most complete view of an object possible and deliver unbeatable detection of foreign materials and food defects. The intuitive interface is easy to use and reduces the skill level and hours required by operators.

Specifically designed for french fry processors, the Sort to Spec functionality allows operators to easily sort against specific customer french fry specifications while effortlessly adjusting to varying Incoming Defect Loads (IDL). The system's advanced algorithms and smart ejection technology help maximize yield by minimizing false ejections. Designed for speed and accuracy, the machine's new customized high-speed, small-pitch ejector valves allow for the precise removal of defective objects, at a rate three times faster than previously possible.



Pom/Dyn

The TOMRA Pom/Dyn is an important element within an organization's quality program. The solution ensures that the length distribution of French fries meets the specifications of the end customer.

The vision system can either measure the length of the product ruler wise (straight length) or following the curvature (centre line) and this with an accuracy of +/- 1 mm. Specifically selected LED illumination makes the system insensitive to product colors and color variations. Measuring 2 kilograms in one minute, the analyzer provides the operator with a fast result. Subsequently, quality control operators can make better informed decisions based on the provided length profiles.

With its intuitive design and novel approach, the Pom/Dyn size analyzer changes the way statistical quality control is carried out. Its purpose is to generate size specifications from French fries samples.

By using sophisticated shape recognition software the system will also measure curved products. Results can be stored locally or exported to the customer's network for future reference.



Working Principle

Once the product is loaded onto the belt, it is automatically transported to the measurement area. There is no need for the product to be directed lengthwise. A vision computer uses an ultrafast camera in combination with sophisticated image processing software to calculate the required parameters. The Pom/Dyn can also relate the measurement results to adjustable length specifications.

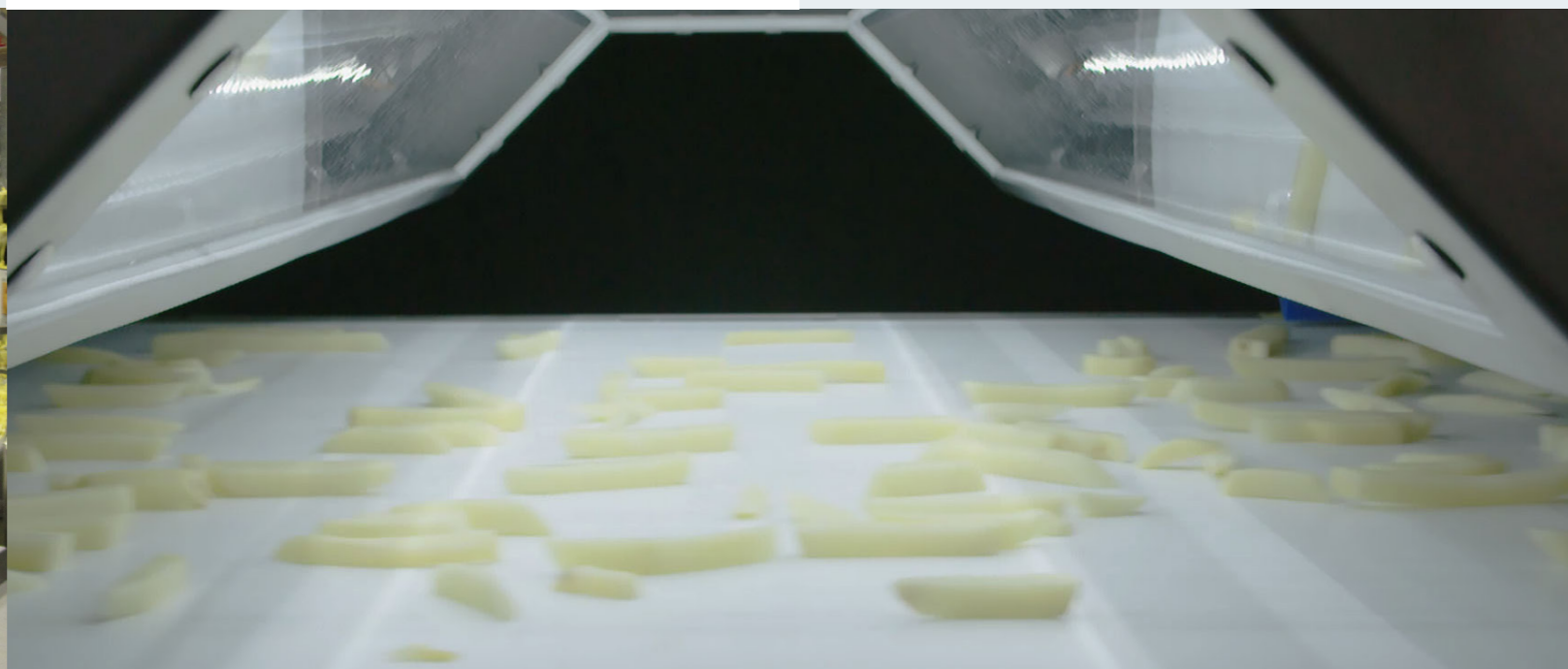
Peel to Spec Solution

Potato processors are often faced with changes in the Incoming Defect Load (IDL), resulting in the need to constantly monitor the peel quality after the peeling process and adjust the peeler's parameters to achieve optimum yields. In most cases operators will play it safe by increasing the steam peeler's steam time leading to excess steam production and yield loss. The TOMRA Peel to Spec solution overcomes these challenges by providing a control system that integrates the steam peeler, optical sorter and re-peeler.

This integrated solution allows all machines on the processing line to work together automatically, provides the greatest possible yield, and requires less skill & hours from operators.

A significant benefit of the Peel to Spec solution is the automated optimization of steam usage. By reducing steam times, processors can maximize the overall throughput in their facility and reduce energy consumption.

The Peel to Spec solution comes equipped with market leading features to deliver the ease and flexibility potato processors demand. Four different software modes combined with three different line setup options give supervisors unprecedented options to configure their facility layout. Two different capacity setups allow processors of all sizes to utilize the solution. An intuitive operator interface on the Peel to Spec control module provides real time data and delivers an easy, straightforward experience for operators.



Our Peeling Solutions

Savings that can be achieved

Mechanical peeling, using knives or abrasive techniques, removes high volumes of skin and flesh from the surface of potatoes, carrots and other root vegetables. The losses can be as high as 50%.

Steam peeling provides customers with the opportunity to dramatically reduce peeling losses, utilize higher volumes of peeled product, reduce waste and increase their profits. TOMRA's steam peeling line enables customers to manage the natural variations in the raw material to achieve the optimal yield from their process.



Peeling Line

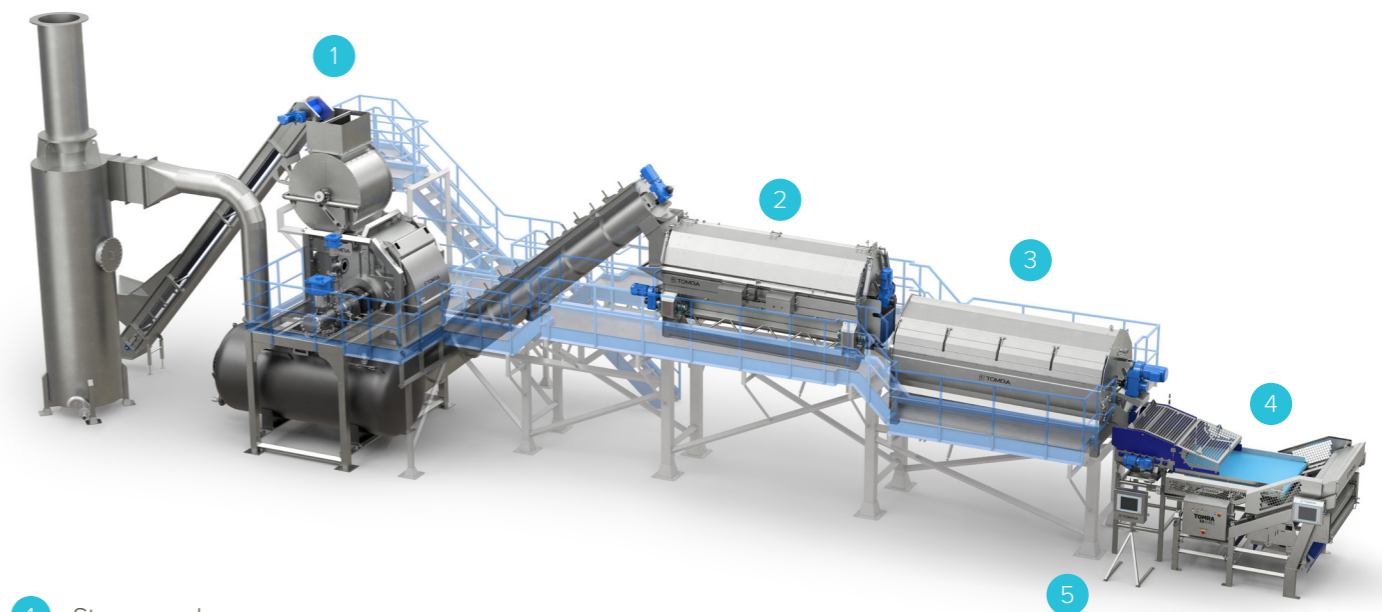
With over 35 years' experience TOMRA has focused on continuously improving the efficiency, yield and quality of the steam peeling process through the development of steam peelers and innovative peel separation solutions.

TOMRA's market leading portfolio includes machines for all stages of the potato processing line. Aside from steaming and peeling technology, TOMRA also equips potato processors with robust washing and brushing machinery. Integrating washing and brushing into the processing line allows for removal of small remaining pieces of the peel or other defects while minimizing water usage.

Tomra's equipment also manages natural variations in raw material and requires little maintenance. All of which delivers a substantial profit increase.

Benefits of Steam Peeling

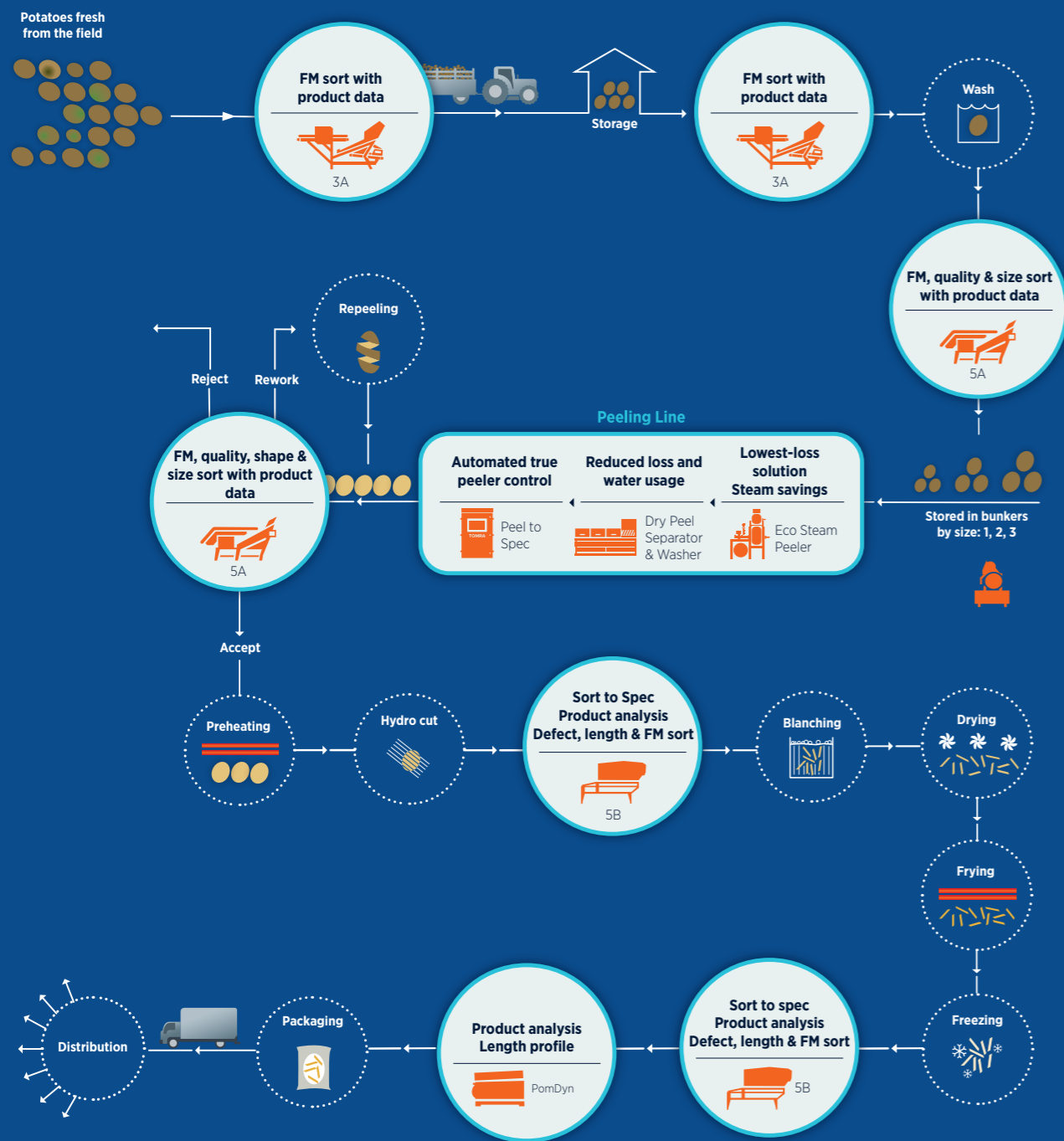
- + High efficiency
- + Reliability
- + Low operating costs
- + Limited maintenance
- + Scalability
- + Lowest peel loss
- + High capacity



- 1 Steam peeler
- 2 Dry peel separation
- 3 Product washing
- 4 Product Washing and Brushing
- 5 Peel to Spec module

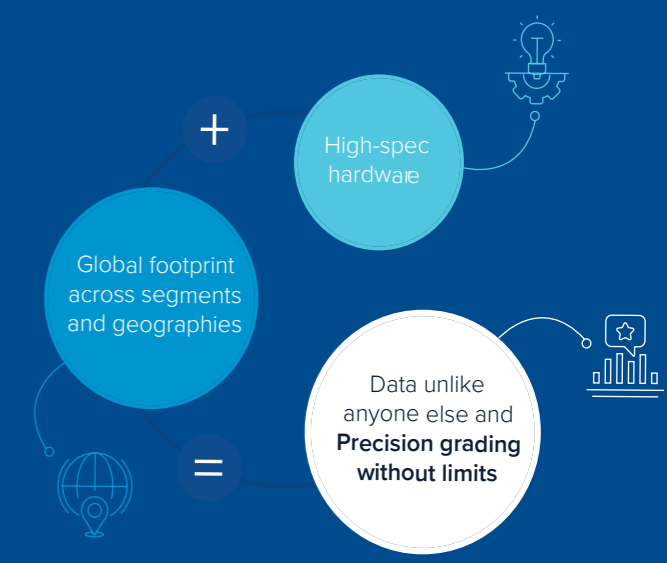
Processing Line Example

Depending on the production environment, throughput and other specific needs, we design the most efficient line lay-out. The actual machine configuration is defined based on TOMRA's experience with similar processors and after extensive testing.



Why TOMRA?

We lead the industry because:



Food Solutions

Our vision is to be the **innovative, world leader in sorting, packing, and optimization** of citrus fruit. TOMRA Food solutions are equipped with the **latest technologies** and designed to **process a variety** of products based on your **unique requirements**. Our solutions can help you **quickly sort, grade and pack quality product for your customers, maximize your own profit** and support you with your **growth aspirations**.

TOMRA Food Locations





TOMRA

Interested in a free demonstration with your own product or require more information?

Please contact us directly

www.tomra.com/food



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