

PROCESSED VEGETABLES

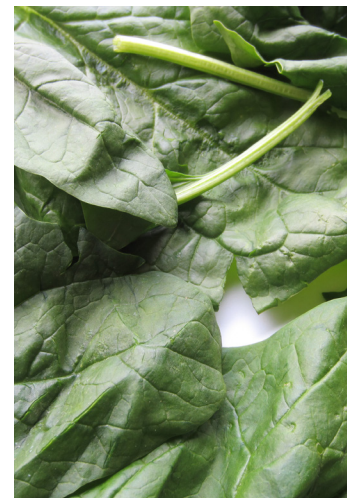
SAFE FOOD, CONSISTENT QUALITY

TOMRA Food has everything in place to meet your needs in terms of a highly qualitative output of processed vegetables. 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 limiting waste.

SORTING IS VITAL

It's your reputation on the line and just one mistake can damage it forever. No matter what part of the food industry you're in, sorting is vital. As trusted suppliers for more than forty years, TOMRA knows the challenges that

growers, packers, and processors face. And that's why we provide you with the best and most comprehensive sensor-based sorting solutions available in the food industry today.



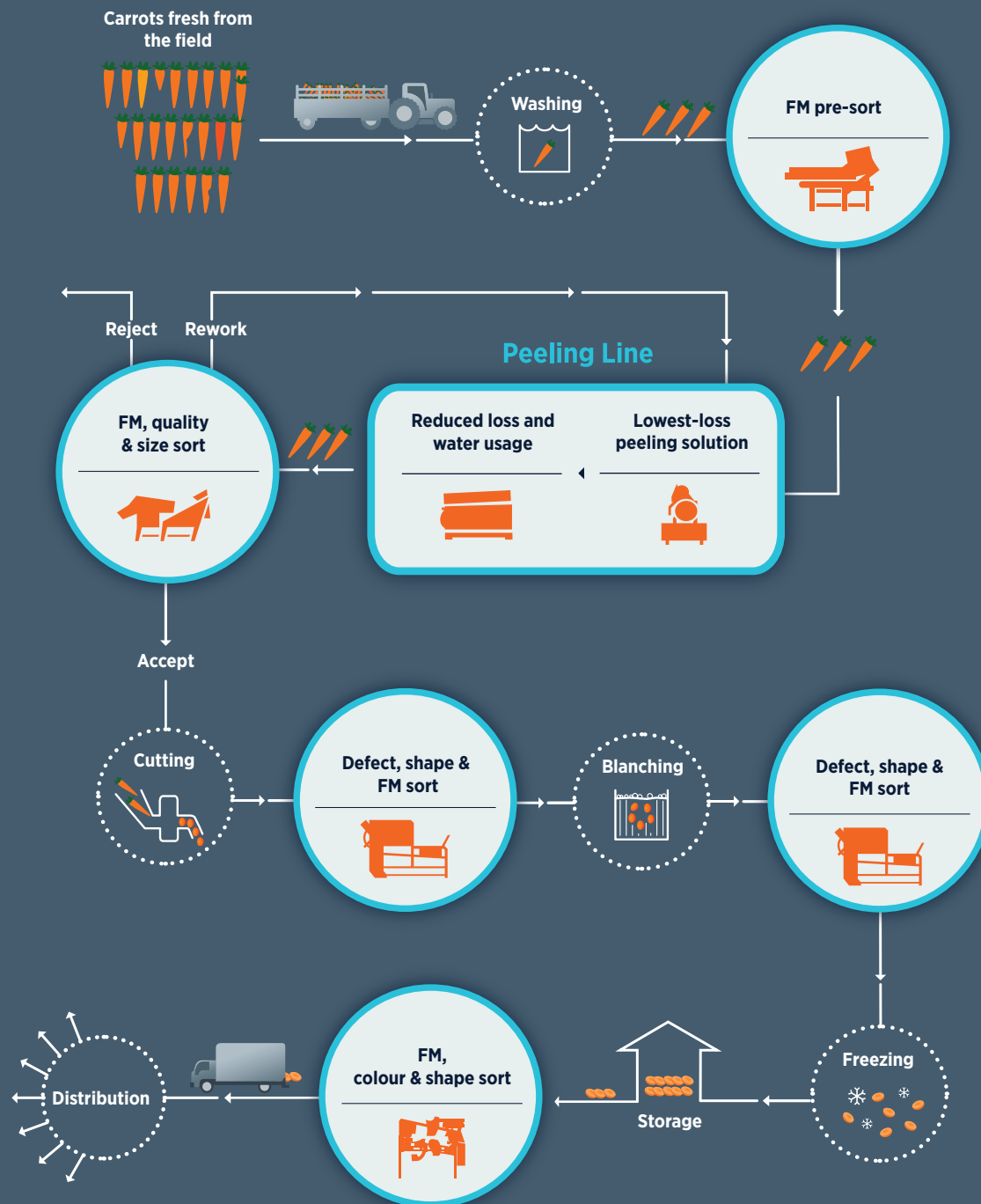
Applications:

Peas, corn, green beans, carrots, industrial spinach, bell peppers, broccoli, cauliflower,

...

SENSOR-BASED SOLUTIONS, FROM FARM TO FORK

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.



TOMRA offers a wide variety of machines for every stage in the processing line and every budget.



BENEFITS

FOOD SAFETY

The implementation of sorting technology can significantly reduce the risk of contamination from foreign material and any other unwanted materials. Limiting product recalls and claims, our solutions help to increase the overall customer **satisfaction**, protect your brand and company's reputation and reinforce your corporate image towards the market and competitors.

YIELD MAXIMISATION

An increased product value not only creates a **trustworthy** relationship with your customer, but also boosts your company's productivity. Providing smart solutions that sort your produce in the most efficient way, limiting product loss and maximising the amount of recovered produce is our goal. At the same time our solutions minimize energy usage and significantly **reduce waste**.

CONSISTENT PERFORMANCE

Stable and reliable performance is key to keep your factory running in the most efficient manner and your business competitive. Through the effective and consequent removal of unwanted material, the consistent delivery of safe and pure food is guaranteed. TOMRA is your technology partner optimizing your production flow while offering stability during operation.

TECHNOLOGY

PULSED LED

The combination of a number of different pulses (targeted frequency illumination) inspecting objects in the RGB and IR spectrum enable the detection of the subtlest color differences and enhance foreign material detection. Benefits are numerous: calibration-free, stability, long life-time, high resolution, less heating.

CAMERA

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

LASER

TOMRA's laser technology sorts based on color, structure, and biological characteristics. Laser scanning detects contaminants even when the product and the defects have the same color, or when unwanted materials are invisible for the human eye.



“The solution from TOMRA Food has given us stability and flexibility in the running of our plant.”

Guy Saint-Lo,
Prim’Co

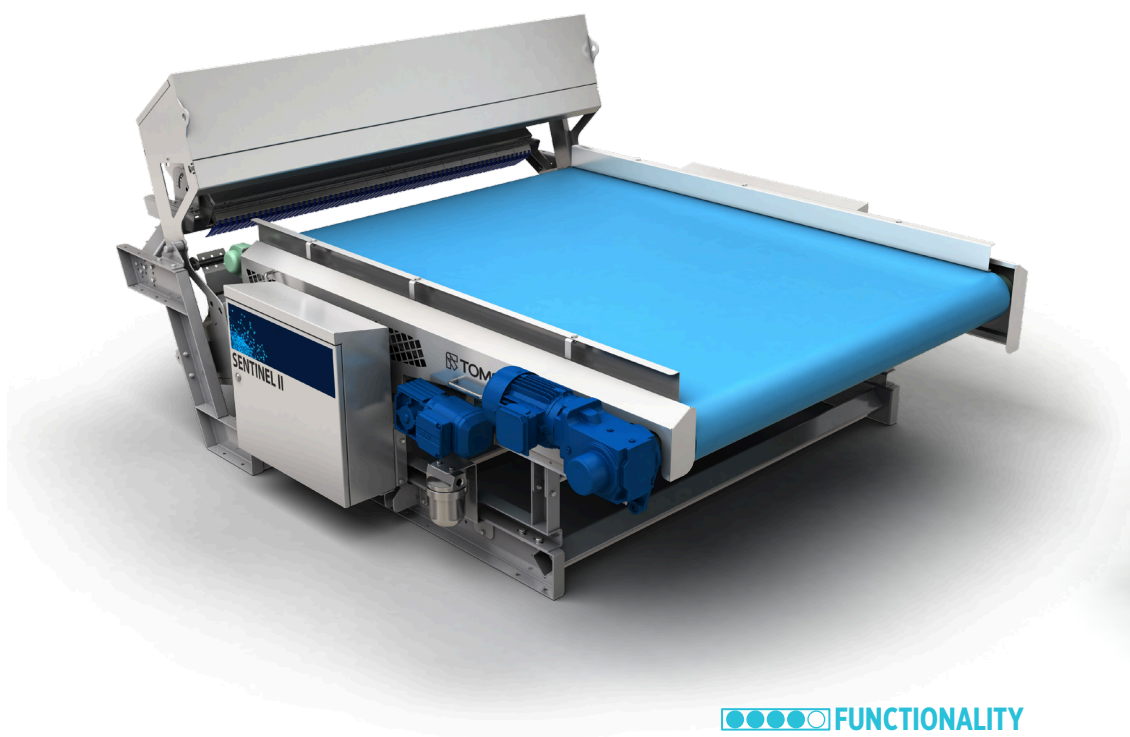
“We have an excellent working relationship with the local agent and TOMRA and this ensured that the installation process was seamless and well-managed.”

Jon Wetherell,
Project Engineer,
Birds Eye

“The advanced and innovative technologies guarantee the highest level of reliability and increase our competitiveness in the market.”

Julien Dubois,
Packing and Optical Sorting Technologies Project Engineer,
Ardo

OUR SORTING & PEELING SOLUTIONS



SENTINEL II

An efficient and meticulous sort of washed and peeled vegetables is made possible thanks to the Sentinel II. Meeting the needs of the 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 and blemishes 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.

●●●●○ FUNCTIONALITY
●●●●○ THROUGHPUT
●●●●○ FLEXIBILITY



HALO

The Halo provides a quality, shape and size sort of vegetables, both before and after peeling. Before peeling the machine sorts out foreign material and big defects and when installed after the peeler, the technology enhances the food safety and further increases the overall product quality, while maximising product recovery. Pulsed VIS/ NIR LED and high resolution sensor technology efficiently separates foreign material, discolorations, blemishes and



●●●●● FUNCTIONALITY
 ●●●●○ THROUGHPUT
 ●●●●● FLEXIBILITY



ODYSSEY STEAM PEELER

shape differences from the good produce, creating three output lanes of different produce grades. The reliable, long life and compact sorter is equipped with wear resistant ejectors and full option user interface providing the operator with live data and statistics. Low operational and maintenance costs, in combination with limited operator interaction, make it a perfect sorter for all vegetable processors.

The Odyssey high quality steam peeler is specifically designed for seasonal processors of vegetables such as red beets, pumpkins, celeriac, kohlrabi and chilies. It incorporates TOMRA's control software, an enlarged steam peeling vessel and a weigh hopper to enable customers to process a wide range of vegetables efficiently. The vessel is bottle-shaped to enable a range of large volume vegetables to be peeled.

Using a simple steam supply and exhaust arrangement, the Odyssey steam peeler is low maintenance and has low operating costs whilst delivering highly efficient steam peeling performance; making it the most cost-effective steam peeling solution available on the market. The Odyssey steam peeler comes in a range of vessel sizes to achieve efficient processing production volumes of between 4000 kg/hour – 40 000 kg/hour.

OUR SORTING SOLUTIONS



●●●●● FUNCTIONALITY
●●●●○ THROUGHPUT
●●●●● FLEXIBILITY

TOMRA 5B

The innovative machine is a highly efficient, intuitive sorting solution that has been designed to **improve yields and product quality**, with **minimal product waste** and **maximum uptime**. To achieve optimum performance, the sorter combines TOMRA's smart surround view technology with a 360-degree inspection. The technology features high resolution cameras, as well as high intensity LEDs for improved light intensity for optimal product appearance. These features reduce false rejection rates and improve

product quality by identifying each object, in turn improving color, shape detection and foreign material, and ensuring product quality. The sorting machine's new **customized high-speed, small-pitch TOMRA ejector valves**, which are part of the innovative smart ejection system, allow for the precise removal of defective products, with minimal final product waste, at a rate three times faster than previous valves.



BLIZZARD

Specifically designed for the IQF industry, the Blizzard free fall, pulsed LED sorter is the most cost-effective solution available on the market. The double sided inspection module efficiently inspects and removes all unwanted material, guaranteeing a high quality and safe product.



●●●●● FUNCTIONALITY
 ●●●●● THROUGHPUT
 ●●●●● FLEXIBILITY

The machine its compact, open and sanitary design makes it an optimal solution for integration after IQF tunnels or in packaging lines. Reduced labor costs and the machine's low energy consumption, reduce the overall costs and increase the yearly return on investment.

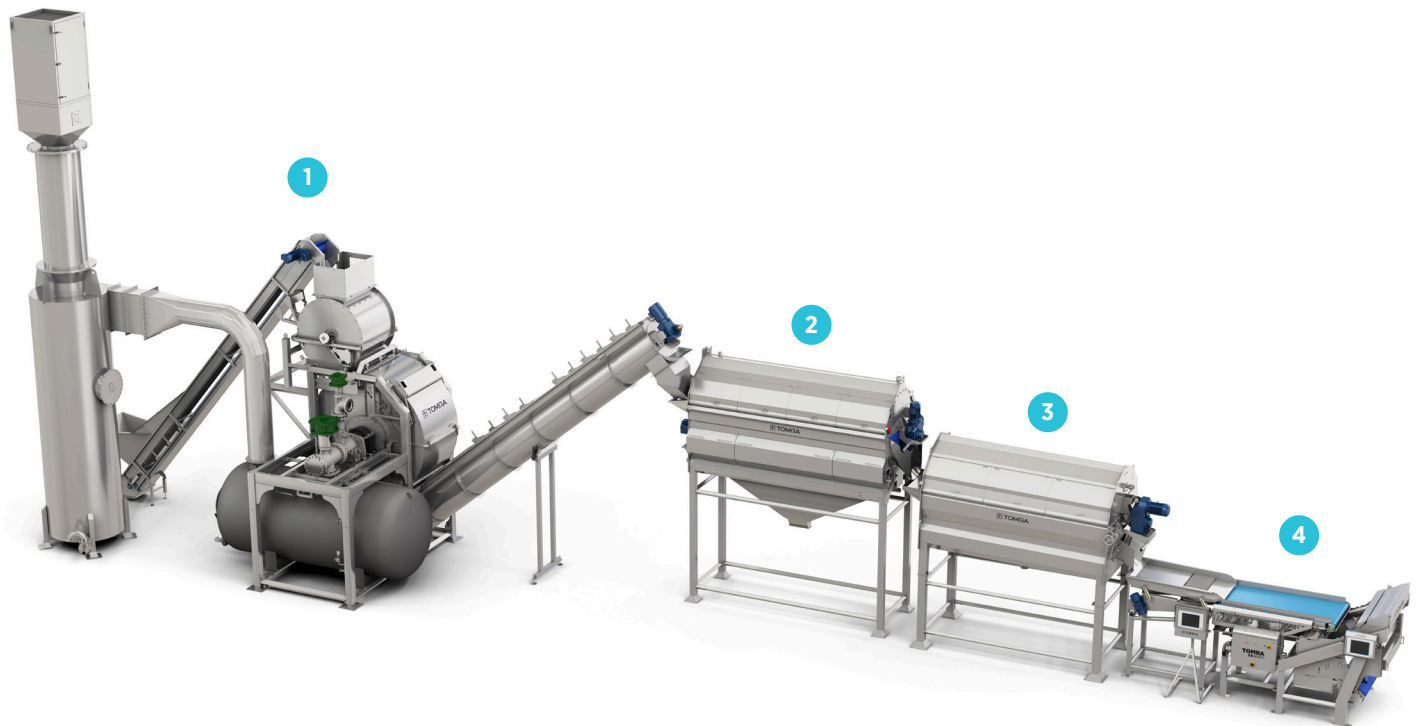


●●●●● FUNCTIONALITY
 ●●●●● THROUGHPUT
 ●●●●● FLEXIBILITY

NIMBUS

The importance of safe and reliable food grows day in, day out. Helping the vegetable processors, TOMRA developed the Helius and Nimbus, free fall laser sorters. The sorter removes all discolorations and foreign material from a stream of frozen products, and can be configured to also inspect product on its biological characteristics (chlorophyll level).

The undesired product is removed through a front or rear ejection system. The advanced technologies and mechanical design are geared to one another, limiting the quantity of false reject, increasing productivity and yield.



- 1 Steam peeler
- 2 Dry peel separation
- 3 Product washing
- 4 Optical sorter

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.

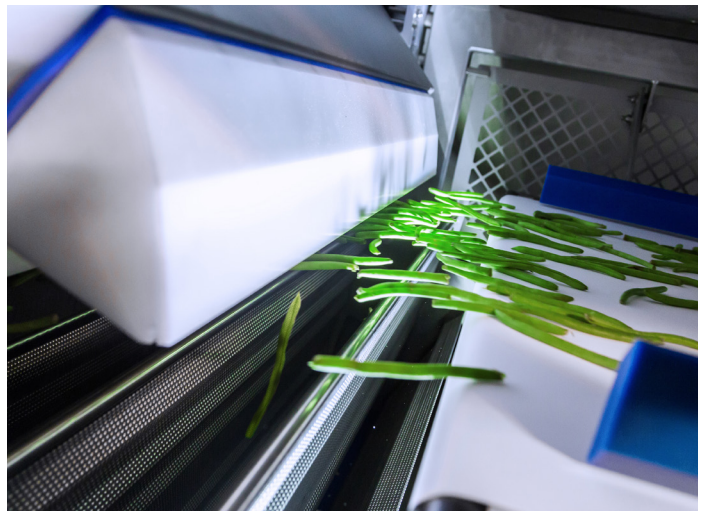
Mechanical peeling, using knives or abrasive techniques, remove high volumes of skin and flesh from the surface of carrots and other root vegetables. The losses can be as high as 50%.

Providing customers with a higher volume of peeled produce, significantly reducing peeling losses, other waste, and energy consumption, our machinery is the best investment to maximize your yield.

Our equipment also manages natural variations in raw material and requires little maintenance. All of which resulting in a substantial profit increase.

BENEFITS OF STEAM PEELING

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



ADVANCED SORTING PARAMETERS

<ul style="list-style-type: none"> ● Gross ●● Good ●●● Excellent 	Function SENTINEL II	High performance HALO	High performance TOMRA 5B	Function BLIZZARD	High performance NIMBUS
Technology	PULSED LED	PULSED LED	CAMERA & LASER	PULSED LED	CAMERA & LASER
Rejection	2-3 way	2-3 way	2-3 way	2 way	2-3 way
Detailed size/ geometry		●●●	●●●	●●●	
Detailed shape		●●●	●●●	●●●	
Subtle color		●●●	●●●	●●	●
Subtle blemish		●●●	●●●	●●	
Subtle defect		●●●	●●●	●●●	
Damage		●●			
Moisture				●●●	●●●
Biological characteristics			●●●		●●●
Foreign material	●●	●●●	●●●	●●●	●●●
Advanced Foreign Material Detection			●●●	●●	●●●
Stones	●●●	●●●	●●●		●●●
Soil	●●●	●●●	●●●		●●●
Density			●●●		
Data	Yes	Yes	Yes	Yes	Yes

Machine brochures available on www.tomra.com/food or on request.



You are a Resource Revolutionary.

TOMRA Food is the leading provider of sensor based sorting, peeling and processing technology for the fresh- and processed food industries.

Turning yield into usage, profits into progress, TOMRA transforms the way the world obtains, uses, and reuses its resources.

If you are interested in a free demonstration with your own product or if you need more information, please contact us directly.



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