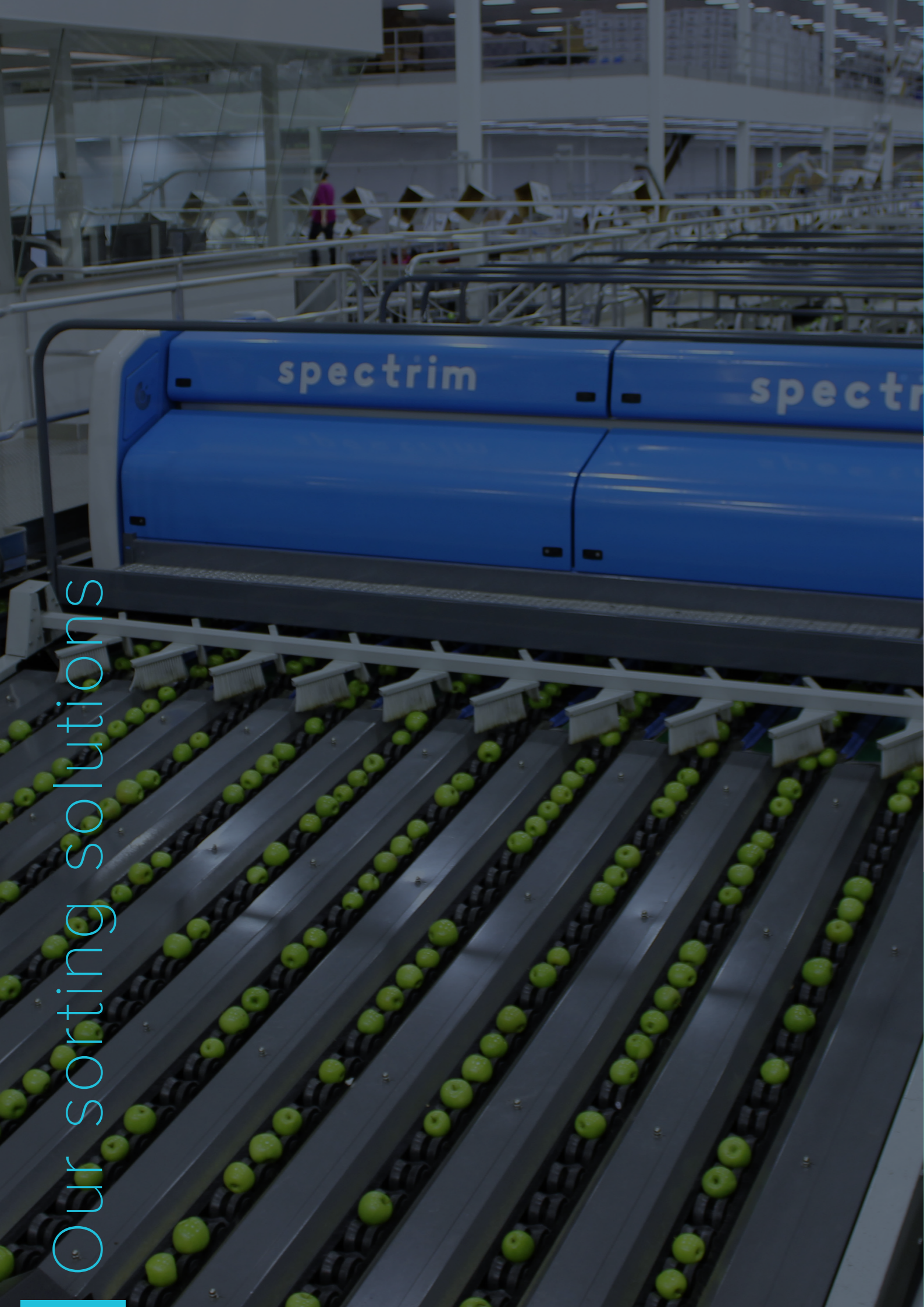




# Sorting & Filling Solutions

Apples



Our sorting solutions

# TOMRA 5S Advanced

The TOMRA 5S Advanced builds on 40 years of experience of providing class-leading multi lane sorting machines that revolutionize food safety expectations. It is the only platform truly designed for hygienic operation, with toolless cleaning and sanitization, and food safe contact areas. With its advanced connectivity features, it is designed to be the heart of the packhouse and meet the industry's evolving needs, futureproofing the customer's business for the next 10 years.

Redesigned from the ground up, the TOMRA 5S Advanced represents a major evolution in the industry, delivering the perfect balance between gentle handling, food safety, people safety, throughput, and cost of ownership.

## Advanced Inspection Systems:



### Spectrim

Spectrim is the industry's most powerful optical sorting platform. It allows our customers to reduce labor and tighten control of what fruit goes into the box, reducing waste and getting more of their crop graded as a premium product.

### Inspectra<sup>2</sup>

Inspectra2 enables you to pack the previously unpackageable batches – sorting internal defects with confidence and ensuring that you deliver a product that will delight your customer.

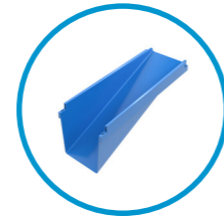


# TOMRA 5S Advanced



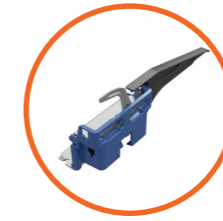
## Advanced carrier design

- TOMRA's proprietary carrier design enables a single carrier to gently singulate, rotate, weigh and eject produce without any additional fruit transfers
- Dual sided tipping to improve gentle handling



## Clip out polymer chutes, backstops & sweeps

- Polymer chute outlets deliver improved fruit flow and maintain excellent handling in an easy to clean design
- Brush drop outlets maintain class leading handling while delivering easy brush exchange and maintenance



## Soft-Tipping Solenoid

- Food Trust solenoid delivers improved reliability of maintenance through a simple clean-in-place design
- Dual sided tipping to improve gentle handling
- Juice resistance hygienic design



## TOMRA chain

As we push the sorter longer the quality of the chain becomes vital to maintaining performance. The TOMRA chain reduces wear, enhances corrosion resistance and mitigates chain-stretch, improving reliability and machine uptime

Revolutionary Design | Food Trust Materials | Electrical Backbone | Toolless Components

## Food trust front

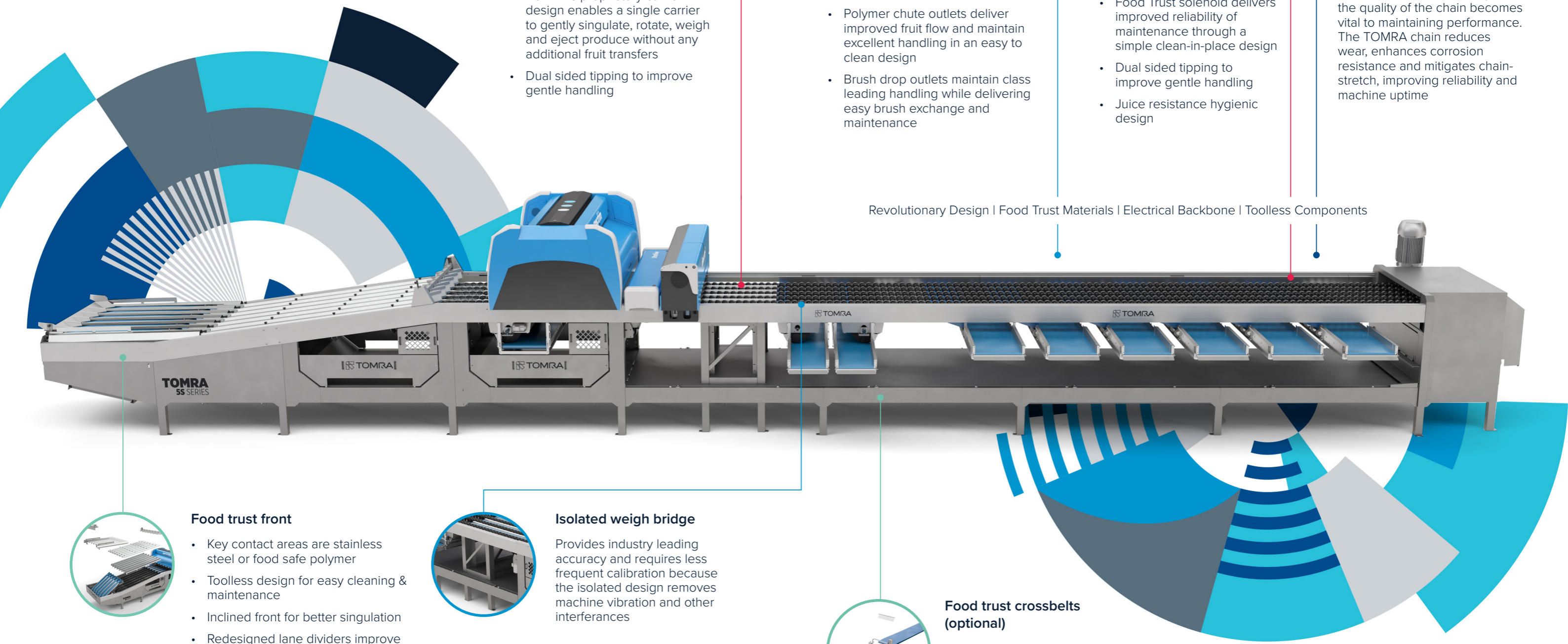
- Key contact areas are stainless steel or food safe polymer
- Toolless design for easy cleaning & maintenance
- Inclined front for better singulation
- Redesigned lane dividers improve gentle handling and versatility when sorting multiple fruit types

## Isolated weigh bridge

Provides industry leading accuracy and requires less frequent calibration because the isolated design removes machine vibration and other interferences

## Food trust crossbelts (optional)

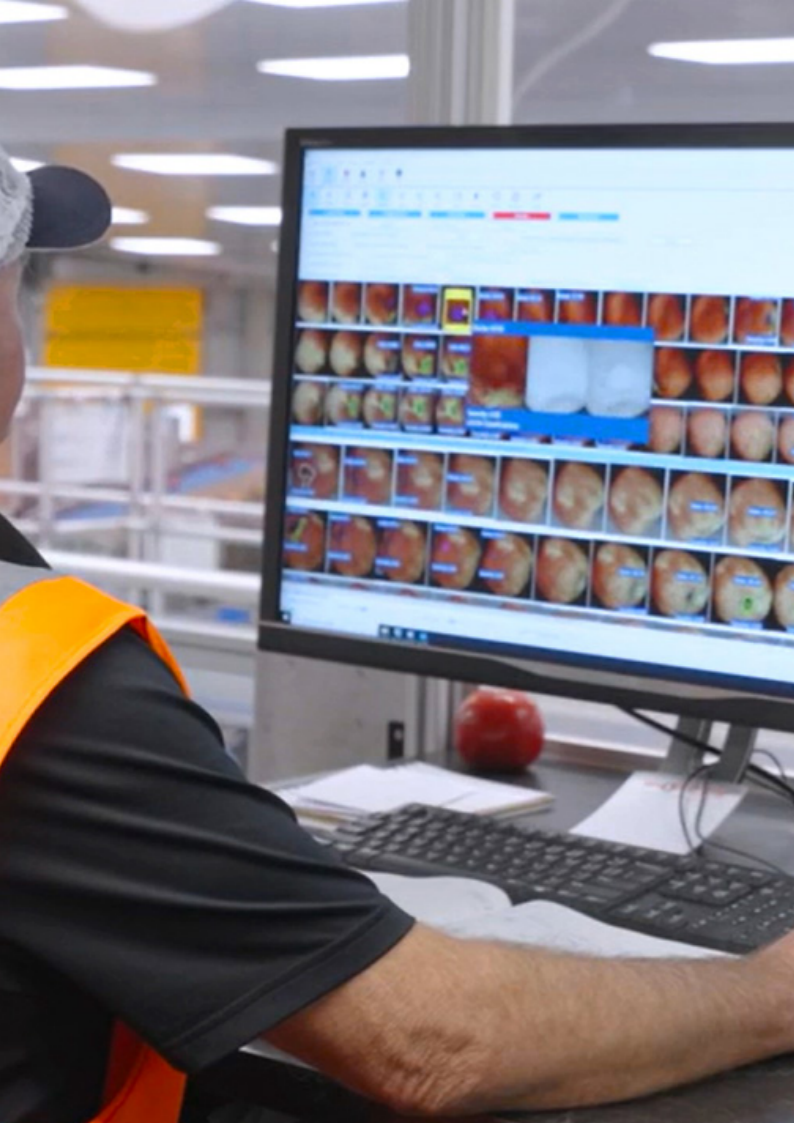
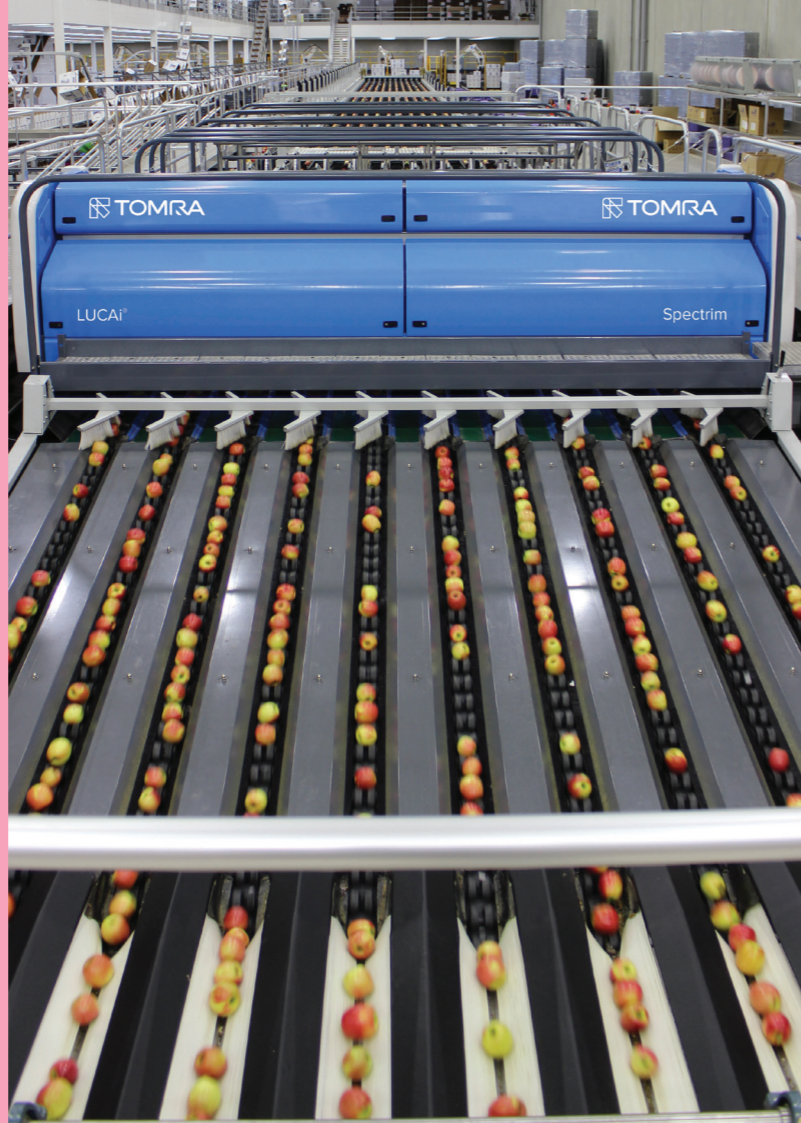
- Toolless detentioning and removal of components
- Clean-out-of-place (COP) designs enable the swap of contaminated components in a few minutes
- Reduced cleaning downtime for maintenance



# Spectrim with LUCAi®

Our latest intelligent optical sorting and grading platform for Apples is here, Spectrim with LUCAi®, powered by TOMRA's LUCAi® Deep Learning technology. Spectrim with LUCAi® will ensure your business is able to tackle the challenges of today, and the future.

Maximize your crop yields and minimize fruit loss like never before. Achieve higher productivity with fewer grading errors and keep your production running seamlessly this upcoming season.



## Benefits of Spectrim with LUCAi®

- Prevents accidental downgrades and eliminates manual grading delays.
- Enhanced user-friendly interface ensures operators of all levels can get the most out of each model.
- Ensures consistency across seasons, batches, varieties and operators.

## What sets Spectrim apart?

### → User friendly interface

We understand that finding and retaining skilled staff can be difficult, and expensive. That's why at TOMRA, we ensure our user interface is intuitive and easy to use for all operators. We take the guess work and time out of operating your line. Your able to make quick changes on the go without sacrificing the overall efficiency of your line.

### → Designed for Accuracy

Spectrim contains new and more powerful grading algorithms which build a far more accurate 3D model of each fruit.

Utilizing the 300 images generated by the system and increased computational power of TOMRA Food's unique algorithms, Spectrim delivers both incredibly powerful grading performance, quickly, and a system which is easy for the operator to use.

### → Powerful Imaging

Spectrim is the most powerful industrial imaging platform to be introduced into the produce industry. It leverages all our learnings from previous systems and developments in machine-vision systems, as well as research findings from other industries.

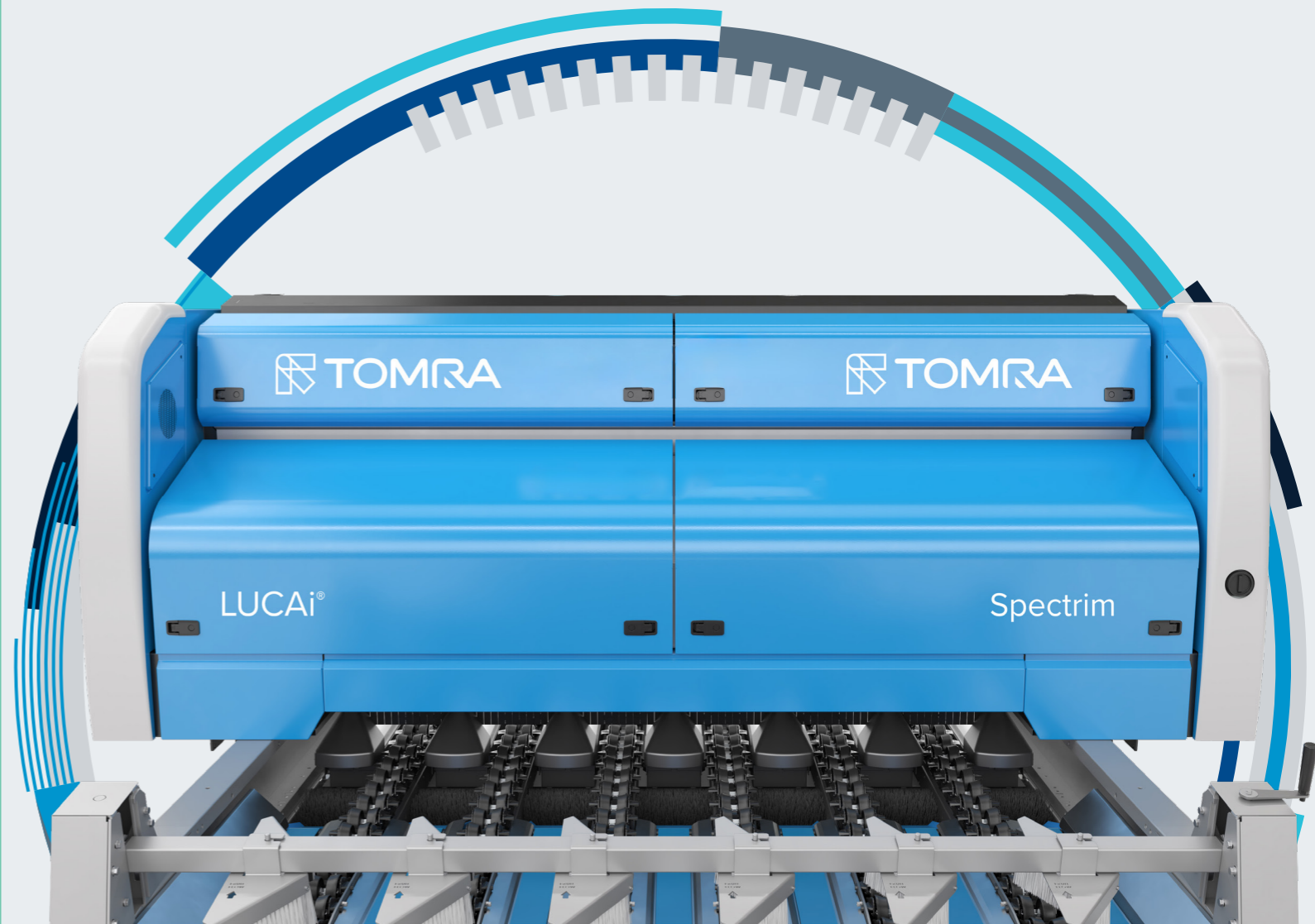
### → Lighting

Spectrim allows produce to be lit in a way that minimizes shadows and reflections across lanes. This ensures illumination power and consistency on your produce, which is critical for superior grading.

### → Sensors & Cameras

Spectrim's sensors and cameras generate up to 30 images of every piece of produce at the highest clarity through a combination of superior lighting and high quality optics.

Spectrim uses multiple wavelengths when processing images. Each wavelength can be configured to target specific defects.





## Inspectra<sup>2</sup>

Inspectra<sup>2</sup> NIR platform delivers high accuracy on internal quality without the operational overhead of traditional systems. Near-infrared inspection (NIR) analyses the spectra of light that is transmitted through every piece of produce to determine internal characteristics. Beyond protecting and enhancing your brand, NIR can increase profitability through supply chain optimization and reduced waste.

Inspectra<sup>2</sup> is designed to make NIR mainstream by consistently delivering high grading accuracy while making it easy to implement in your packhouse.





## Rotofiller

The Rotofiller range has been designed to provide all your bulk dry bin filling needs, balancing throughput and gentle handling with its optimized geometry.

The Rotofiller range of models can be configured to provide bin filling for a multitude of produce, from extra delicate to larger varieties, as well as different levels of automation from manual, semi-automated, to fully automated bin handling ensuring that all project requirements are met.

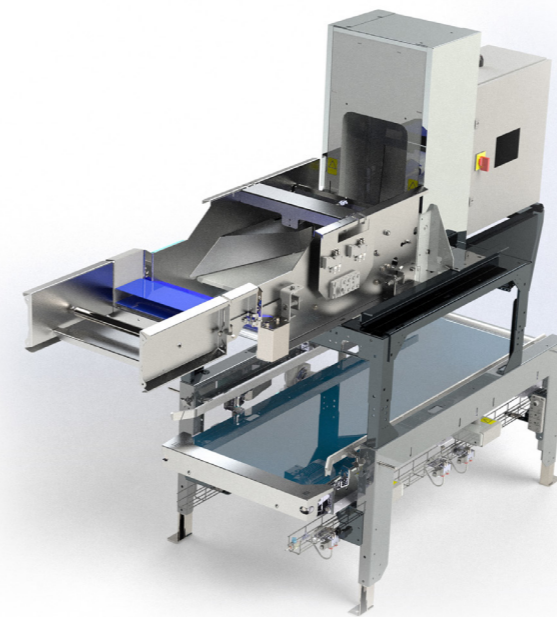


## Gentle Box Filler

Our box fillers accurately and gently fill boxes and cartons of various sizes. Our box fillers have accuracy down to a single piece of produce and can fill at speeds of over three boxes per minute. Using our innovative sizer software and a feed belt equipped with sensors, every individual piece of produce is counted as it is packed into a box or carton. Our box filling weighing option ensures boxes meet a certain weight while still can fill at speeds of over three boxes per minute.

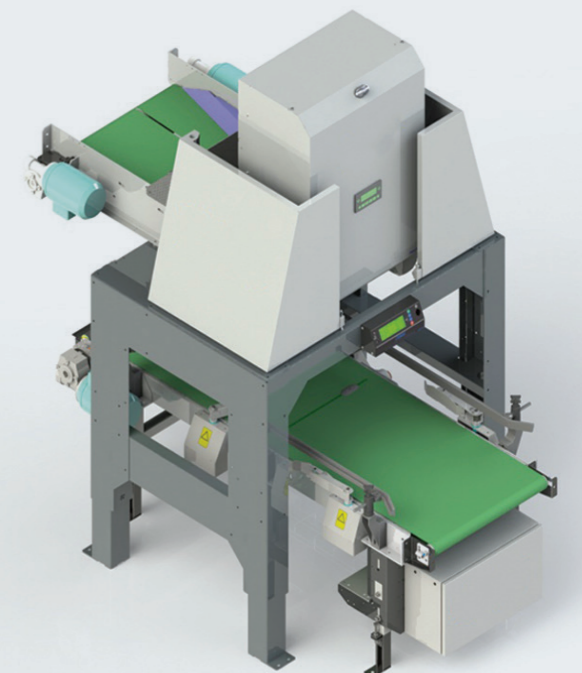
### Benefits

- Unparalleled gentle fruit handling
- Commodity flexible
- Robust and Reliable
- Reduces packing staff numbers



## Weighing Gentle Box Filler

Weighing Gentle Box Filler (WGBF) is the ideal solution for accurately filling boxes and cartons of various sizes. The WGBF has the ability to fill three to four boxes per minute to an accuracy of one piece of produce. Using a split feed belt with sensors the WGBF is able to count every piece of produce packed into a box or carton. Combined with the weighing of each box or carton this results in a highly accurate pack out





## Food Solutions

Our vision is to be the **innovative, world leader in sorting, packing, and optimization** of apples. 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**.



## Supporting the global Apple Industry

With over **1.000 lanes of optical apple sorting** and installations in **countries across the globe**, TOMRA Food is the **leader in sorting and packing solutions for the Apple industry**.

TOMRA Food offers a range of **packhouse solutions for all sizes** of operations and **varietals of apples**. In addition to size, color, and internal browning, we also offer **artificial intelligence systems** for superior grading on **external defects like bruising, punctures, stem splits, bitter pit, hail damage and shrivel**.

With TOMRA you can have technology from a **worldwide company** with localized **service and post-sales support**, ensuring you continue to get the best from your TOMRA solutions.



## Helping our customers succeed

TOMRA understands the Apple industry, and we know things are changing quickly. Whether you're a grower, packer or importer, we know what you need to succeed. You can rest assured that our solutions will focus on what's important to you.

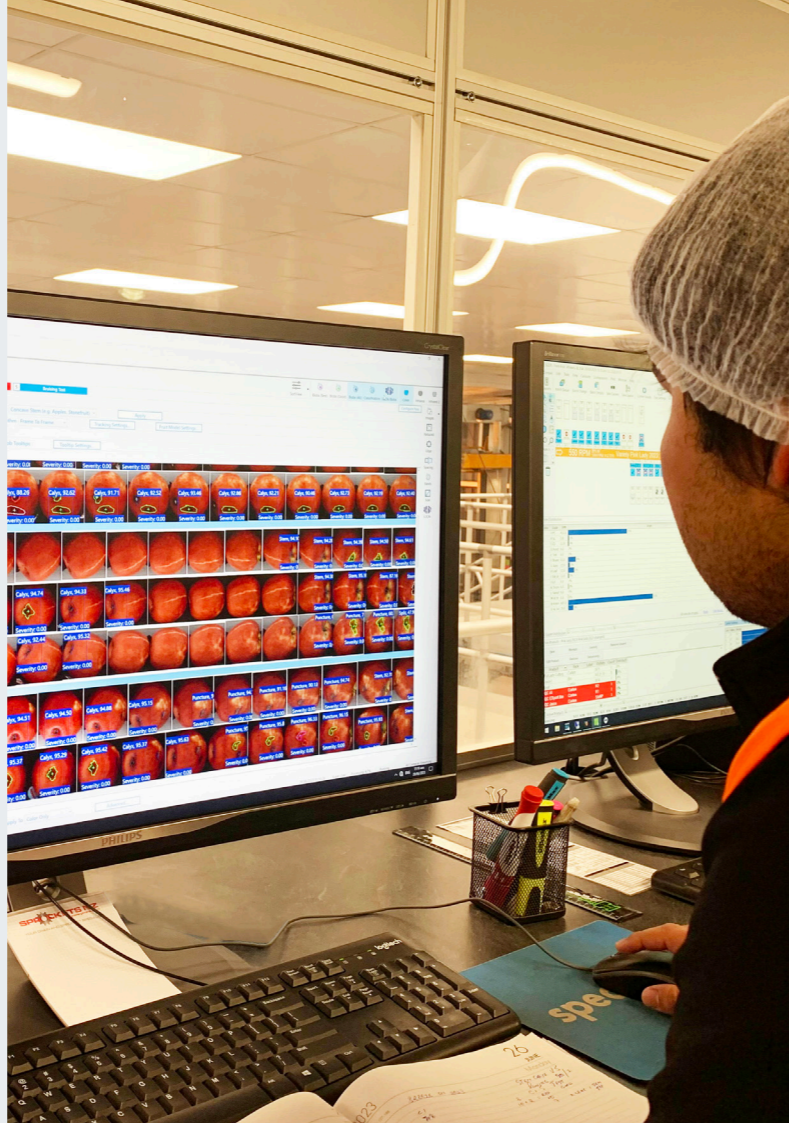
- Gentle handling of fruit across the line
- Improved operational efficiency & manual labour reduction
- Specific classification of Apple and accurate defect detection
- High speed and accurate filling systems
- Simple & intuitive user interface

# Right product, right pack, season after season: AI at TOMRA

Setting the right grading tolerance takes discussion, time, effort, and labor – and the one thing that remains the same is that the next season will be different.

TOMRA Food's AI capabilities extend across our entire active product line. From deep learning to simple machine learning applications, our AI features and capabilities support your strategic decision-making and lift the burden from your operators.

The result: right product, right pack, season after season – no matter where the year takes your business.



## Where will we go next?

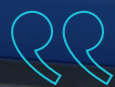
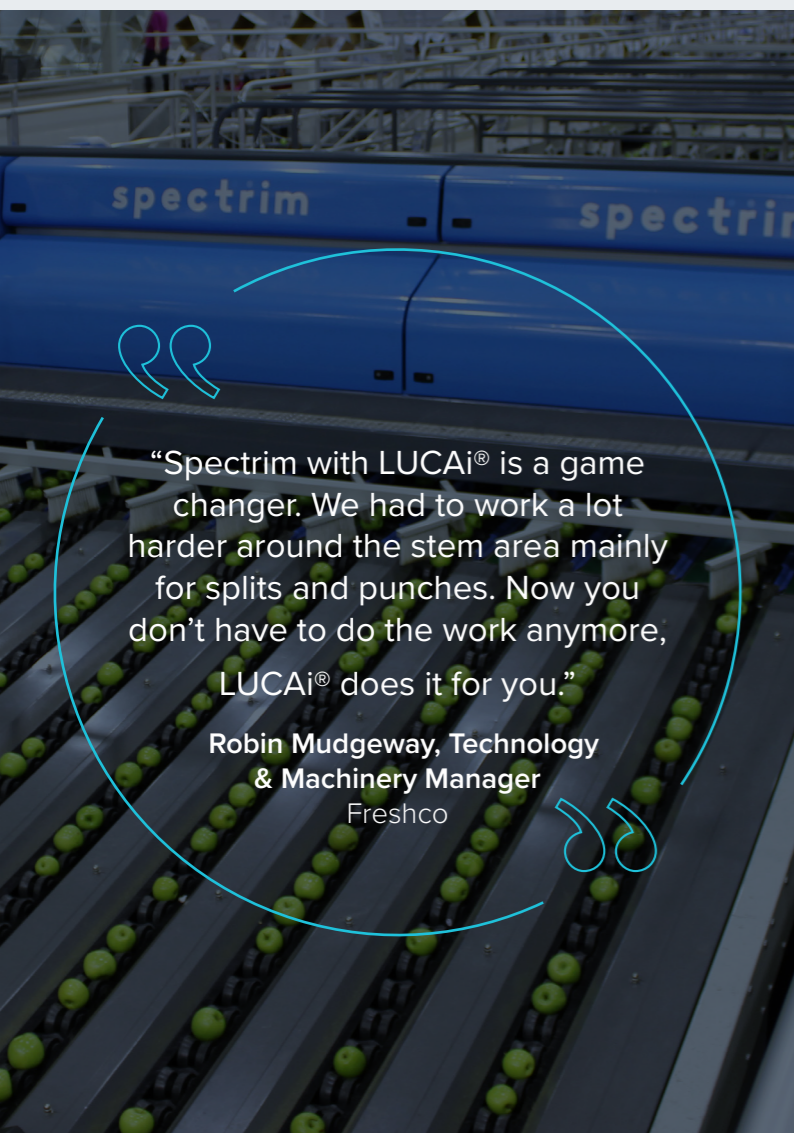
TOMRA Food aims to extend its deep learning algorithms across the commodities we serve – and go further. We're constantly working towards offering more precision to our customers with improved usability, so operators can raise the bar on best performance.

One thing we can predict is constant change in the global food industry, and TOMRA will be here every step of the way to support our customers, existing and new, through this journey.



“With LUCAi®, we noticed an instant change in grading accuracies. Across all apple varieties, we have less good fruit in bad and less bad fruit in the good.”

Jaritt Hays  
Monson Fruit, USA



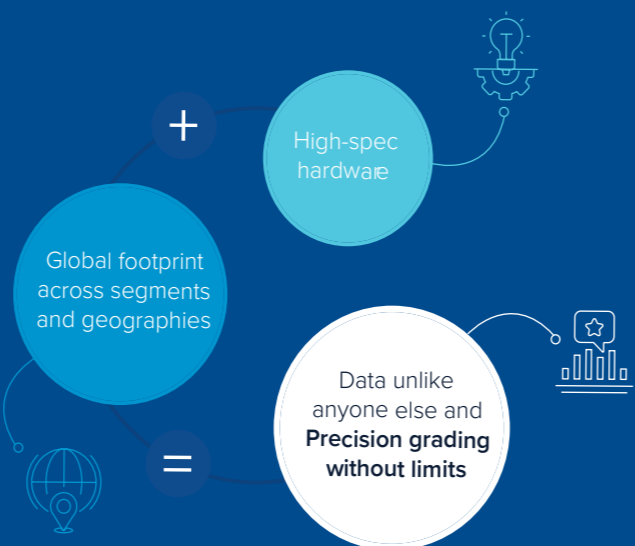
“Spectrim with LUCAi® is a game changer. We had to work a lot harder around the stem area mainly for splits and punches. Now you don't have to do the work anymore, LUCAi® does it for you.”

Robin Mudgeway, Technology & Machinery Manager  
Freshco



## Why TOMRA?

We lead the industry because:



## TOMRA Food Offices



● TOMRA Food Offices



**TOMRA**

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

**Please contact us directly**

[www.tomra.com/food](http://www.tomra.com/food)



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