

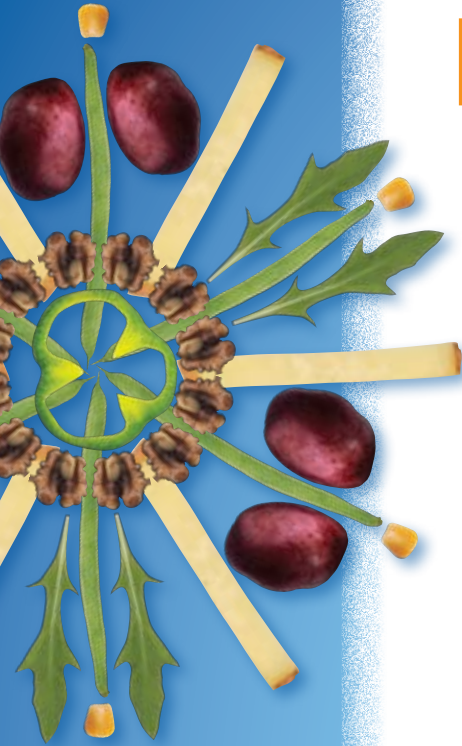
DESIGNED FOR SORTING



Color & Laser Sorting Systems
Optyx®
Tegra®
Manta®



FM and defects don't



For decades, food processors around the world have depended on Key to know what it takes to make a sorter perform. Our food industry experience and engineering knowledge make for powerful technology that gives you the ability to understand and control your product flow.

Rely on the critical elements of a Key sorter to stop foreign material (FM), extraneous vegetable matter (EVM) and defects from making it to the consumer - and ensure quality, yield and the highest level of food safety.



Uniform layer of cut corn for optimal imaging

Product Presentation

- Single, uniform layer of product
- Even spacing for optimum viewing
- Aligns / orients as required
- Stabilizes product at up to 3 m/second (600 ft/minute)



Designed for cleanliness

Structure & Support Systems

- All-stainless steel construction
- Sanitary design, sloped surfaces, minimal laminations
- Engineered for rigorous factory conditions
- On-board air/water preparation

cross these lines.

Intelligence (control)

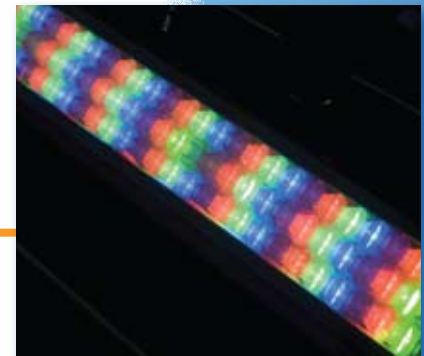
- Object-based image processing
- Contour ejection
- Valve activity tracking
- Foreign material tracking (**FMAIert™**)
- Intuitive operator interface



Foreign material tracking for whole green beans

Imaging

- Sub-millimeter spatial resolution
- Lasers: multi-spectral, depending on application, including FluoRaptor™
- Cameras: patented tri-chromatic (RGB, RGIR, RBIR, RCIR)
- Lights: HID, LED or UV



High-intensity LED mosaic

Ejection

- Precision pneumatic-based valves
- 3-way sorting capability
- Ejector spacing designed for minimum collateral damage



Clear glass removed from whole potatoes

SORTER INTELLIGENCE

Delivering value to your product and your

Key innovations provide important levels of control from the sorter's vantage point, including smart, fast decision-making based on color, shape and size for defect removal. In addition, depend on remote monitoring and real-time data gathering that enable on-the-fly process adjustment to optimize your line.



Color & shape analysis on walnut halves



FMAAlert™ image and image file list

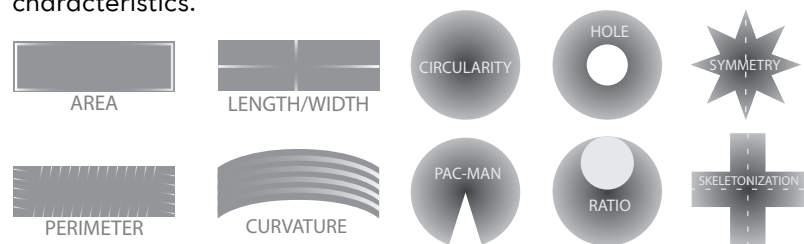


Volunteer bean removed from peas with 13 individual valves

Advanced Object-Based Image Processing

Cameras and lasers work singly or in powerful combination to distinguish good product from defects and FM by color, shape, texture or fluorescence. The G6 platform provides data for optimal product/defect separation – and instant action – via digital enhancement. **K**

Shape Sorting – Customer-specific shape algorithms, available on-menu or user-specified, can be applied – including length, width, curvature, symmetry, circularity and other special shape characteristics.



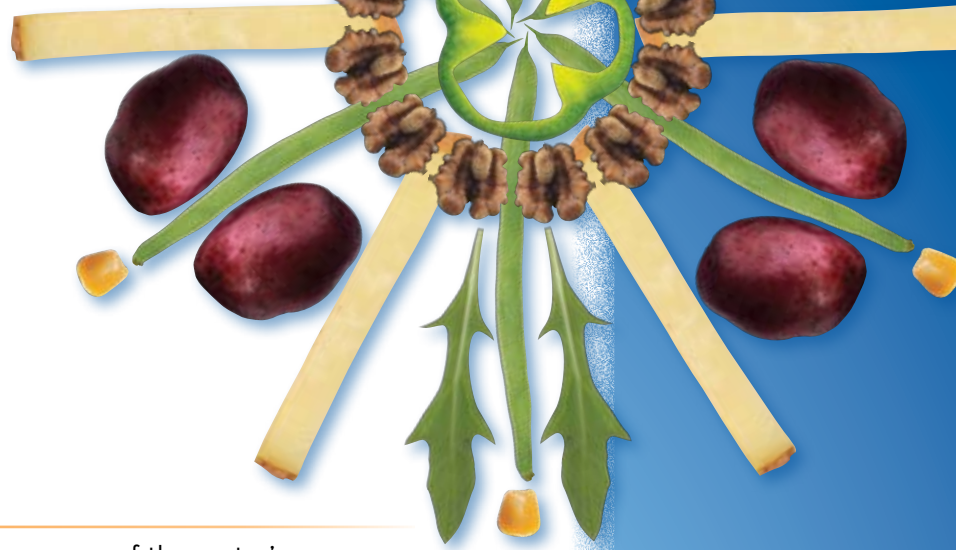
Foreign Material Event Tracking

FMAAlert™ enables sorters to capture and store a digital time-stamped and date-stamped image of every object identified as foreign material or other pre-defined class. **K**

Contour Ejection

Higher removal accuracy and minimized yield loss result from “intelligent ejection” of select defects. Ejector valve operation is mapped to the contour of objects, allowing removal of large defects and hole-shaped items such as washers and rings.

process



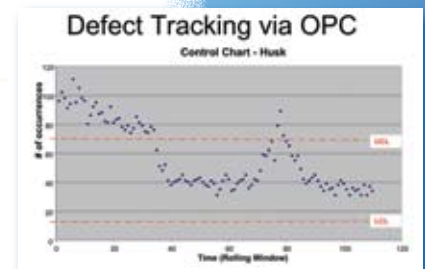
Self-Monitoring Capability

Valve Activity Tracking monitors firing frequency of the sorter's valves. If the level exceeds a pre-set threshold, a task is triggered - such as "sound alarm horn" or "activate cleaning system." **K**

Sorter Support

Ethernet Connection via OPC between the sorter and control room reduces need for personnel on the factory floor. Useful for:

- product/defect statistics
- machine control, including changeover
- machine status



Real-time data enables immediate decision-making and adjustment

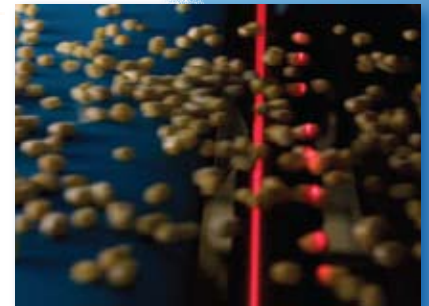
Laser Technologies

Key's Raptor Laser Technology penetrates product to identify differences in material properties. The way the laser interacts with each object allows precise characterization of good product, defects, FM and EVM.

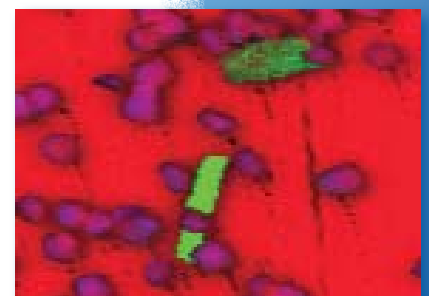
- advanced image processing algorithms provide unprecedented detection of subtle signals; for example, soft berries, such as blueberry or cranberry, are distinguishable from good berries or sub-surface pit in dried stone fruit **K**
- captures 12 million data points per second
- sub-millimeter laser spot size and resolution
- multiple-wavelength lasers increase FM and defect detection in processed and fresh-cut vegetables

FluoRaptor™ Laser

- detects varying levels of chlorophyll to separate FM (including that of similar color) and EVM from good product
- changeover from peas to corn or other products in seconds



Cut corn passes through FluoRaptor™ laser line of sight



FluoRaptor™ on-screen laser image reveals husk in cut corn

ON-BELT SORTERS

Optyx® and **Manta®** on-belt color and laser sorters are characterized by exceptional color, shape, size and texture recognition, application-specific intelligence and a wide range of capacities. These versatile, modular sorters are capable of combining a variety of cameras with Raptor or FluoRaptor™ lasers for thorough FM / EVM removal. Each can use **FMAIert™** and OPC communications to further safeguard consumers and enhance the value of your brand.

Optyx® 3000



Scan width:	610 mm (24 inches)
Capacity:	6 metric tons (13,000 lbs)/hour*

Optyx® 3000 on-belt sorter features:

- Color sorting
- HID, UV lighting
- Laser sorting
- Combination laser & color sorting
- Up to 5 different camera configurations
- Single and/or two-sided viewing
- Optional ultra-high-resolution camera
- Belt speeds up to 3 m/sec (600 ft/min)
 - Variable speed
 - Self-tensioning (auto)
 - Quick/easy change
- Integrated and automatically controlled clean-in-place (CIP) system(s)
- Air and water prep on board
- Integrated UPS power conditioning
- Integrated CIP blowers and starters included (if required)

Designed for Sorting CASE IN POINT:



Optyx® 3000 is used by green bean processors to re-sort the defect streams of other sorters and increase yields.

Result: Improved yield.

Optyx[®] 6000

Scan width: 1219 mm (48 inches)
Capacity: 12 metric tons (26,500 lbs)/hour*

Optyx[®] 6000 on-belt sorter features:

- Color sorting
- HID, UV, LED lighting
- Laser sorting
- Combination laser & color sorting
- Up to 15 different camera configurations
- Single and/or two-sided viewing
- Belt speeds up to 3 m/sec (600 ft/min)
 - Variable speed
 - Self-tensioning (auto)
 - Quick/easy change
- Integrated and automatically controlled clean-in-place (CIP) system(s)
- Air and water prep on board
- Integrated UPS power conditioning
- Integrated CIP blowers and starters included (if required)

Typical Product Applications for Optyx[®] 3000 and 6000:

cereal • confectionery • dry beans • fresh-cut (including core removal) • fruit • nuts • potatoes (chips/crisps, whole, dices, slices, strips, wedges) • prepared foods • raisins • snack foods • vegetables • wet or dry products



Designed for Sorting CASE IN POINT:

Optyx[®] 6000 FluoRaptor[™] enabled processors to cut uncored iceberg and romaine lettuce heads with conventional technology, then use the sorter to remove the core.

Result: Reduced labor costs, higher yield, longer shelf life.

* Depending on product and defect load

ON-BELT SORTERS

Manta[®] High-Capacity Sorter

Scan width: 2000 mm (79 inches)
Capacity: 20 metric tons (44,000 lbs) /hour*

Manta[®] high-capacity on-belt sorter features:

- Color sorting
- HID, LED lighting
- Laser sorting
- Combination laser & color sorting
- Up to 14 different camera configurations
- Single and/or two-sided viewing
 - Belt speeds up to 3 m/sec (600 ft/min)
 - Variable speed
 - Self-tensioning (auto)
 - Quick/easy change
 - Integrated and automatically controlled clean-in-place (CIP) system(s)
 - Air and water prep on board
 - Includes chiller on 2-meter
 - Integrated UPS power conditioning



Typical Product Applications:

- carrots • cut corn • green beans (cut, whole)
- peas • diced peaches • diced pears • potatoes (frozen strips, wet strips, chips/crisps)

Designed for Sorting CASE IN POINT:

A major US vegetable processor is able to run full factory line-flow of cut green beans through Manta[®] at over 40,000 lbs/hr, and successfully remove a specific defect that other sorters could not detect.

Result: Increased overall value.

IN-AIR SORTERS

Tegra® In-Air Sorters

Tegra® is the ultimate sorter for diced and sliced fruit and vegetables. It uniformly launches product from its non-damaging, gravitational C-Belt® conveyor - while up to four high-performance cameras get unobstructed views of every surface.

Scan width:	750 mm (29.5 inches)
Capacity:	7.5 metric tons (16,500 lbs)/hour*

Scan width:	1500 mm (59 inches)
Capacity:	15 metric tons (33,000 lbs)/hour*

Tegra in-air sorter features:

- Color sorting
- Fluorescent, UV, LED lighting
- Up to 4 different camera configurations
- Single and/or two-sided viewing
- C-Belt speeds up to 3 m/sec (600 ft/min)
 - Variable speed
- Integrated and automatically controlled clean-in-place (CIP) system(s)
- Air and water prep on board
- Integrated UPS power conditioning



Typical Product Applications:

vegetables (diced, sliced) • fruit (whole, sliced, diced) • potatoes (strips, slices, dices, wedges) • candy • coffee beans • nuts • snacks

Designed for Sorting CASE IN POINT:



Color sorting sliced peaches on Tegra® allowed a processor to pack glass jars by color for uniform appearance and high customer appeal.

Result: Increased marketability.

* Depending on product and defect load

PRODUCTIVITY

Online Connectivity for

Remote Communication and Control

By connecting your sorter to your network, your operation is set to provide powerful communication between machine, plant network and Key technical engineers:



Production operator in control room

- **Sorter-to-Network ...for statistical information**
- **Network-to-Sorter ...for control and monitoring**
- **Key-to-Sorter ...for troubleshooting and adjustment**

And building plug-and-play OPC communications into Key sorters helps make them as easy as possible to use. If a product changeover is scheduled for 11:00 a.m., your sorter is signaled to recall the exact pre-programmed settings, making the switch with no operator intervention.

Ask about more Key communications advantages.

Online Training for Peak Performance

Your in-plant team is the final design element in a powerful sort. Now you can strengthen this asset with interactive, online training courses for operators, supervisors, technicians and maintenance staff:

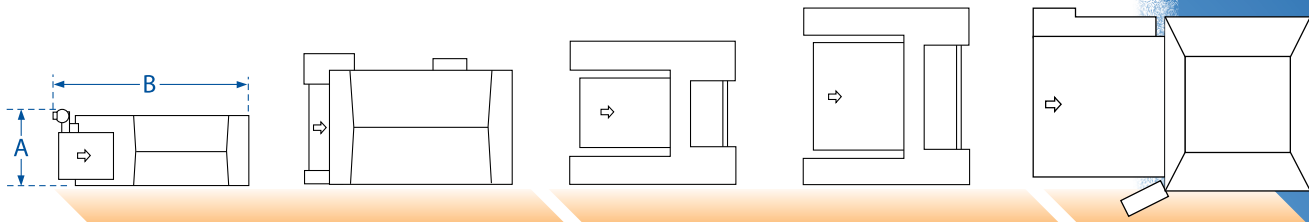


- **20-minute-or-shorter modules**
- **Self-paced, on-demand**
- **Reduce training costs**
- **Validate job skills**
- **Tailor to employees' roles**
- **Improve operating efficiencies**
- **Prove compliance with regulations**

This convenient and cost-effective training opportunity is ideal for new employees, as well as for certifying and re-certifying staff skills.

Ask about how you can **improve productivity, reduce downtime** and **eliminate waste** by making every "class" convenient and customized.

SPECIFICATIONS



Optyx

Tegra

Manta

CAPACITY

Scan Width	610 mm (24")	1219 mm (48")	750 mm (29.5")	1500 mm (59")	2000 mm (79")
Capacity* (approximate)	6 metric tons/hour 13,000 lbs/hour	12 metric tons/hour 26,500 lbs/hour	7.5 metric tons/hour 16,500 lbs/hour	15 metric tons/hour 33,000 lbs/hour	20 metric tons/hour 44,000 lbs/hour

DIMENSIONS

A - Width	1198 mm (47-3/16")	2080 mm (82")	2143 mm (84-3/8")	2753 mm (108-3/8")	2892 mm (113-7/8")
B - Length	2815 mm (111")	3276 mm (129")	2515 mm (99")	2515 mm (99")	4215 mm (166")
Height	2272 mm (89-7/16")	2413 mm (95")	2438 mm (96")	2438 mm (96")	2719 mm (107-1/16")
Infeed Elevation	1207 mm (47-1/2")	1168 mm (46")	2007 mm (79")	2007 mm (79")	1384 mm (54-1/2")
Discharge Elevation	1023 mm (40-1/4")	1023 mm (40-1/4")	1067 mm (42")	1067 mm (42")	1023 mm (40-1/4")

UTILITIES

Power	3 KVA	9 KVA	9 KVA	9 KVA	10 KVA
Air**	79 Nm ³ h (50 scfm)	197 Nm ³ h (125 scfm)	79 Nm ³ h (50 scfm)	158 Nm ³ h (100 scfm)	237 Nm ³ h (150 scfm)
Water***	8 lpm (2 gpm)	8 lpm (2 gpm)	8 lpm (2 gpm)	8 lpm (2 gpm)	19 lpm (5 gpm)

* MAXIMUM PEAK-LOAD REQUIREMENT, depending on product and defect load

** Nm³h (normal cubic meters per hour) European standard unit for air flow

*** Amounts listed are maximum; systems typically regulate to lower flows

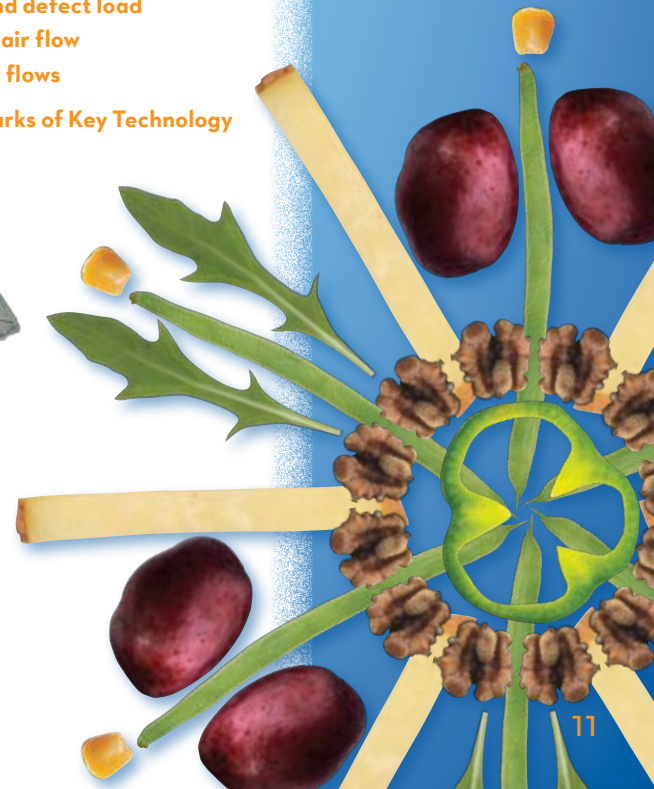
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Optyx® 3000 Optyx® 6000 Tegra® Manta®

6 12 15 20

Metric tons/hour (depending on product/defect load)



Call us, meet us, visit us online.

From fresh-cut to fresh fruit, vegetables to snacks, a Key sorter will help you remove defects and foreign material at high production speeds, while reducing labor costs and improving quality, yield and safety. **We look forward to working with you to protect your customers and your brand.**

CLICK or CALL today
for innovative, efficient,
high-yield processing
technology.
It's Key.

www.key.net



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AMG - 0709 - CP500

