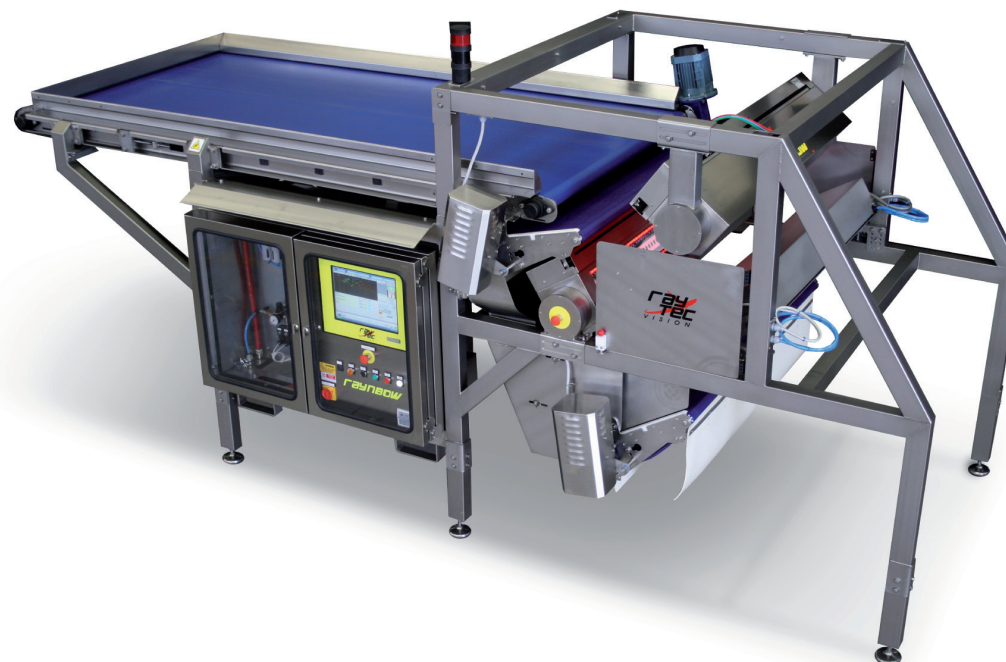


FOTOTRAINER™
TECHNOLOGY



RAYNBOW™

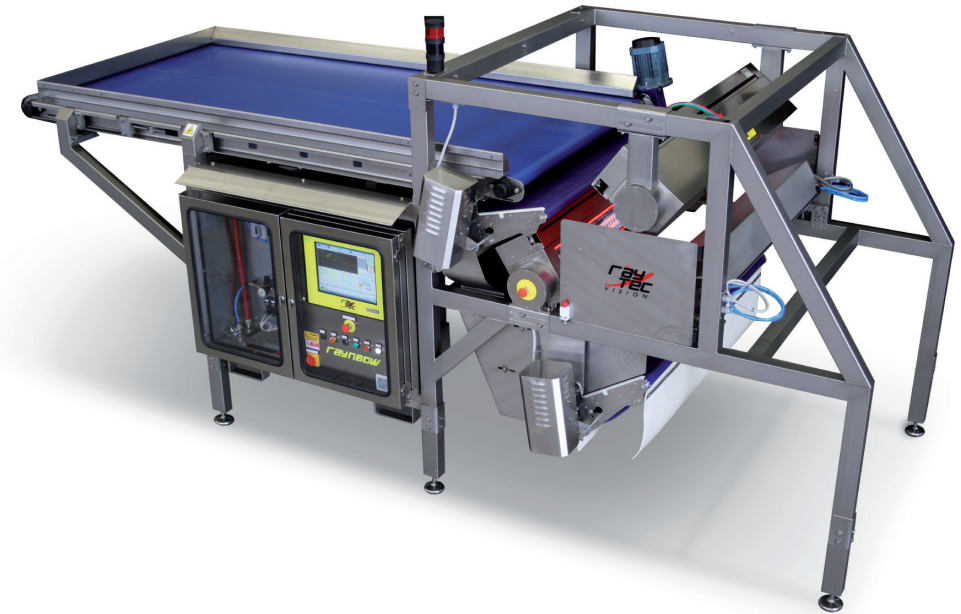
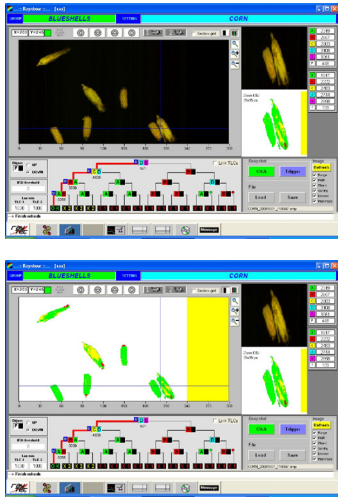


STD SENSOR SORTER
WITH ELECTRO-PNEUMATIC EJECTION

High Speed
DOUBLE PRODUCTION, SAME HIGH QUALITY

RAYNBOW™ STD

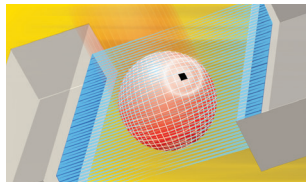
RAYNBOW™ High Speed



ver.09/2016

Selection until 4 levels

RAYNBOW is a high resolution sensor sorter. It is equipped with Visible Color and NIR technology (Near Infra Red). The system can detect the presence of organic or inorganic foreign bodies (including completely black), rotten products and color defects. Ethernet connection for remote access is available. Product traceability: the installed software allows data collection during process for offline analysis and/or traceability. The software works with four control levels which can be independently parameterized and it has a simple interface. Minimal re-calibrations of the machine are required, typically only twice per year.



Bilateral sensor vision

RAYNBOW is able to view the product from both sides. Banks of sensors above and below the product provide a comprehensive set of images for the vision system. The high quantity and position of sensors used allows a 4x4 mm pixel size.



Hexa-Chromatic lighting

RAYNBOW adopts the solid state lighting technology (L.E.D.) with 5 monochromatic wavelengths reflections + 1 monochromatic wavelength transmission. The use of light sources in the visible spectrum and in the infrared (NIR) spectrum allows for product sorting by color and by parameters which are independent from the color.



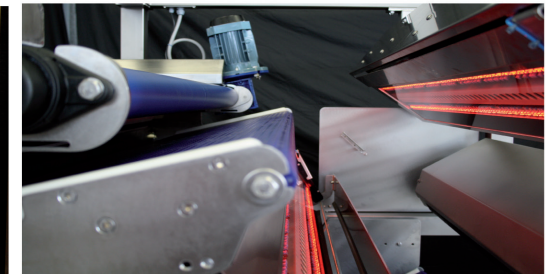
Ejection system

RAYNBOW can be equipped with electro-pneumatic or air jet ejection system depending on the processed product.

Raytec, with the introduction of the new Raynbow High Speed offers a photodiode array sensor sorter with 60% higher capacity than standard Raynbow.

Raytec have always been committed to finding the best solution with the minimum investment for customers. The market needs to limit costs without reducing quality and it is in this spirit that we have designed our **High Speed** sorter, based on the famous **Raynbow**.

The electronics of this unit are adapted to the **sorting speed**. This ranges from Raytec's standard 70 m/min (230 fpm) to 120m/min (394 fpm). Raynbow High Speed is available in the 50 channel version (50" belt width).



FOTOTRAINER™ TECHNOLOGY

The Fototrainer technology has a combination of 4 analyses that combined together make the system very efficient on contaminant detection.



LIGHTING SYSTEM

The system can be equipped with 3 different light combination:

| | RG-IR | RGB-IR | CHLORO |
|--------------------|-------|--------|--------|
| Red | ✓ | ✓ | ✓ |
| Green | ✓ | ✓ | ✓ |
| Blue | | ✓ | ✓ |
| Near Infrared 1 | ✓ | ✓ | ✓ |
| Near Infrared 2 | ✓ | ✓ | ✓ |
| Near Infrared 3 | ✓ | ✓ | ✓ |
| Chlorophyll | | | |
| Infrared Backlight | ✓ | ✓ | |

The frequencies of the visible spectrum allows color analysis. The frequencies of the infrared spectrum allows foreign bodies and rotten products detection, even when these have the same color as the good product. The Chlorophyll analysis allows foreign body detection in green products like green beans or rot in whole apples.

Blob

A BLOB is a group of pixels in contact with each other that are identified as defective by the sorting recipe. This allows the system to associate a "weight" to all the different kinds of defects that the sorting recipe can discriminate. Weight is associated with all the pixels that are identified as defective on the grabbed image. The system rejects a BLOB only if the BLOB weight (sum of the weights of all the adjacent defective pixels) is higher than a set value.

Snap

The thresholds are adjustable directly from the control panel with the Snap system.

Directly on the photo grabbed by the system it is possible to verify how the system will act on the defects and which way of rejection the defects will be assigned.

3WAY

The system allows to have two different classes of rejection.



RAYNBOW™
RAYNBOW™ High Speed

3WAY
OPTION

DOUBLE REJECT IN A SINGLE SORTER

The first sorter with 4x4mm resolution celebrates its 10th birthday, just like the company that created it!

Over 130 installations of this model of machine have been made in these years.

In 2009 the double reject sorter with pneumatic finger system was presented for applications such as potatoes, peaches, tomatoes and onions.

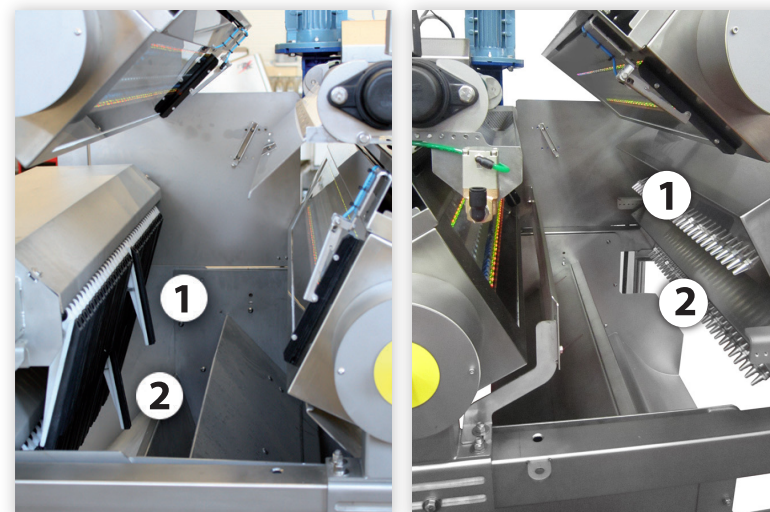
Access to new market sectors called for further evolution which Raytec immediately responded to with the addition of air jet ejection. Today we have three different versions of 3-way machines for 4 models (20,30,40 and 50 channels), all equipped with the new Fototrainer technology.



| | TOMATO | POTATO | PEELED POTATO | PEACH | ONION |
|--------------|--------|--------|---------------|-------|-------|
| GOOD PRODUCT | | | | | |
| REJECT 1 | | | | | |
| REJECT 2 | | | | | |

ver/09/2016

MECHANICAL AND AIR REJECT UNIT



3WAY

THE SYSTEM ALLOWS FOR TWO DIFFERENT CLASSES OF REJECTION:

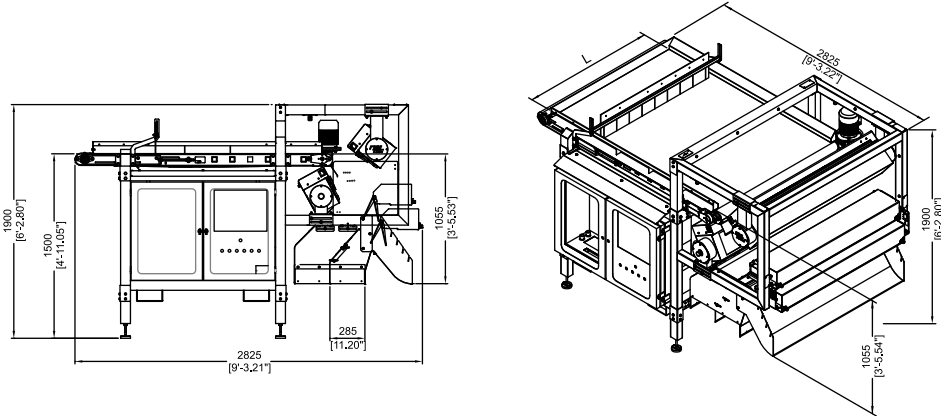
1 = good products;
2 = foreign bodies;
3 = color defects.

1 = good products;
2 = big defects;
3 = small defects.

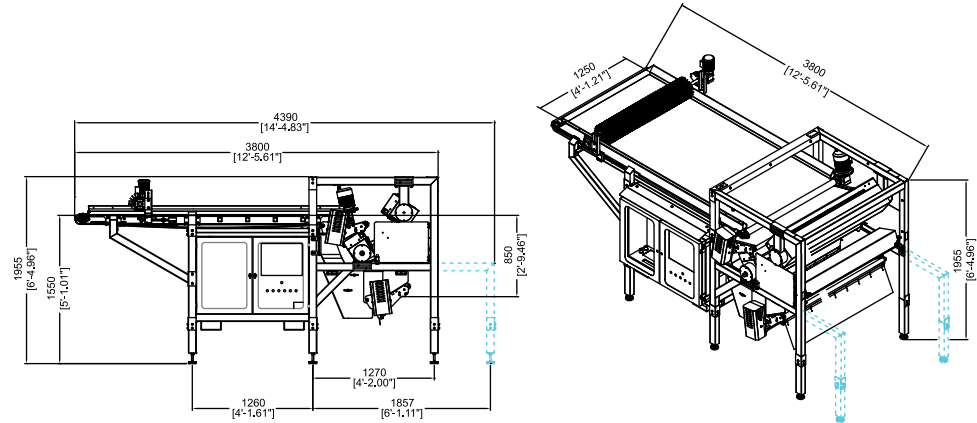
1 = good products;
2 = rotten products;
3 = fruit stones.



RAYNBOW™ STD



RAYNBOW™ High Speed



TECHNICAL FEATURES

| | 20 | 30 | 40 | 50 |
|---|--|-------------|--------------|--------------|
| Sorting channels | 20 | 30 | 40 | 50 |
| Vision area width (L) | 500mm (20") | 750mm (30") | 1000mm (40") | 1250mm (50") |
| Pixel Dimension | 4x4mm (0.16"x0.16") | | | |
| Control and diagnostic device | Interactive LCD Touch-Screen color digital panel onboard | | | |
| Rejection channel width | 25mm (1") | | | |
| Rejection type | Driven by fingers (Mod. M) / Air jets (Mod. J) | | | |
| External and/or remote connection | Ethernet and/or modem | | | |
| Vision glass cleaning device | Integrated and pneumatically controlled | | | |
| Conveyor speed | 50÷75 m/min [164÷246 ft/min] | | | |
| Power supply and consumption | | | | |
| Power supply | 3-Ph + Gnd | | | |
| Voltage | 400/480 V | | | |
| Frequency | 50/60 Hz | | | |
| Installed power | 1.3/1.5 kW | | | |
| Applied air treatment (pneumatic circuit) | Dehumidification – Filtration – Lubrication | | | |
| Lubricating system (pneumatic circuit) | Food grade and pharmaceutical compatible | | | |
| Working pressure (pneumatic circuit) | 6÷8 bar [87÷116 psi] | | | |
| Typical consumption (pneumatic circuit) | 120 NI/min [4.2 cft/min] (Mod. M)* /1200 NI/min [42 cft/min] (Mod. J)* | | | |
| Max. air flow rate (pneumatic circuit) | 1000 NI/min [35 cft/min] (Mod. M) /3600 NI/min [127 cft/min] (Mod. J) | | | |
| Water treatment (water circuit) | Filtration | | | |
| Working pressure (water circuit) | 1÷4 bar [14÷58 psi] | | | |
| Water consumption (water circuit) | Lower than 0.1 m3/h [26.4 US gal/h] | | | |

TECHNICAL FEATURES

| | |
|---|--|
| Sorting channels | 50 |
| Vision area width (L) | 1250mm (50") |
| Pixel Dimension | 4x4mm (0.16"x0.16") |
| Control and diagnostic device | Interactive LCD Touch-Screen color digital panel onboard |
| Rejection channel width | 25mm (1") |
| Rejection type | Driven by fingers (Mod. M) / Air jets (Mod. J) |
| External and/or remote connection | Ethernet and/or modem |
| Vision glass cleaning device | Integrated and pneumatically controlled |
| Conveyor speed | 120 m/min [393 ft/min] |
| Power supply and consumption | |
| Power supply | 3-Ph + Gnd |
| Voltage | 400/480 V |
| Frequency | 50/60 Hz |
| Installed power | 1.3/1.5 kW |
| Applied air treatment (pneumatic circuit) | Dehumidification – Filtration – Lubrication |
| Lubricating system (pneumatic circuit) | Food grade and pharmaceutical compatible |
| Working pressure (pneumatic circuit) | 6÷8 bar [87÷116 psi] |
| Typical consumption (pneumatic circuit) | 120 NI/min [4.2 cft/min] (Mod. M)* /1200 NI/min [42 cft/min] (Mod. J)* |
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| Water treatment (water circuit) | Filtration |
| Working p ressure (water circuit) | 1÷4 bar [14÷58 psi] |
| Water consumption (water circuit) | Lower than 0.1 m3/h [26.4 US gal/h] |