



WHEAT

Sorting Process



PIXEL FH Series



The Company:

Company Name:

SEA S.r.l.

Year of Foundation:

1970

Since May 2012:

Part of CIMBRIA Group

Staff:

At present SEA has 34 full-time employees plus external resources. All staff members are high qualified engineers, technicians and administrators.

Business Activity:

SEA designs, produces and sells ELECTRONIC SORTERS

Headquarters:

Via Ercolani, 30 - 40026 Imola (BO) - ITALY

Website: www.seasort.com

**Highly Dynamic Company
With Dynamic People**

- ✓ *Innovative, cost effective & technology driven solutions*
- ✓ *Consistent performance of high quality products*
- ✓ *Unmatched after-sales support*
- ✓ *Quicker deliveries*





The History:

In 1970

SEA introduced its first prototype of optical electronic colour sorter to the Italian market

Thanks to the successful market response, SEA developed and started producing colour sorters for grains, seeds, and other foodstuff.

In **1989** SEA entered the recycling industry, with two new series of machines specifically designed for plastic and glass cullet sorting.

In **2004** the exclusive resonance sorter collected more and more the favour of the explored markets.

Today SEA focuses on development and production of new sorters applying **monochrome, bi-chrome, IR, UV, InGaAs, resonance, and other technologies**, being a fundamental reference point for an increasing number of operators in different fields all over the world.

**More than 40 years
experience
in optical sorting!!!**





The Colour Sorters:

SEA sorters
provide
well-known
benefits

to all those
who trust
and make
use of the
best repute
Italian high
precision
technology

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ECHO

Sorters

*The use of the COLOUR sorter
has different purposes:*

- ✓ Separation of contaminants based on color differences, thus separating particles showing a different color if compared to the established ones.
- ✓ Separation of contaminants during production phase, by removing defective or non-conforming particles.
- ✓ Separation of opaque from transparent materials.
- ✓ Separation of motley streams into homogeneous fractions.



The main reason to use color sorters is the production quality improvement of a given commodity. SEA has been researching and designing electronic sorters **for over 40 years** in different application fields (foodstuff, plastics, minerals, glass from recycling, and others) with **over 2.000 sorters installed** world-wide.





The Colour Sorters – Operational process:

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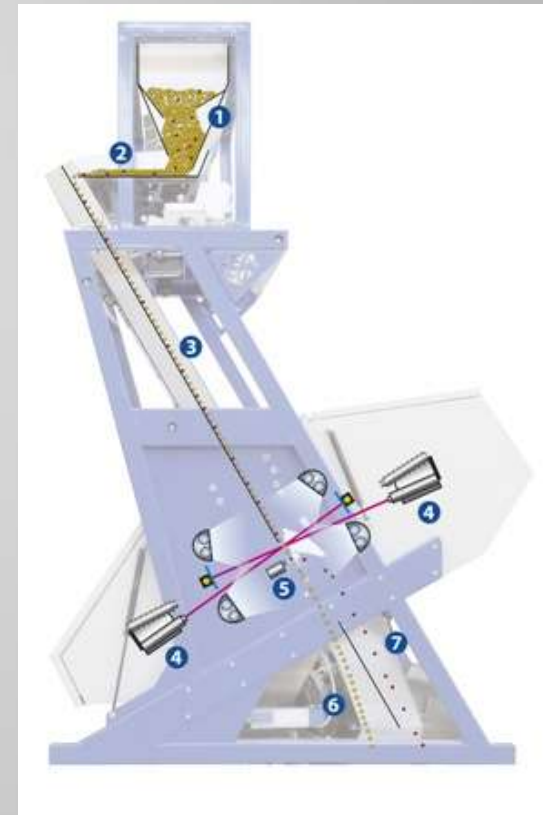
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PIXEL FH sorters

Input product is loaded into the in-feed hopper ①, it moves along the vibrating plate ② until it flows onto a sloping chute ③ where it is individually checked and sorted by state-of-the-art CCD cameras ④ situated in the front and rear of the flow.

Depending on the signals received by the optical device, the sorter software controls the pneumatic device ⑤ which physically separates the unwanted products out of the conforming ones which naturally reach their discharging hopper ⑥.

The rejected products are instead deviated by a jet of compressed air produced by the relevant ejector and discharged in the front side hopper ⑦.



Resort configuration:

SEA sorters can be divided into **separate and independent sections** simultaneously working. Should the input product contains a high contamination rate, the **second section** of the machine can be used for an additional run of the product already sorted in the first section. The second section can also be used to recover the good product rejected together with the impurities of the first section.





Pixel FH Series:

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Sorters

- ❖ **Best sorting performance** with dimension control of defects and separation by transparency, shade or colour with respect to the standard.
- ❖ Optimized mechanics for high production capacities
- ❖ **0.2 mm resolution** CCD cameras at scanning speed of up to 4 m/sec.
- ❖ Pixel can sort out any slightest color and brightness differences (e.g. white/light and dark grey or slightly brown shades).
- ❖ **Exclusively produced ejectors** guaranteed for 2 billions cycles & repairable.
- ❖ XP-Embedded graphic interface
- ❖ Pressurized optical box
- ❖ High reliability and constant efficiency results
- ❖ Easy-to-use and low-maintenance required
- ❖ Quick return of the investment
- ❖ Long-term operation and endurance is granted by the use of effective corrosion protection with special powder coating, and stainless steel.





Pixel FH Series - Models:



Pixel 1FH



Pixel 2FH



Pixel 3FH



Pixel 4FH



Pixel 5FH

<i>Models:</i>	<i>Dimensions (mm.) w,d,h</i>	<i>Electrical consumption*</i>	<i>Air consumption at 4 bar</i>
Pixel 1FH	1.560 x 1.465 x 2.000	1,0 kW	8,4 l/sec
Pixel 2FH	1.560 x 1.465 x 2.000	1,5 kW	16,8 l/sec
Pixel 3FH	1.560 x 1.465 x 2.000	1,5 kW	25,2 l/sec
Pixel 4FH	1.950 x 1.465 x 2.000	2,0 kW	33,6 l/sec
Pixel 5FH	1.950 x 1.465 x 2.000	2,0 kW	42,0 l/sec

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Colour Sorters – Main Characteristics:

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Simplified Handling: More than 40 years experience in colour sorting technology enables SEA to reach outstanding results with its versatile and precise sorting machines.

Versatility: up to 600 different custom-made sorting programs available

Microprocessor Control: SEA-software allowing the use of auto-diagnosis, auto-setting, and the storage of the programs according to the specific production requirements.

Double Section: Pixel sorters can be divided in two separate sections so as to carry out different sorting processes at the same time.



Feeder: Specific feeding chutes or channels are used for different products in order to grant their best transport to the sorter's detection unit.

The loading hopper can be provided with minimum, medium and maximum level sensors controlling the vibrators' speed thus warranting the continuous production flow.

Automatic cleaning system: A brush activated by a piston cleans the glass that protects the optical sensors: the continuous proper functioning of the machine is thus guaranteed.



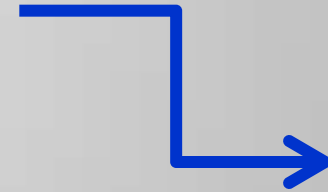


Technical Service:

Commissioning & Personnel training: We provide complete explanations on the sorter proper and most effective operation. Operator is duly trained during the commissioning of the machine.

Spare Parts: The wearing parts can be locally founded in almost every Country. The use and maintenance handbook specifies spare parts codes to require to SEA.

Assistance: In many Countries SEA offers a programmed maintenance service granting periodic controls at the customers' sorting installation at fixed annual fee.



Free deal-up servicing through Internet!

The dial-up assistance is the guarantee of immediate and free interventions. Your highest security in case of anomalies!



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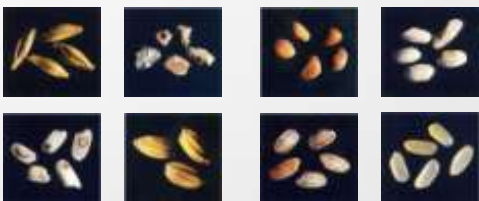
Applications: RICE, GRAINS & SEEDS

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White Rice:

Separation of variegated grains, chalky grains, stripped grains, yellowish grains, green grains and any other defective grains, seeds and foreign bodies.



Parboiled Rice:

Separation of discolored grains, mottled grains, black and burned grains, any other defective grain.



SORTED

REJECT

Wheat

The introduction of SEA sorters in the wheat Mills in the **cleaning process or directly on the "B1"** allows the separation of the mottled grains, coal grains, sick grains, strained grains, shriveled grains, vetches, and other foreign seeds which are the cause of black and brown spots in the finished product.



SORTED

REJECT

Another common application of our colour sorters is on the second choice grains.

On the broken grains, contaminated by tares and other foreign seeds, destined to the production of by-products or pet-food, SEA sorters almost completely recover the healthy grain to send it to crushing; that allows a fast return on investment.

Capacities up to 35 t/h

Other Grains & Seeds:

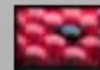
In **GRAINS Pixel** allows the separation of grains of different nature that can be recognized by colour, grains presenting a different tonality with respect to the once considered conform.

In **SEEDS Pixel** allows the separation of any foreign or defective seed that can be distinguished by colour.



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REJECT





Wheat & Corn:

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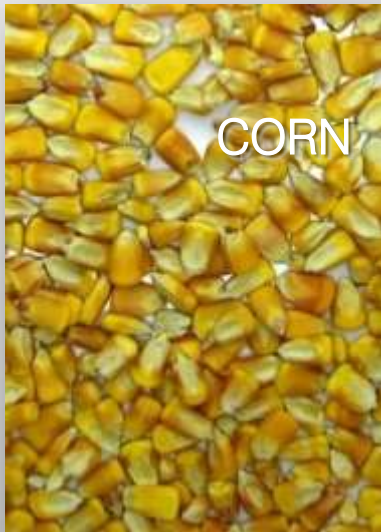
Sorters



DURUM WHEAT



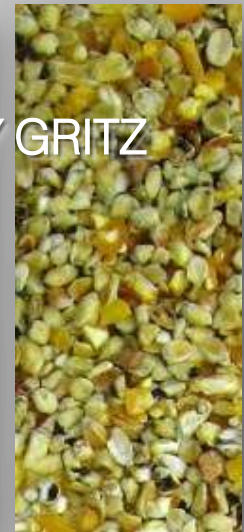
SOFT WHEAT



CORN



HOMINY GRITZ





Important details:

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Capacitive sensors installed to control **Minimum – Medium – Maximum** level of product in the loading hopper

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Optional: **RAL** colour customization upon specific request





Reject resort configuration:



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High concentrated reject:



Separation of **defective grains** (mottled and shriveled ones) and of **foreign bodies** (vetch, stones, ears, wood, etc.).

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Installations:



STANDARD INSTALLATION WITH LOADING & DISCHARGING HOPPERS AND SUPPORTING FRAME



GROUND INSTALLATION

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RAISED INSTALLATION WITH STAIRS.



EXAMPLE OF INSTALLATION WITH ELEVATOR.





References

Many famous Mills and Pasta producers have chosen PIXEL colour sorters!

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Applications

In case of doubt on particular commodities or applications (feasibility, efficiency, etc) just contact us for **free-of-charge sorting tests** in our pilot plant station in Italy!!!

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