

SEA HYPERSORT

ELECTRONIC SORTING 





BEYOND THE VISIBLE



SEA HYPERSORT

Based on our extensive experience in sensor-based sorting technology, Cimbria is able to present the new SEA HYPERSORT series of machines, specially designed for plastic flake sorting.

SEA HYPERSORT technology strengthens Cimbria's leading role in the recycling industry worldwide, where several SEA colour sorters are installed for added value processes and to make the recycling of different polymers possible. The separation of different polymers that have the same colour has always been a challenge in dry processing, as the polymers cannot be distinguished visually.

Now, thanks to SEA HYPERSORT, all PET, PVC, PE, PP, PS, HDPE or other polymers can be recycled in order to conform to the purity standards required in the market today.

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SEA HYPERSORT

POLYMER FLAKE SORTER

Our SEA HYPERSORT uses Hyper Spectral Near-Infrared Sensors, which are able to identify different polymer contaminants that have the same colour, thus enabling polymer flakes to be separated according to their chemical nature, and are therefore able to clean and recover high-value materials for recycling.

SEA HYPERSORT locates flakes which are contaminated with different polymers but have the same appearance. Relying on visible differences, transparency and/or reflection in the NIR spectrum with conventional optical sorters does not provide sufficient performance to reach the required purity of final material for recycling purposes.

The high performance and quality recovery of materials are obtained through the best available ultimate hyper spectral NIR technology, combined with the latest RGB full-colour high resolution cameras. The Hyper Spectral Near-Infrared Sensors recognize elements based on their specific spectral properties when reflecting light.

SEA HYPERSORT is the ideal state-of-the-art solution for material sized from 2 mm to 50 mm.

There are two types of SEA HYPERSORT available - Standard or High Resolution - depending on the applications required.

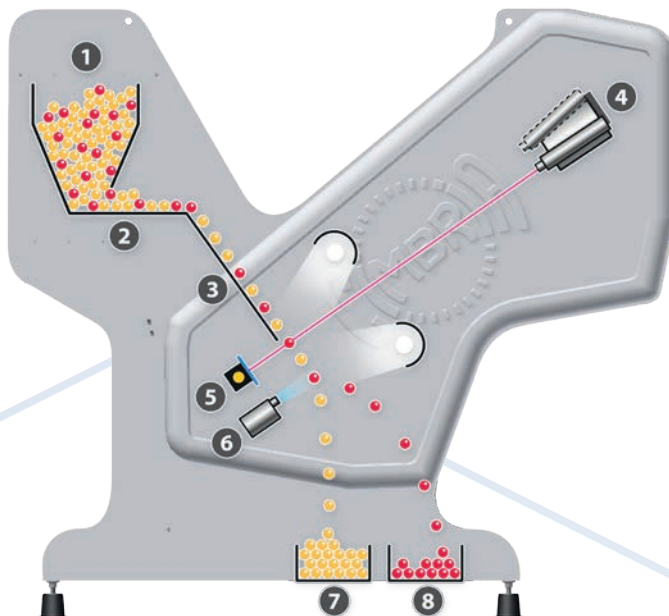
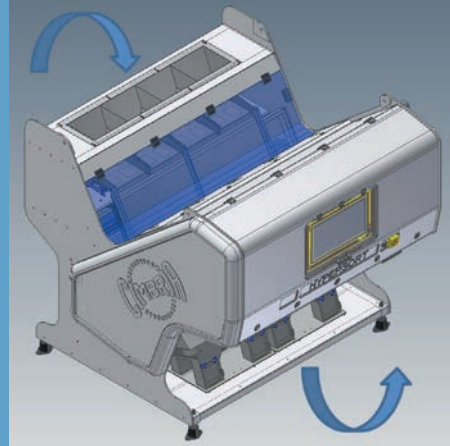
SEA HYPERSORT is available in medium (M) and large (L) versions in order to obtain multiple production capacities.

The new SEA HYPERSORT enriches our sophisticated portfolio of high-tech optical sorting solutions, and has been recognized as a market leader for multiple industry applications.



PROCESS OVERVIEW

The product is spread by the infeed shaker into a mono-layer than it drops and is guided by the slide through the inspection area. The product is lighted by SEA custom led lighting. The optical lens projects the reflected light onto a NIR Hyperspectral advanced camera. The reflected light breakdowns into the different invisible colors. The camera collects all these information and transforms them into a signal which represents the digital bio-fingerprint of the inspected product. This fingerprint is compared with a master template of the good product. When the fingerprint differs to the original master, the ejectors activate and reject the material/product.



OPERATION

- 1 PRODUCT IN-FEED HOPPER
- 2 VIBRATING PLATE
- 3 SLOPING CHUTE
- 4 HYPER SPECTRAL NIR CAMERAS AND RGB FULL-COLOUR OPTICAL DEVICE
- 5 LED LIGHTING AND BACKGROUND
- 6 EJECTORS
- 7 ACCEPTED PRODUCT DISCHARGE HOPPER
- 8 REJECT PRODUCT DISCHARGE HOPPER



MACHINE RANGE AND CONFIGURATIONS

MODEL	HYPERSORT M Medium version Standard resolution	HYPERSORT MH Medium version High resolution	HYPERSORT L Large version Standard resolution	HYPERSORT LH Large version High resolution
CONFIGURATION				
STANDARD VIBRATING FEEDER	Included	Included	Included	Included
CHUTE WIDTH mm	620	620	1240	1240
HYPER SPECTRAL NIR CAMERAS	1	2	2	4
RGB FULL-COLOR CAMERAS	1	1	2	2
EJECTORS	126	252	126	252
THROUGHPUT ton/h	0.5-2	0.5-2	1-4	1-4

* Data can vary according to the characteristics of input material and its contamination rate.

MODEL	HYPERSORT M Medium version Standard resolution	HYPERSORT MH Medium version High resolution	HYPERSORT L Large version Standard resolution	HYPERSORT LH Large version High resolution
DIMENSIONS mm				
WIDTH	1960	1960	1960	1960
DEPTH	2050	2050	2050	2050
HEIGHT +/-20mm	1780	1780	1780	1780
WEIGHT kg	1400	1400	1500	1500
MACHINE POWER CONS. kW	2.2	2.7	3.0	3.5
AIR CONS. AT 4 BAR l/sec	45	45	70	70

Machine power supply: 230V AC (50±60 Hz) single-phase.

The dimensions and technical data specified above are indicative.
Cimbria reserves the right to alter specifications without prior notice.

HYPERSORT M



HYPERSORT L



MAIN FEATURES

ULTIMATE ADVANCED NEAR-INFRARED (SWIR) TECHNOLOGY

- Along with superior sorting quality, the SEA HYPERSORT provides the highest sorting efficiency for contaminant removal. With self-control functions and minimum rejects, it offers the possibility to remotely monitor and control machine performance.
- Our advanced near-infrared (SWIR) spectrometry sensor recognizes the difference in materials based on their specific and unique spectral properties.
- The SWIR sensor, combined with full-colour technology, allows for the identification of material to be sorted by type and colour.
- RGB camera snapshot rate can reach 18,000 times/sec. (18 KHz).

NEW EXAGON SOFTWARE

- The HSI system observes the images detected by the RGB system almost as effectively as the human eye.
- The image processing system by photographic acquisition compares the object to user-defined accept or reject thresholds in order to identify it as a genuine defect or as an accepted element.
- The new EXAGON software allows the user to set the defect size and can recognize up to 16 sectors of defects.

FEEDING SYSTEM

- The feeding of the sorter can be separated into two sections in order to handle different sizes of materials.

ELECTRONICS – HARDWARE

- High-speed signal elaboration and communication to the expulsion system ensures excellent performance.
- Self-control functions, such as auto-diagnosis and auto-calibration ensure consistent sorting performance.

EJECTION SYSTEM

- State-of-the-art ejectors guarantee maximum precision and expulsion, producing highly concentrated rejects.
- SEA-HYPERSORT's rapid-firing ejectors are guaranteed for more than 2 billion operating cycles and can easily be repaired or replaced.
- SEA-HYPERSORT's specially designed ejection device prevents any delays or pressure reduction.

22-INCH COLOUR TOUCH SCREEN DISPLAY

- The Windows 7 embedded graphic interface assures an easy connection to company networks and to remote assistance systems.

MECHANICAL DESIGN

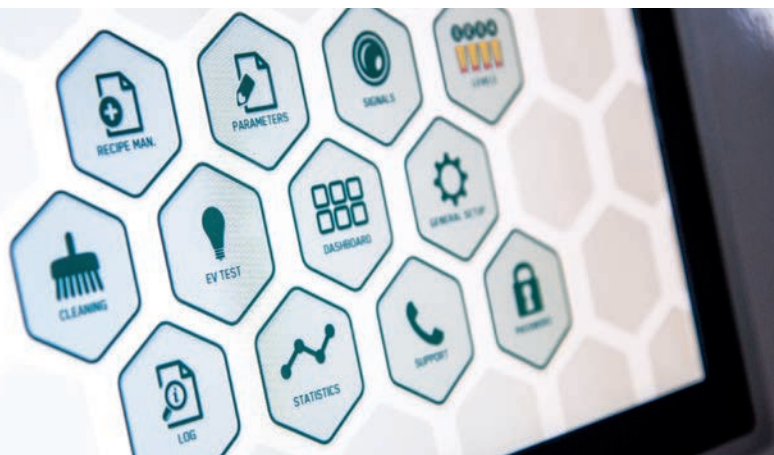
- Pressurised and conditioned optical boxes prevent dust from entering sensitive sections of SEA HYPERSORT sorters.
- An airtight structure prevents dust and product outflow.
- Our automatic cleaning system is completely integrated into the sorter.
- The built-in conditioning system enables the electronics to work at appropriate operating temperatures.

EXAGON^{1.0}



NEW EXAGON GRAPHIC
INTERFACE FOR USER-FRIENDLY
SET-UP AND ADJUSTMENTS.

EUROPEAN
TECHNOLOGY
MADE IN ITALY



APPLICATIONS AND ADVANTAGES

HYPERSORT



APPLICATIONS

Removes unwanted polymers out of PET, PVC, PP, HDPE, PS, ABS, PC, PA and others mix stream.

SEA HYPERSORT can combine the separation of plastics based on polymer nature and color sorting.

OTHER APPLICATIONS

Testing centres are available for industrial tests in our main production facility in Italy or in countries near you.

ADVANTAGES

- Adaptable to a wide range of sorting tasks
- Best sorting performance is reached at high throughputs
- Highly concentrated rejects
- Cost-effective technology
- Extremely fast return on investment
- Low operating cost
- Versatile and user-friendly technology
- Heavy-duty machinery
- Easy installation
- Quick adaptation to existing process
- Low maintenance
- Remote service and assistance by internet connection
- Set-up and training delivered by highly skilled technical staff
- Programmed annual technical service contracts available





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