**Optical Sorting**

# SEA.TN

The SEA.TN optical-electronic sorters boast an extremely high production capacity and a multispectral vision system of RGB full-color and NIR technologies. SEA.TN sorters separate even the smallest color and shade differences, as well as any foreign body, from almost any bulk and grain commodity. Using SEA.TN sorters thus guarantees to meet the strictest food hygienic and healthy requirements on end-products.
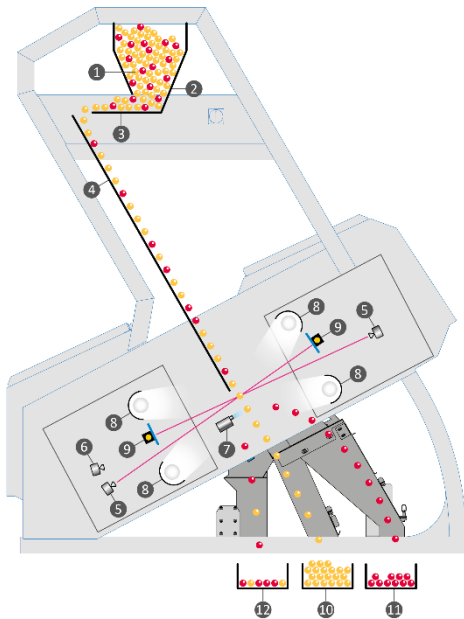


## PROCESS

1. **Product to sort**
2. **In-feed hopper**
3. **Vibrating feeder**
4. **Feeding chute**
5. **RGBN (Full-Color+NIR) cameras**
6. **InGaAs cameras (option)**
7. **Ejection system**
8. **Lights**
9. **Backlights**
10. **Sorted product output**
11. **Reject output**
12. **Bounce output**

Grain  Cereal  Seeds  Pulses  Coffee  Nuts  Plastic  Metal
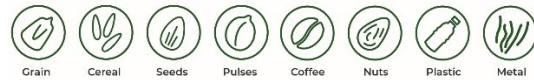
## MAIN CHARACTERISTICS

- Up to 4 sections for simultaneous resorting
- Available configurations with re-sorting, re-resorting or reverse sorting
- Image acquisition perfectly consistent with reality
- Can be controlled and reprogrammed even remotely with the customer's specific recipes

## ELECTRONICS

- Organized in easily replaceable electronic boards using the latest technology
- Self-control functions (self-diagnosis and self-calibration) guarantee excellent operational stability
- The Windows 10® embedded graphic interface assures an easy connection to company network and to remote assistance systems
- Ethernet connection allows real-time monitoring and web-based remote assistance
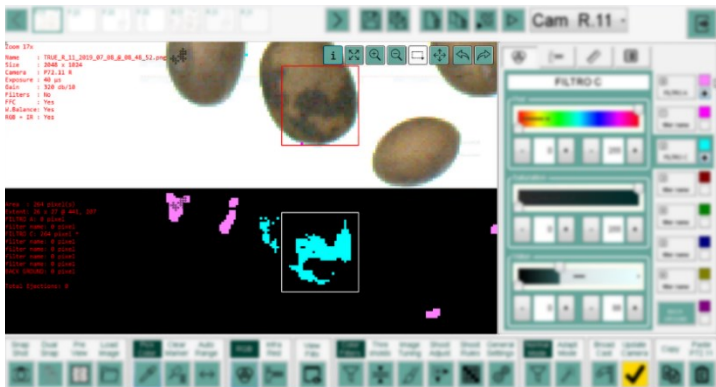
## EJECTION SYSTEM

- No. 54 solenoid valves per chute
- Ejectors working speed up to 1,000 cycles/s guaranteed up to 2 billion opening/closing cycles
- Ejection time and duration adjustable according to needs

## OPTICAL SYSTEM

- The SEA.TN standard version is equipped with 4096-pixels full-color RGB+NIR smart cameras (front & back) working in the visible and infrared spectrum
- Optional additional InGaAs cameras (back only)
- Scan rate: 25.000 scan/s
- Optical resolution: 0.06 mm
- The software can control 7 families of defects
- LED lighting and active background

## MECHANICS

- Available from 1 to 7 chutes
- Reversible chutes
- Tilting optical boxes simplify cleaning and maintenance
- Pressurization and airtight structure prevent dust from entering
- Automatic programmable cleaning system
- Cooling system to grant the ideal temperature inside the optical boxes
- Pre-arrangement for the intake system installation

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## USER INTERFACE

- 15" color touch screen with capacitive feature for perfect visibility in low light conditions
- By photographic acquisition, the image processing system compares the object to user-defined accept or reject elements
- Main information and functions:
  - Machine status (vibrators and sensitivity on/off for each section)
  - Level sensors (product control inside the hopper)
  - Alarms and smart explanation to restore functions, in case of anomalies
  - Total and partial hour counter
  - Daily and progressive backup
- OPC systems allowing:
  - The connection between two or more sorters*
  - The control of several sorters from a single control station* *at the customer's charge

## CONFIGURATIONS

| Front | | Back | |
|---|---|---|---|
| **RGBN** | **+** | **RGBN** | No. 2 RGBN - Full-Color + NIR cameras/chute (front&back) |
| **RGBN** | **+** | **RGB(N)R** | No. 1 RGBN - Full-Color + NIR camera/chute (front)<br>No. 1 RGBN - Full-Color camera (back) + No. 1 additional InGaAs camera/chute (back) |

RGBN = RGB Full-Color camera + integrated NIR /R = InGaAs camera

*On request, the pre-wired Plus version is available to accept additional cameras in future*

## EXTERNAL EQUIPMENT REQUIRED FOR THE CORRECT WORKING*

- 230 V – 50/60 Hz power supply
- Voltage stabilizer (strictly necessary)
- Pneumatic system including rotary compressor, tank, filters and dryer, class:
  - ISO 8573-1:2010 [5:4:3] for NON-FOOD PRODUCTS
  - ISO 8573-1:2010 [1.2.1] for FOOD PRODUCTS
- 1" minimum diameter air supply hose
- Supporting frame (minimum one meter of free space each side)
- Additional in-feed and discharge hoppers (option)
- Product conveyors systems
- Fast internet connection

***Customer must provide and install the above***
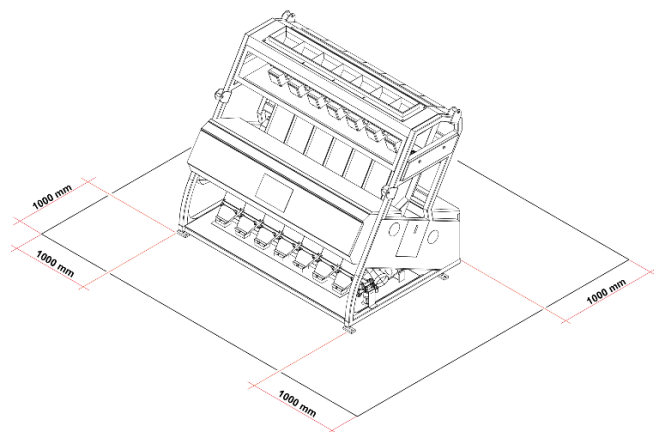


***Leave at least one meter of free space around the sorter***

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## TECHNICAL DATA

- White RAL 9003 Standard (custom color as option)
- Ambient temperature in the workplace min. +5℃ max. +35℃
- IP 5x protection
- CE conformity certificate
- 2006/42/CE on Machinery Safety
- 2014/30/CE on Electromagnetic Compatibility
- Compatible with UL and CSA standards
- ATEX standards Certificate (option)
- Sorter in AISI 316 L stainless steel (option)

## MACHINE TECHNICAL DATA

|  |  | 1 | 1.5 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| No. of feeders/chutes |  | 1 | 1.5 | 2 | 3 | 4 | 5 | 6 | 7 |
| No. of cameras (front+back) |  | 2-3 | 2-3 | 4-6 | 6-9 | 8-12 | 10-15 | 12-18 | 14-21 |
| No. solenoid valves/chutes |  | 54 | 77 | 108 | 162 | 216 | 270 | 324 | 378 |
| Compressed air consumption (max. value at 6 bar) | l/min | 300 | 450 | 600 | 900 | 1200 | 1500 | 1800 | 2100 |
|  | m³/h | 18 | 27 | 36 | 54 | 72 | 90 | 108 | 126 |
| Compressed air hose | Ø | 1" | | | | | | | |
| Power supply/frequency | V/Hz | 230V-50/60 Hz - 1 Ph (L + N + PE) | | | | | | | |
| Maximum current* | A | 1,6 | 1,8 | 2,6 | 2,8 | 4,6 | 4,8 | 5,7 | 5,9 |
| Maximum power* | Kw | 0,36 | 0,40 | 0,60 | 0,65 | 1,05 | 1,10 | 1,34 | 1,38 |

**\*** *The values indicated are calculated to process a highly polluted product*

## ASPIRATION SYSTEM

|  | 1 | | 1,5 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | m³/h | l/min | m³/h | l/min | m³/h | l/min | m³/h | l/min | m³/h | l/min | m³/h | l/min | m³/h | l/min | m³/h | l/min |
| Extraction | 500 | 8333 | 500 | 8333 | 1000 | 16667 | 1000 | 16667 | 2000 | 33333 | 2000 | 33333 | 3000 | 50000 | 3000 | 50000 |

* The user must ensure, near the intake vents, an air head equal to 150 mm H²O

**Minimum flow values required to the machine to process a highly polluted product

## DIMENSIONS (mm/in)

|  | 1 | | 1.5 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| Length | 1093 | 43.03 | 1093 | 43.03 | 1700 | 66.93 | 1700 | 66.93 | 2125 | 83.66 | 2125 | 83.66 | 2675 | 105.32 | 2675 | 105.32 |
| Width | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 | 1690 | 66.54 |
| Height | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 | 2100 | 82.68 |

## WEIGHT (kg/lbs)

|  | 1 | | 1.5 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Kg | lbs | kg | lbs | kg | lbs | kg | lbs | kg | lbs | kg | lbs | kg | lbs | kg | lbs |
| Weight | 700 | 1544 | 750 | 1654 | 950 | 2095 | 1000 | 2205 | 1150 | 2536 | 1200 | 2646 | 1400 | 3086 | 1450 | 3197 |

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