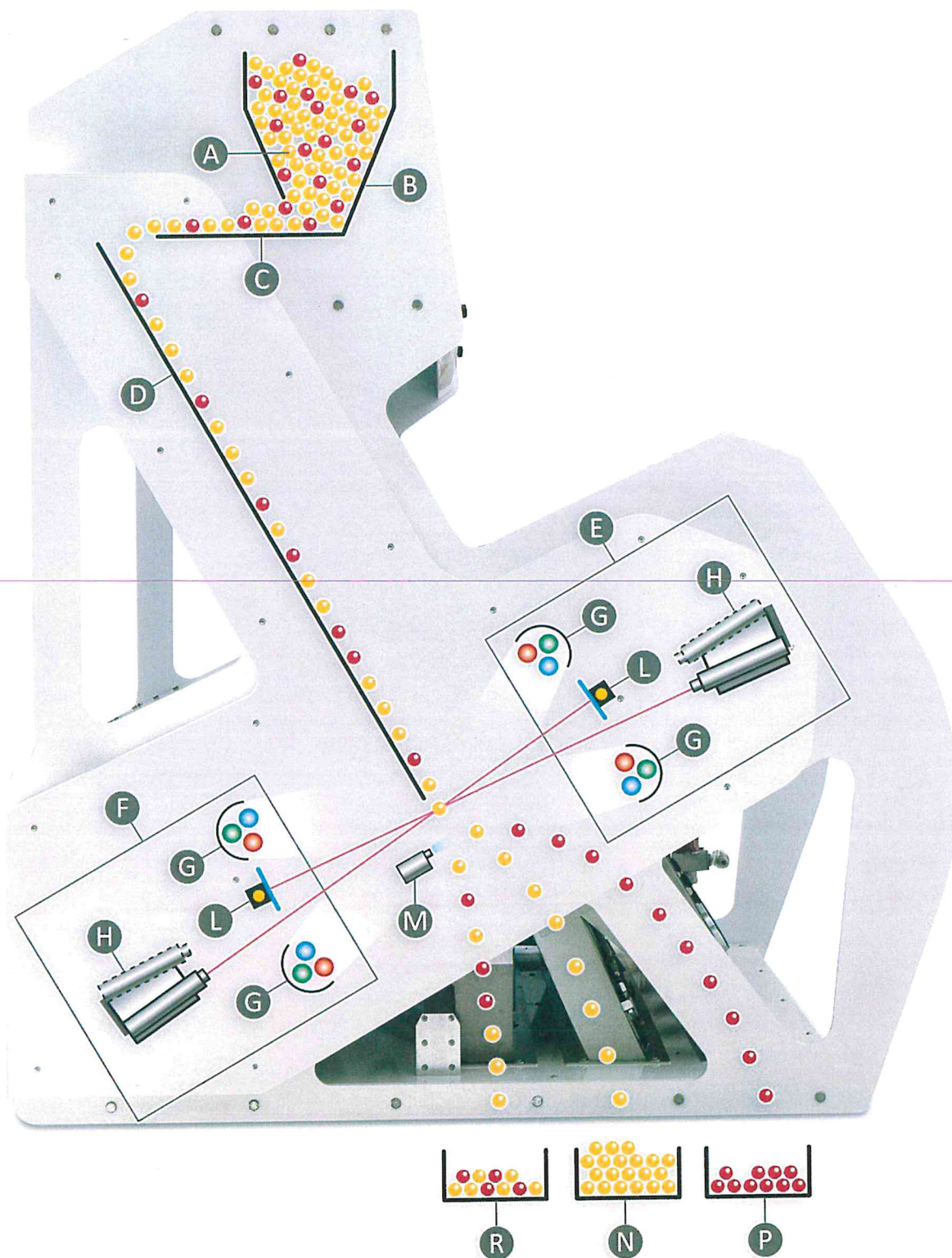


4.1 Intended use

4.1.1 Technological process



The sorting technology process is described in this section:

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- The “DIRTY” product to sort **(A)** is placed on the vibrating plate **(B)**, to be evenly distributed before falling into the sloping chute **(D)**.
- After falling down the chute **(D)**, the product ends up between the optical box **(E)** and the reference system **(F)** lit up by the fluorescent overhead tube or the LED bar.
- The product **(A)** is then fed past the cameras **(H)** and on reaching the reference unit **(F)** it undergoes focussing and detection, and any difference in transparency is recorded with respect to the software-programmed conforming product.
- The cameras **(H)** send special impulses to the software, which processes them and determines which product units should be “REJECTED”.
- At the end of processing, another impulse is sent by the software to the control unit of the solenoid valve **(M)** located on the NON-CONFORMING product unit pathway.
- The solenoid valve **(M)** emits a very short and powerful air blow ('shot') from the nozzle plate, which redirects each product unit fall trajectory from the CONFORMING product outlet **(N)** to the NON-CONFORMING product outlet **(P)**.

4.1.2 **Sorting products**

4.1.2.1 **Food products**

- White Rice
- Parboiled Rice
- Wheat
- Cereal and Seeds
- Legumes and Coffee
- Dried Fruit/Nuts

4.1.2.2 **Non-food products**

- Plastic
- Ground PVC
- PET flakes
- Other plastic materials
- Plastic granules
- Glass

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4.2 General description

The **CHROME** series sorting machines described in this manual are optical/electronic sorters suitable for both **FOOD** (wheat, rice, etc.) and **NON-FOOD** (plastic, glass, etc.) industry applications.

It is possible to choose between 9 modular models that can be further customized upon clients' requests to meet any specific requirements.

Ever since 1970, the **Manufacturer CIMBRIA** has built optical/electronic sorting machines available in monochrome, bi-chrome, trichromatic, NIR and InGaA versions, helping its loyal customer base achieve ever-increasing efficiency and productivity, by minimizing waste and operating expenses, and offering customization options.

Like for any other CIMBRIA product, special care has been taken with the designing of the sorting material feeding system, in order to obtain a consistent machine output.

The digital vision technology used is based on CCD cameras, powerful processors and algorithms optimized for process management, as well as high-tech hardware and software.

Whenever it was not possible to source off-the-shelf components suitable for achieving the company's targets in terms of top quality and reliability, customized parts have been developed: solenoid valves, cameras, filters, lenses etc. have been specially designed and implemented.

The design of electronic circuits, based on the **Manufacturer CIMBRIA's** twenty-plus years' experience in the sorting field, enables the machine to adapt to a wide variety of user needs.

Great importance has been attached to system modularity - to simplify and minimize maintenance logistics.

The engineers also focused on streamlining the design and arrangement of the controls, to turn any operation into a fast, user-friendly experience.

When designing the system electronics – extremely sophisticated given the high level of performance required, care was taken to achieve great sturdiness and operating safety, even in environments where electronic machines cannot normally be used; in particular, by also designing self-diagnosis and self-calibration functions into the systems

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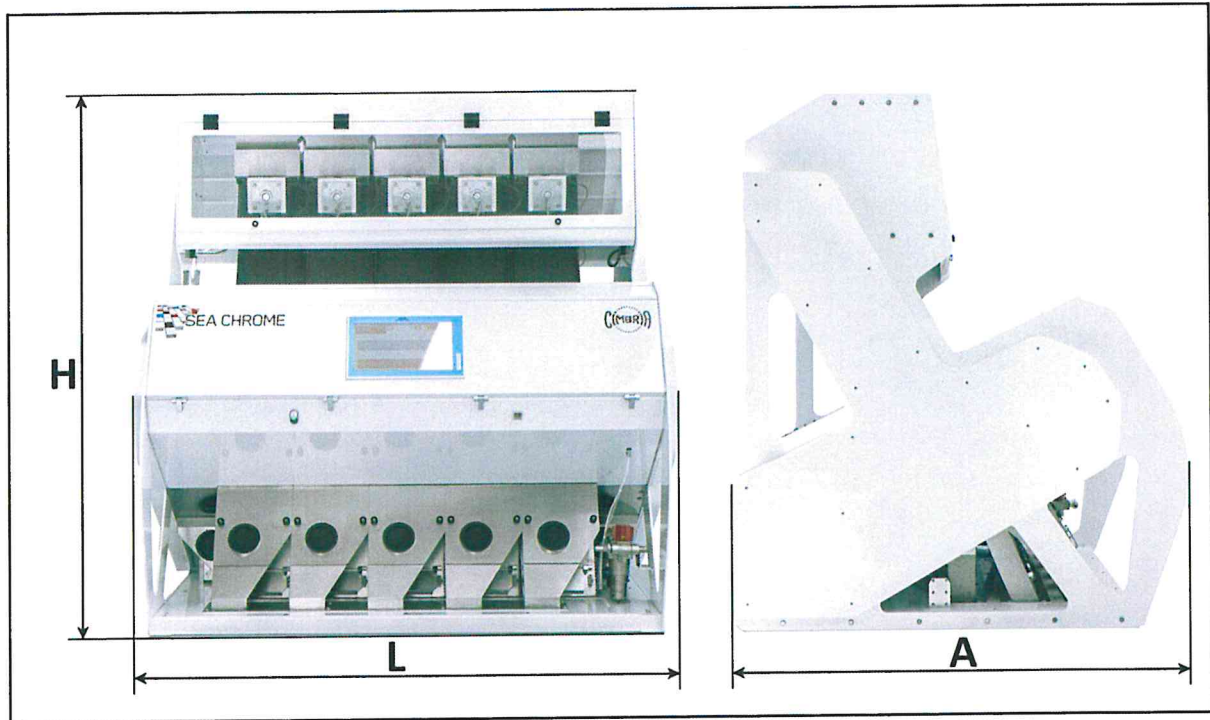
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4.4 Technical specifications



IMPORTANT

- The indicated compressed air consumption value is the value measured in the highly unlikely situation in which a highly contaminated product is processed at the highest processing speed, with an active cooling pipe.
- The indicated absorbed power is the apparent power measured in the highly unlikely situation in which a highly contaminated product is processed at the highest processing speed.
- The indicated max absorbed current is measured in the highly unlikely situation in which a highly contaminated product is processed at the highest processing speed

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Table 4:B – Data for SEA-CHROME models 0.5 / 1 / 1.5 / 2 / 3

| Characteristics | | 0.5 | 1 | 1.5 | 2 | 3 |
|---|------------|-------------------------------|------|------|------|------|
| Max processed product speed | m/s | 4 | | | | |
| No. of vibrating plates/chutes | | 1 | 1 | 1 | 2 | 3 |
| No. of cameras | | 1 | 2 | 2 | 4 | 6 |
| No. of solenoid valves/ shooting channels | | 27 | 54 | 77 | 108 | 162 |
| Compressed air consumption (max value) | l/s | 4.2 | 8.4 | 12.6 | 16.8 | 25.2 |
| Air pressure | bar | 6 | | | | |
| Supply voltage / frequency | V/Hz | 230 / 50 – 1 Ph (L + N + PE) | | | | |
| Absorbed power (max value) | kVA | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Absorbed current (max value) | A | 7 | 7 | 7 | 7 | 7 |
| Dimensions | Length (L) | mm | 920 | 1510 | 920 | 1510 |
| | Depth (A) | mm | 1690 | | | |
| | Height (H) | mm | 2100 | | | |
| Weight | kg | 750 | 940 | 790 | 1000 | 1060 |

Table 4:C – Data for SEA-CHROME models 4 / 5 / 6 / 7

| Characteristics | | | 4 | 5 | 6 | 7 | |
|---|------------|----|------|-------------------------------|------|------|------|
| Max processed product speed | | | m/s | 4 | | | |
| No. of vibrating plates/chutes | | | 4 | 5 | 6 | 7 | |
| No. of cameras | | | 4 | 5 | 6 | 7 | |
| No. of solenoid valves/ shooting channels | | | 216 | 270 | 324 | 378 | |
| Compressed air consumption (max value) | | | l/s | 33.6 | 42.0 | 50.4 | 58.8 |
| Air pressure | | | bar | 6 | | | |
| Supply voltage / frequency | | | V/Hz | 230 / 50 – 1 Ph (L + N + PE) | | | |
| Absorbed power (max value) | | | kVA | 2.5 | 2.5 | 3.5 | 3.5 |
| Absorbed current (max value) | | | A | 12 | 12 | 16 | 16 |
| Dimensions | Length (L) | mm | 1920 | | 2470 | | |
| | Depth (A) | mm | 1690 | | | | |
| | Height (H) | mm | 2100 | | | | |
| Weight | | | kg | 1240 | 1300 | 1490 | 1650 |

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