

VARISORT+ UNITY

The versatile sorting system for recycling plastic and rigid packaging

CMN

Sensors

4

Work widths

350 mm

Grain size

Modular concept

Depending on the sorting task and requirements, the VARISORT+ UNITY is available as a complete solution with separator housing and conveyor belt, or as VARISORT+ FLEX, a separate sensor attachment for existing sorting lines.

Measurement bridge
VARISORT+ FLEX

Ai with added value

Previously unidentified or difficult-to-identify contaminants are reliably detected within the material stream, depending on the application, thanks to Sesotec Object-Ai and/or NIR-Ai, and sorted by the air blast nozzles.

Optimized hardware design

By the optional three chute design and second blasting bar the material flow can be divided into three separate streams with just one device, thereby increasing productivity.



Flexible sensor technology
for plastic and rigid
packaging recycling

Free consultation

<https://www.sesotec.com/emea/en/contact-form>



Application areas

Sensor combination/application	C	CN	CM	CMN	N	MN
Bottle recycling	+	+++	+	+++	++	++
Mixed plastics (PS/PE/PP)	+		+	+++	++	++
Light packaging	+	+	++	+++		+++
MSW	+	+++	+	+++	++	++
Color sorting	+++	+++	+++	+++		
Metal detection	Option (M): Metal sensor					

Technical data

Working width [mm]	1024	1536	1920	2816
Throughput up to [t/h]	3	4.5	6	8
Number of valves	64/40	96/60	120/75	160/110
Valve pitch [mm]	16/25.6	16/25.6	16/25.6	17.6/25.6
Suitable grain sizes [mm]	15–350	15–350	15–350	15–350
Power [max. KVA]	3.5	3.65	3.8	4.5
Temperature range	+5°C up to +40°C			
Protection class	IP 54			

Options

Split machine	Splitting of the sorting machine for sorting two different material streams in parallel or for 2-step-sorting
3rd chute	Additional 3rd chute and 2nd valve bar for sorting the input material into 3 fractions
Valve grid	Other valve grids possible depending on type of sorting application
Sensor upgrade	Prewiring for future integration of additional sensors
M+: Selective metal sensor	Selective, inductive multi-channel detection coil for detection of stainless steel, steel and non-ferrous metal
Roller splitter	Vortex cooling for use in environments with high temperatures
Cooling system	Vortexkühlung zum Einsatz in Umgebungen mit hohen Temperaturen
VISUDESK system visualization software	Web-based visualization of sorting systems using OPC UA
Belt scraper	Rotating brush below the conveyor belt to keep the belt clean
Vibratory feeder	Additional vibratory feeder for the sorting device for optimum distribution and separation of the elements in the material flow

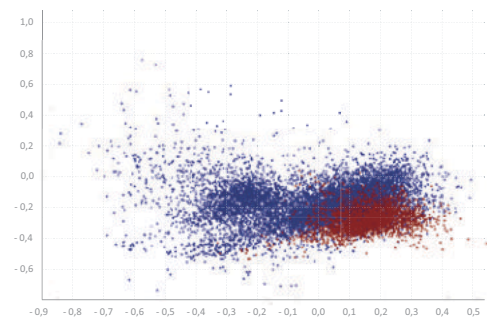
Driving the AiVOLUTION

ARTIFICIAL INTELLIGENCE FOR MAXIMUM SORTING PERFORMANCE

NIR-Ai: Making the invisible visible

The issue:

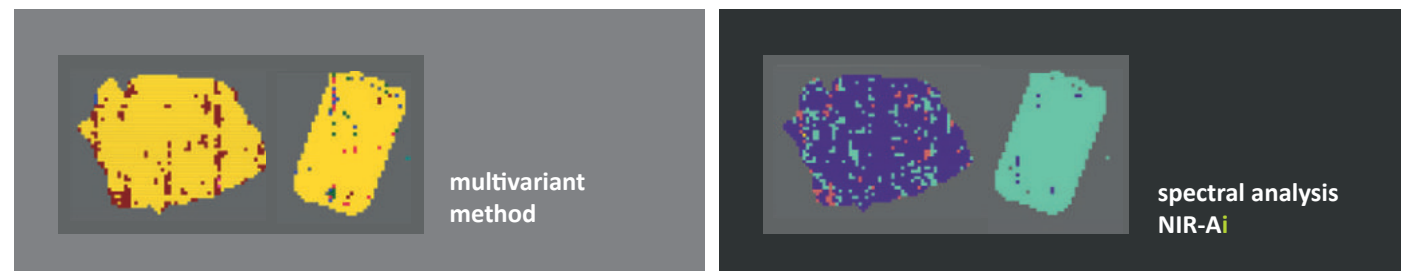
Multivariate methods reach their limits of detection accuracy when dealing with optically similar products, resulting in valuable materials being sorted out 'just to be safe'.



The point-clouds defined by the spectral analysis of the near-infrared sensor must be clearly distinguishable from each other for reliable differentiation. Once strong overlaps occur, as indicated in the left-hand image, the risk of false detection increases. Valuable resources for feeding into the material cycle are lost. A typical application scenario with limits for NIR sensor technology: Monolayer and multilayer PET.

The Solution: NIR-Ai Application

Example: monolayer vs. multilayer PET trays



Thanks to Artificial Intelligence for the near infrared sensor spectral analysis optically similar products can be clearly distinguished from each other. For better sorting results. For higher profitability.



Typical application areas:

- Differentiation between PET monolayer and multilayer (tray and bottle)
- Detection of PE multilayers
- Differentiation between HDPE bottles and foamed PE
- Improved differentiation between PET and PETG (bottles and flakes)
- Recognition of various bottle-label combinations



Note:

The list of use cases can be expanded according to customer-specific requirements.

Devices with NIR-Ai



NIR-Ai is available and retrofitable on all models of the VARISORT+ family.

Your benefits

- **Efficiency:** Consistently high results in standard applications
- **Quality:** Differentiation of very similar polymer structures possible
- **Flexibility:** Retrofitting possible on all Sesotec sorting devices
- **Innovation:** Solution already addressing tomorrow's challenges (tray sorting, multilayer juice bottles, ...)



ARTIFICIAL INTELLIGENCE FOR MAXIMUM SORTING PERFORMANCE

OBJECT-Ai: Optical Sorting Perfection

The issue:

What may seem easy to recognize for the human eye pushes machine sorting of heterogeneous material streams to its limits in detecting contaminants.

The solution: OBJECT-Ai

Thanks to Artificial Intelligence specific properties are assigned to each object during color and shape analysis by the color sensor. This ensures a clear classification and differentiation of good material and foreign matter based on shape, color, and texture (bounding boxes).



Legend:

- HDPE_Bottle_Labeled_Food
- Mixed_Bottle_Colored_Food
- HDPE_Bottle_White_Food
- PET_Bottle_Colored_Food
- HDPE_Bottle_White_nonFood
- Silicon_Cartridge_White_nonFood
- HDPE_Canister_Colored_nonFood
- HDPE_Cap_Colored_unknown
- Silicon_Cartridge_Black_nonFood
- Mixed_Bottle_White_Food
- PET_Bottle_Clear_Food
- Silicon_Cap_White_NonFood
- HDPE_Bottle_Colored_nonFood



Typical application areas:

- PE / PP
- Films
- Electronic waste (WEEE)
- Food vs. Non-Food in various forms

Examples of food-grade materials:

Juice and milk bottles, HDPE packaging, Squeeze bottles (butter, oil, syrup, ...), Bottle caps

Examples of non-food materials:

Cleaning and cosmetic containers, Silicone cartridges, Oil canisters, Pipes or cable casings



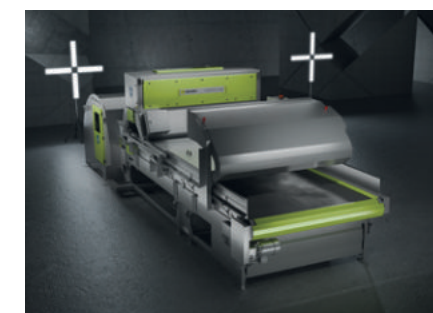
Note:

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Devices with OBJECT-Ai



VARISORT+ UNITY



VARISORT+ FILM

Your benefits

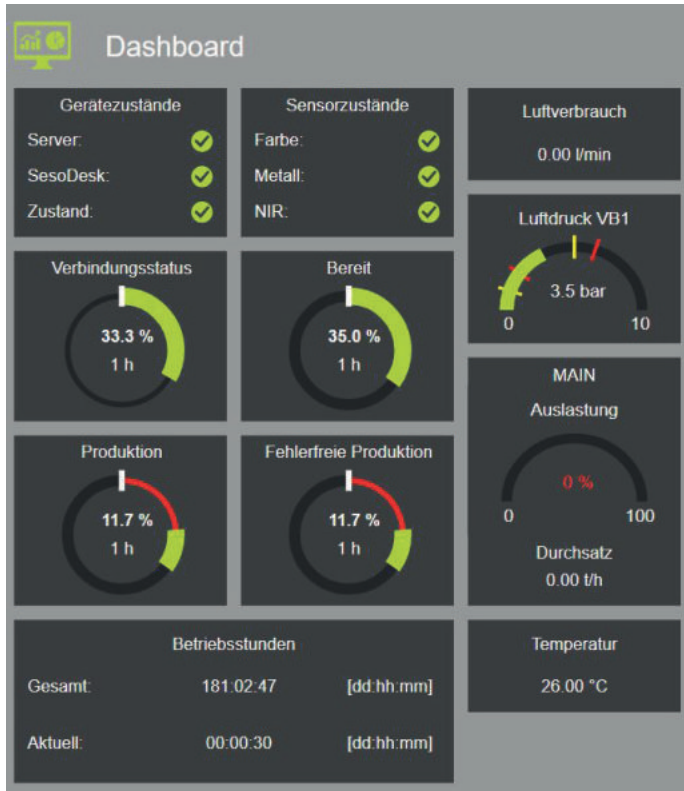
- **Innovative:** Differentiation of materials that were previously not possible to sort (food – non-food)
- **Quality:** Improved color sorting, effective detection of bottles with full-shrink labels and opaque bottles
- **Efficiency:** Reliable detection of contaminants such as silicone cartridges or black objects
- **Profitability:** Texture-based sorting for WEEE applications (circuit board sorting)

VISUDESK

To improve product quality and the efficiency of sorting and recycling plants, process data is essential for operators. With the VISUDESK visualization software, this data can be easily and clearly displayed on all Sesotec equipment. Based on this data, they can derive targeted measures to increase efficiency and effectiveness on the one hand and minimize downtimes on the other. The OPC UA-based machine communication model is implemented both on the devices and on a server and thus enables both stationary and mobile access to the application.

Advantages of VISUDESK

- Control of the sorting process
- Optimization of the sorting system
- Predictive maintenance
- Reduction of downtime
- Fact-based decisions

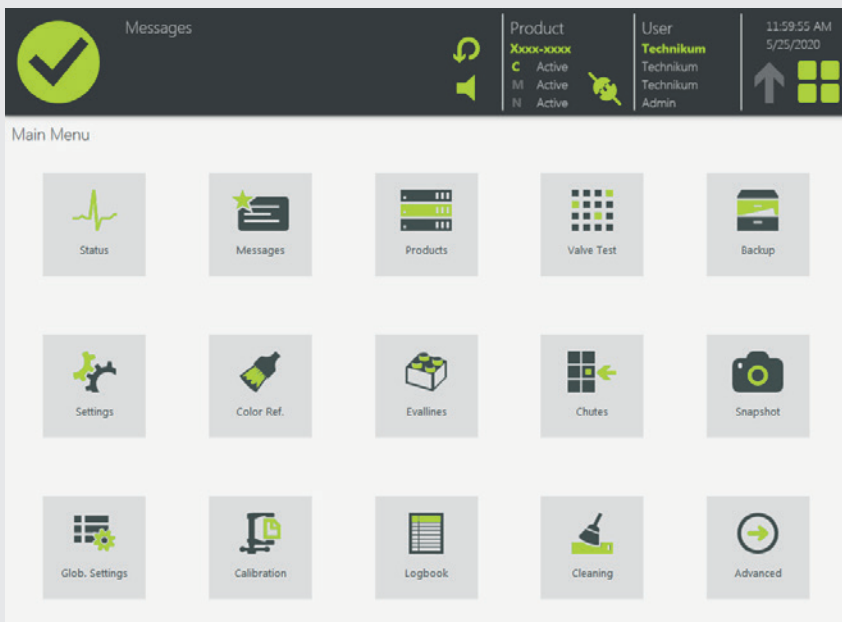


Dashboard visualization of process data, valve data, evaluation data and material data

SesoDesk

Our SesoDesk operating software allows for intuitive and fast configuration of all sorting devices for each application.

- Modern design
- Error/status messages
- Intuitive operation
- Logbook
- Integrated remote maintenance
- Predictive maintenance



Main menu of the SesoDesk user interface

Fast and reliable service



Phone support

Many questions and incidents can be solved by phone. Our free telephone support is available for you daily from 6 am to 8 pm, on weekends from 8 am to 5 pm.

Service Hotline Sorting

+49 (0) 8554 - 308 129
service.sorting@sesotec.com



Remote Access

Sesotec service technicians have direct access to your machines via Ethernet connection and can perform error analyses, optimizations and parameter settings.



Augmented Reality

In addition to telephone support and remote access, Sesotec also offers video-based support with augmented reality. This is done via the TeamViewer Pilot App.



Want to learn more about our technology for recycling industries?
Get in touch with us directly! We look forward to advising you.
You can reach us at:

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