Optical sorting solutions for plastics

BÜHLER

Bühler in partnership
with recyclers

ANNIVERSARY 75 SORTEX

Bühler is globally renowned for supplying industry-leading optical sorting solutions to the food and non-food industries and has been at the forefront of pioneering optical sortings technologies for over 75 years.

Through substantial investment in research and development, Bühler has developed state-of-the-art technologies that allow recyclers to maximize the recovery and purity of their recycled plastics and reduce the amount of reusable material that ends up in landfills every year.

Bühler is active in many areas of plastic recycling from the packaging, construction, electronic/electrical (WEEE) and End-of-Life vehicle (ELV), to the petrochemical industries, providing solutions for the most complex and challenging applications.
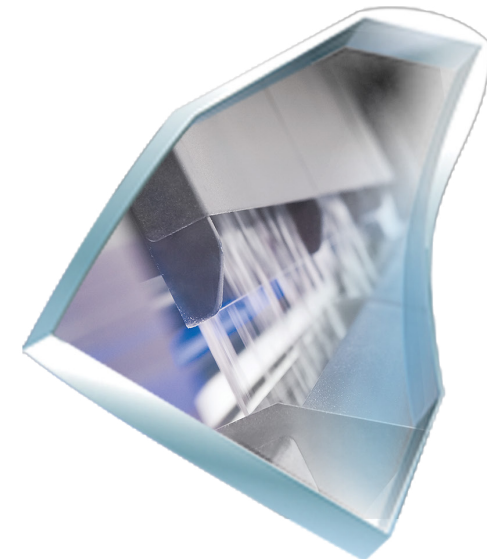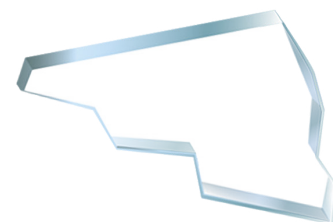
Aligning ourselves
to the market requirements

Bigger line capacities

Brand owners and end markets are significantly increasing their demand for recycled plastic, and as a result plastic processing lines are getting bigger and more complex. We are seeing increasing requests for larger capacity plastic recovery facilities. With Bühler's high performance, high capacity optical sorter product offering, we are confident that our technologies will stand the test of time for consistent quality and reliability at high throughputs. Our SORTEX N PolyVision machines come in up to three sizes with a sorting capacity of 6 T/h.

Requirement for data

In order to optimize your processing costs and improve your recyclables, it is vital to have full control of your production cycle at all times. SortControl helps you achieve this by integrating your SORTEX machine into your local automation system. Make data-driven decisions based on key performance indicators and long-range trend analysis retrieved from your sorter's raw data. Track the sorting statistics, wear statuses and capacities of your sorting machines. Using SMS we can reduce unplanned downtime, reduce energy costs, improve quality and yield by optimal sorter setup.

Stricter regulations to meet increased purity requirements

Circular economy requires recyclables of high quality. Acceptable contamination levels of critical defects such as PVC are continuously falling and becoming stricter. Bühler SORTEX optical sorters are designed to work at high throughputs as tailor-made solutions to achieve your market's purity requirements.

Lower cost of ownership

Our TotalCare offering is designed with the customer in mind. It consists of a customized service package, which comprises of individual service features from maintenance visits, downtime cover to refurbishments and preventative measures – all basic to fully comprehensive. Our TotalCare package is designed to ensure your optical sorter performs at its maximum performance with lower cost of ownership.

Sorting
Applications

PET flakes

Our color and polymer optical sorting solutions have been designed to maximize your processing capacities and the purity of your recycled PET flakes. They are equipped to remove translucent and opaque colors, ferrous and non-ferrous metals, labels, and foreign materials such as wood, rubber and silicon.

Input **Accept** **Reject**

SORTEX Optical Sorters

SORTEX N
PolyVision

SORTEX A
GlowVision

SORTEX B
MultiVision

SORTEX A
ColorVision

Color sorting, grouping PP/PE

Our flexible range of sorting solutions deliver consistent high quality and high throughput color sorting results, typically for PE and PP applications (milk bottles, bottle caps, detergent, chemical and shampoo bottles).

Input **Accept** **Reject**

SORTEX Optical Sorters
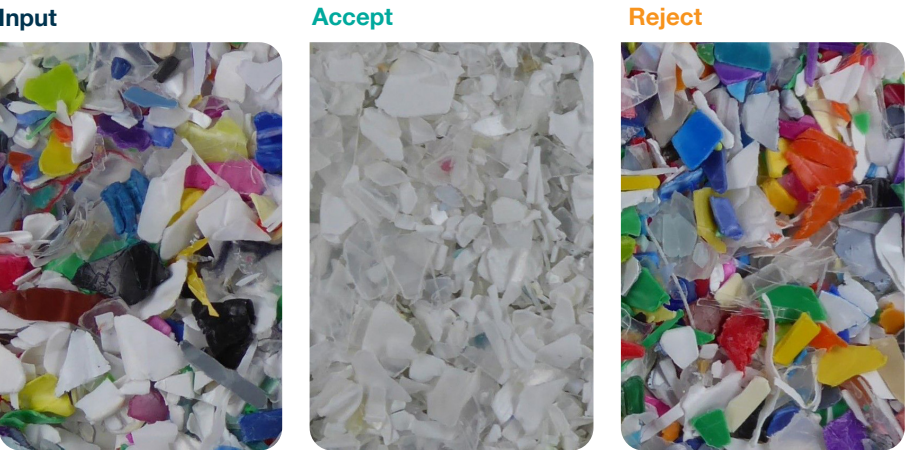
SORTEX B
MultiVision

WEEE and Industrial applications

Our optical sorters offer customised solutions for a range of WEEE, ELV and uPVC applications. Typical defects include black rubber, polymer, white silicone, wood, glass, wires and other color contaminants.

Input **Accept** **Reject**

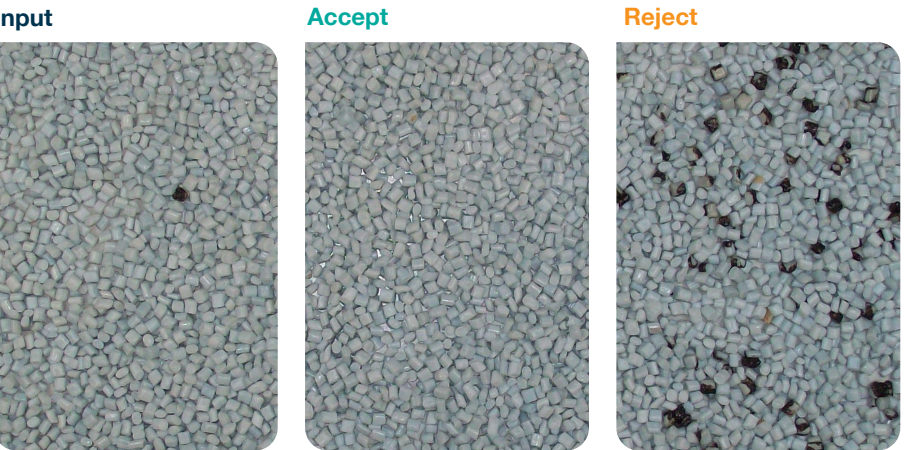### SORTEX Optical Sorters

SORTEX A
ColorVision InGaAs
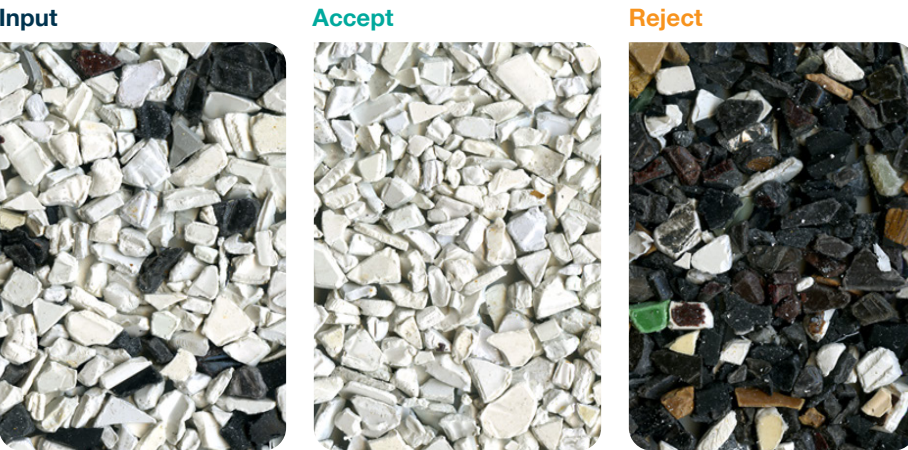
SORTEX B
MultiVision

Pellets

The SORTEX range removes typical and challenging defects such as spot defects, discoloration and/or misshapen pellets and clumps.

Input **Accept** **Reject**

SORTEX Optical Sorters

SORTEX A
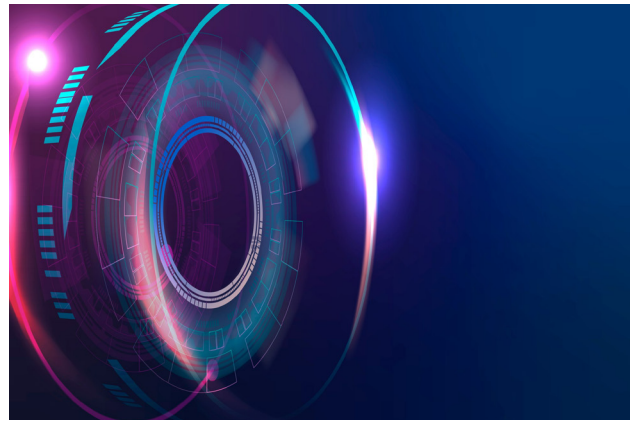ColorVision

SORTEX B
MultiVision

Innovative
Technologies

Our color optical sorting solutions maximize your processing capacities and the purity of your recycled plastics, and are equipped to remove polymers, colors, metals and foreign materials.
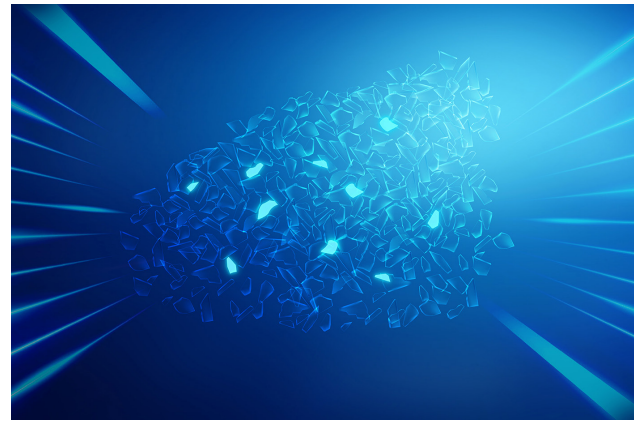

ColorVision™

Bühler's high definition color cameras are designed and custom-built in house to remove color defects and foreign materials in the most challenging sorting requirements.


MultiVision™

Trusted SORTEX® technology with high resolution color front and rear cameras, MultiVision™ is developed to offer recyclers solutions for conventional sorting applications such as unwanted colored plastic (e.g.: polyolyfines from bottle caps), metals, wood, organics and other foreign materials.

GlowVision™

Unique inspection system featuring custom designed cameras and innovative LED lighting technologies able to detect multiple polymer, color and foreign materials, and defect classes in PET clear and light blue streams.
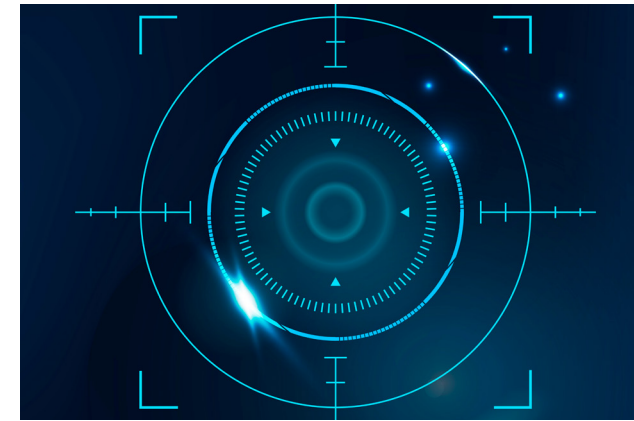

PolyVision™

Bühler's ground-breaking SORTEX PolyVision™ detection technology analyzes the unique chemical composition of challenging polymer contaminants with greater efficiency than ever before.

Data Analytics and Services

At-a-glance dashboards of the SORTEX Monitoring System provide a simple and comprehensive overview of each sorter with various alarms to notify anomalies as defined by the sorter algorithm. Using SORTEX Monitoring Systems we can reduce unplanned downtime, help reduce energy costs, improve quality and yield by optimal sorter setup.
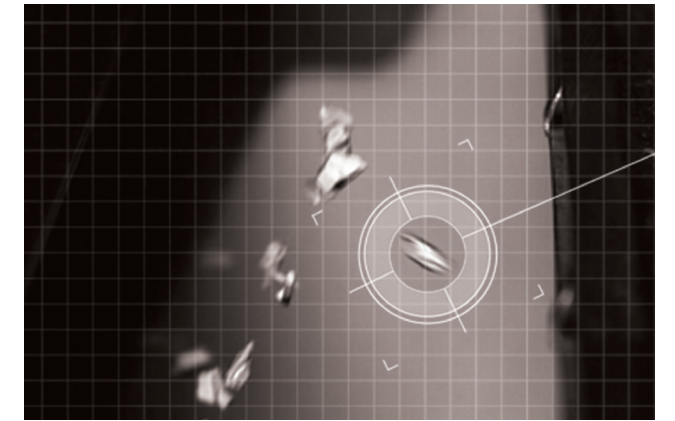
PROfile™

Designed by SORTEX experts, PROfile is an intelligent detection technology which inspects products based on shape, color and size criteria when the defective product can not be separated using conventional technologies. PROfile uses multiple detection criteria options, combining them to remove wires from WEEE or misshapen pellets.

SORTEX A GlowVision
4-in-1 PET sorting solutions

As a 4-in-1 sorting solution for bottle-to-bottle and food applications, the SORTEX A GlowVision™ has been designed for superior color sorting, foreign material removal, polymers sorting and loose labels reduction.

High-capacity color and polymer sorter

Available with up to five chutes, the SORTEX A GlowVision features a flexible sorting configuration capable of handling up to five tons of product per hour.

Exceptional accept quality

With a custom-built inspection system designed specifically for PET clear and light blue sorting, the SORTEX A GlowVision can remove the most challenging of defects, including polymers for an exceptional accept quality.

Simultaneous re-sort capabilities

In response to increasing demand for high reject concentration, the SORTEX A GlowVision comes with a simultaneous re-sort function to ensure the highest reject concentration.

SORTEX Monitoring System powered by Bühler Insights

At-a-glance dashboards of the SORTEX A GlowVision provide a simple and comprehensive overview of each sorter with various alarms to notify anomalies as calculated through the algorithm.

1 Automated background
Background adjusts as light levels vary delivering consistent operation

2 Advanced inspection system
Ultimate detection of all known defects and foreign material for the most complex sorting applications

3 Simultaneous re-sorting
Maximizes recovery of good product by achieving the highest reject concentration

4 Sealed optical & control cabinets
Rated up to IP5X to protect against dust ingress maintaining a stable and reliable operation in dusty environments

5 High capacity
Available with up to five chutes for flexible sorting configuration

6 Innovative LED
Flexible solid state LED lighting that improves illumination and enhances defect recognition

7 SmartEject™ technology
Fires precisely at the whole object to ensure efficient removal

8 Digital services
State-of-the-art digital solutions powered by Bühler Insights drive gains in performance, productivity, and efficiency. Ensure maximum uptime, avoid product wastage, and spot quality issues using actionable insights and real-time alarms.

SORTEX A GlowVision

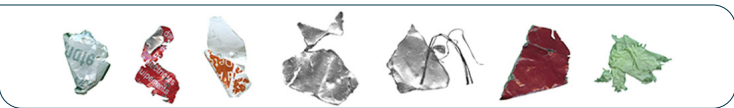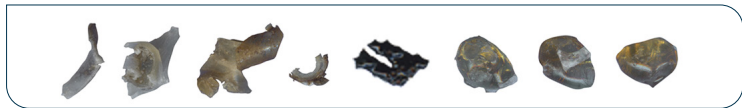## Defects

Foreign material removal
Metals, wood etc.

Loose labels reduction

Superior color sorting
Opaque and transparent colors

Polymer sorting
Polyvinyl chloride (PVC), polystyrene (PS), polyamide (PA) and polycarbonate (PC)

SORTEX N PolyVision
Polymer flake sorting in a range of capacities

SORTEX N PolyVision uses Bühler's market proven camera to remove PET flakes from other polymers such as PVC, PP, PE, PS, PA, PMMA, SAN, POM, rubber and silicone. Available in a range of capacities of up to 6 T/h, the integrated in-feed shaker and compact footprint ensures the SORTEX N PolyVision will suit a wide range of installations and applications.

High-capacity color and polymer sorter

Available with up to three chutes, the SORTEX N PolyVision features a flexible sorting configuration capable of handling up to six tons of product per hour.

PolyVision detection system

With a custom-built inspection system designed specifically for all types of PET sorting, the SORTEX N PolyVision can remove the most challenging polymer defects for an exceptional accept quality.

Usability

ProSort X4.0 simplifies the user interface and provides useful insights both on and off the machine for the Operator and Plant Manager. This means greater visibility into machine performance and any changes in throughput over time.

SORTEX Monitoring System powered by Bühler Insights

The Sortex N PolyVision includes a 1 year free of charge service to SORTEX Monitoring System subscription powered by Bühler Insights. This allows processors to monitor sorting performance and receive alarm notifications from anywhere in the world - resulting in reduced product wastage and downtime and greater transparency on performance.

1 PolyCam
PolyCam delivers clear separation of PET from other polymers

2 ProSortX 4.0
ProSortX 4.0 - now with EasySim™ sensitivity adjustment and SORTEX Monitoring System connectivity

3 Integrated Feed system
Fully-integrated and controllable anodized chute feeding system

4 Sealed optical & control cabinets
Rated up to IP5X to protect against dust ingress maintaining a stable and reliable operation in dusty environments

5 High capacity
Flexible capacity of 1, 2 or 3 modules, offering up to 6t/h

6 SmartEject™ technology
Fires precisely at the whole object to ensure efficient removal

7 PolyVison Detection System
Trans-reflected inspection system enables sorting for both color and polymer flakes

8 Digital services
Lift efficiency, quality, and traceability to entirely new levels and help Owners, Operators, Quality & Plant Managers to improve their sorter performance and ROI further

SORTEX N PolyVision, 2 modules

Defects

Loose labels

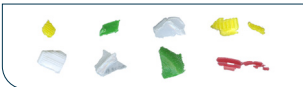**Rubber and silicone**

Color PET

PS	PS after oven test	PVC	PVC after oven test	PP–PE	PP–PE after oven test

SORTEX B MultiVision
Color and foreign material removal

The SORTEX B MultiVision optical sorter has been built for plastics in throughputs of up to 7 T/h per machine. It detects transparent and opaque colored flakes, metals and other typical foreign materials.

Maximizing profitability

Available in up to seven modules and with customized options to meet individual sorting requirements and maximizing profitability. Typical applications include removal of transparent and opaque colored PET flakes and metals as well as other typical foreign materials.

Consistent product quality

The SORTEX B MultiVision uses multiple visible wavelengths to enable the detection of all color defects. This enables you to achieve a consistent product quality with highest reject concentration.

Optimizing yields whilst minimizing waste

The product tracking software installed on the SORTEX B MultiVision accurately classifies each plastic piece as either accepted or rejected. This minimizes recirculation of defects and reduces false ejection of good plastics.

Robust build, sealed components, and long lifetime

The SORTEX B MultiVision is built to withstand hazardous environments in processing plants. Its critical components are sealed to IP5X rating for protection against dust. Additionally, wear parts such as the Broadband LED lighting and the ejectors are modularly arranged so they can be serviced or replaced easily, thus minimizing sorter downtime.
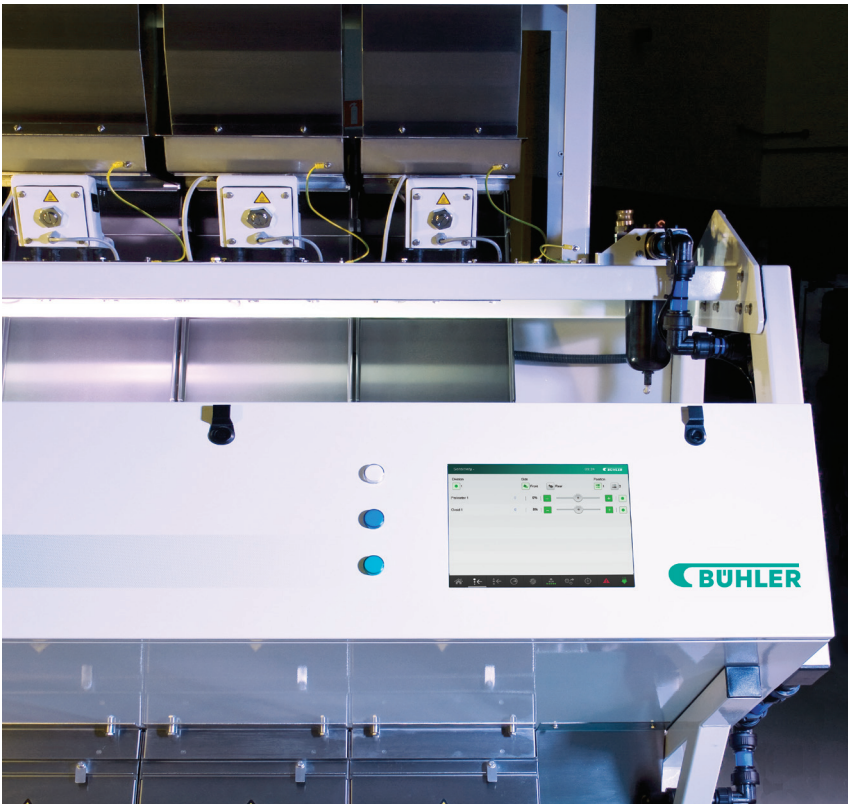
1 **High capacity**
Available with up to 7 chutes and with customized options to meet individual sorting requirements

2 **Long life, low energy consumption LED lighting**
The SORTEX B MultiVision™ includes Broadband LED lighting for excellent illumination and enhanced defect recognition.

3 **Custom-built cameras**
High resolution color cameras with up to three wavelengths for excellent color sorting capabilities

4 **SORTEX ProSortX™ operating software**
Intuitive navigation control and user functionality, simple to set up and use

5 **Product Modes**
Featuring up to 100 user-defined modes

6 **Simultaneous re-sorting**
Maximizes recovery of good product by providing the highest reject concentration

7 **Product Tracking**
Provides consistent product quality by registering changes in input and product color variation, adjusting inspection settings automatically
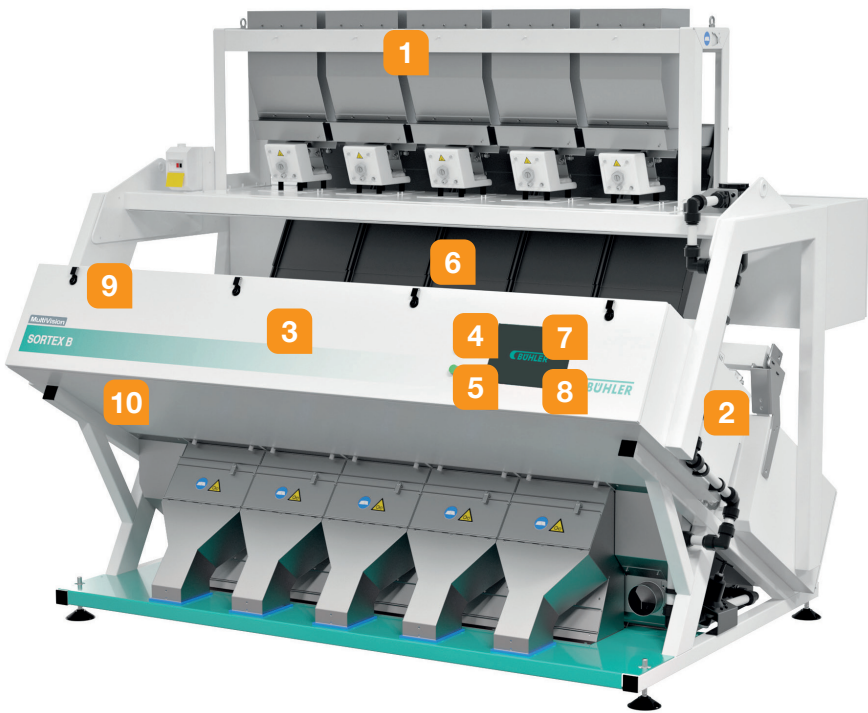
8 **Remote access for real-time monitoring**
Bühler Engineers can monitor the performance of the sorter remotely

9 **Automated Background**
Background adjusts as light levels vary delivering consistent operation

10 **Low power and air consumption**
For reduced operational costs

SORTEX B MultiVision

Defects

Superior color sorting
Opaque colors

Superior color sorting
Transparent colors

Foreign materials
Such as wood, metals, rubbers

SORTEX A ColorVision
Pinnacle of optical sorting

Process engineered with the flexibility to handle small to large capacities, the SORTEX A ColorVision is available in three different frame sizes with one to five modules. Depending on requirements, the sorters can be customized with tailored options to meet the most complex processing requirements.

Automatic calibration during setup

Machine-learning such as automatic calibration and product tracking makes it easier to set up the sorter and to keep it running at peak performance. It also saves you time in monitoring and making adjustments while the sorter is in operation.

Multiple simultaneous re-sort capabilities

Up to three separate sorting divisions in one machine enable highly concentrated reject ratios, enhanced accept qualities, or efficient color grouping requirements depending on the recycler's needs.

Maximize profitability by using PROfile™ technology

PROfile™ technology detects foreign material and defects which are the same color as the good product by size, shape and color characteristics.

Advanced inspection system

The SORTEX A ColorVision™ with InGaAs technology combines multispectral wavelengths allowing the detection of the most challenging defects such as materials of the same color as the good product.

1 Advanced inspection system
Ultimate detection of all known defects and foreign material for the most complex sorting applications

2 Broadband LED Lighting
Flexible solid state LED lighting that improves illumination and enhances defect recognition

3 High capacity feed system
Available with up to five chutes for flexible sorting configuration

4 SmartEject™ technology
Fires precisely at the whole object to ensure efficient removal

5 SORTEX ProSortX™ operating software
Simplifies a wealth of configurable options with unmatched processing speed

6 Automated Background
Background adjusts as light levels vary delivering consistent operation

7 Simultaneous re-sorting
Maximizes recovery of good product by achieving the highest reject concentration

8 Sealed optical and control cabinets
Rated up to IP5X to protect against dust ingress maintaining a stable and reliable operation in dusty environments

9 ATEX Compliant
Certified for use in hazardous environments

10 Low power and air consumption
For reduced operational costs

11 Remote access for real-time monitoring
Real time monitoring by Bühler Engineers of the performance of the sorter from anywhere in the world

SORTEX A ColorVision

Defects

Superior color sorting
Opaque colors

Superior color sorting
Transparent colors
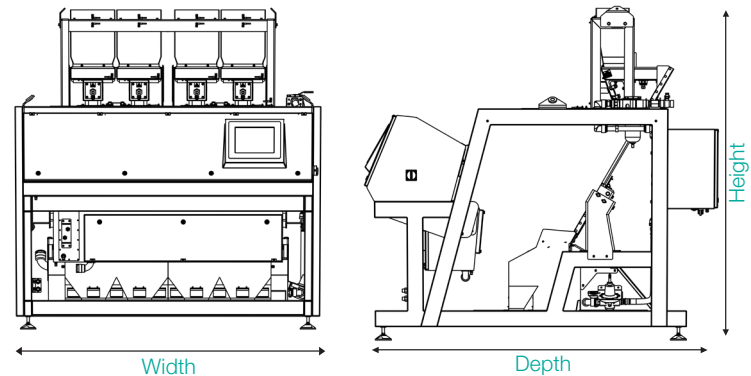
Foreign materials
Such as wood, metals, rubbers

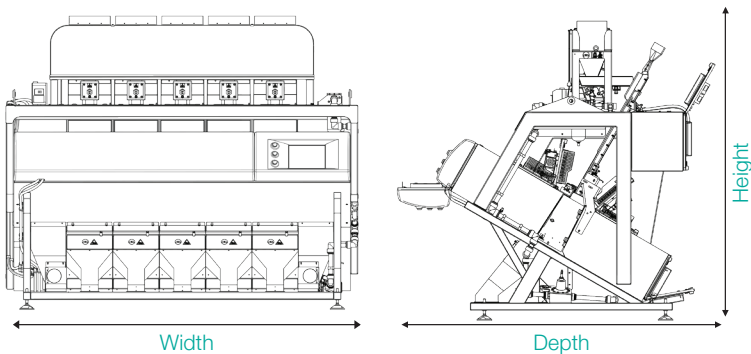**Shape sorting**
Such as misshapen pellets

Technical specifications

SORTEX N PolyVision

Module	Width	Depth (door shut)	Depth (door open)	Height	Weight*	Typical air requirements	Typical power consumption**
						0.6-0.8 Mpa	(220v, 50/60 Hz single phase)
	mm	mm	mm	mm	kg	L/s	kW
N1	1365				600	5	1.5
N2	1959	2181	2926	2042	856	10	2.2
N3	2623				1100	15	4

SORTEX A GlowVision

A3					1064	25	2.8
A4	2387	1708	2342	2088	1107	32	3.2
A5					1150	40	3.6

*Unpacked weight. Figures will vary based on machine specifications.
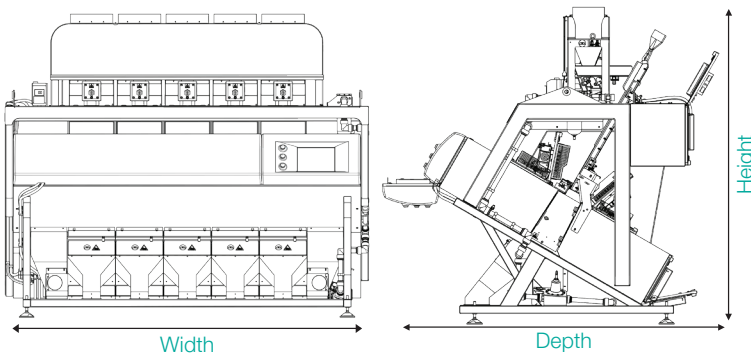
**Figures will vary based on contamination levels.

***Figures will vary based on machine specifications.

SORTEX B MultiVision
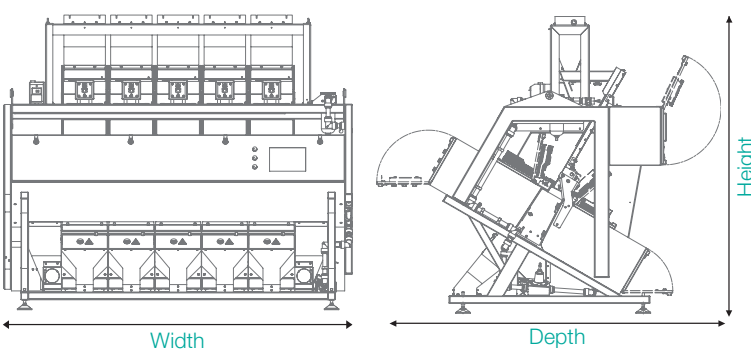
Module	Width	Depth (Doors Open)	Depth (Doors Shut)	Height	Weight*	Typical air requirement (L/s)**	Typical power consumption (kW)***
						72-102 psi	200-240v,
	mm	mm	mm	mm	kg	(5-7 bar)	50/60 Hz single phase
B1	1000	2340	1625	2088	500	8	0.9
B2	1787	2340	1625	2088	927	16	1.2
B3	1787	2340	1625	2088	970	24	1.5
B4	2387	2340	1625	2088	1107	32	2.1
B5	2387	2340	1625	2088	1150	40	2.9
B6	3047	2340	1625	2088	1270	48	3.0
B7	3047	2340	1625	2088	1350	56	3.1

SORTEX A ColorVision

A1	1000	2333	1708	2088	500	8	1.5
A2	1788	2333	1708	2088	927	16	2.3
A3	1788	2333	1708	2088	970	40	3.6
A4	2387	2333	1708	2088	1107	32	3.4
A5	2387	2333	1708	2088	1150	40	4.5

*Unpacked weight. Figures will vary based on machine specifications.

**Figures will vary based on contamination levels.

***Figures will vary based on machine specifications.

With you
at every step.

We at Bühler believe in nurturing lifelong partnerships with our customers. We are here to help you 24/7, providing customer service that you can depend on. From maintenance and product testing, to training and digital services, our aim is to boost your production performance and ensure an unmatched quality of final product for your customers.

Performance Optimization

Connecting your sorter to Bühler Insights enables you to collecting real-time data. Our digital services such as SORTEX Monitoring System and SortControl enable you to remotely monitor and control your sorting performance and turn it into actionable insights leading to productivity, quality and efficiency optimization.

Remote Services

As a member of the Bühler family we offer you a range of aftercare solutions to enjoy, including: Tests, repairs and remote support from our Service Engineers based at 98 Bühler service stations around the world.
myBühler portal – our trusted customer portal which provides you with all the information you'll need to run your SORTEX machine.
TotalCare – our service package for repairs and performance optimization.
Retrofit services – which allow you to update or upgrade your machine, increasing its lifecycle.
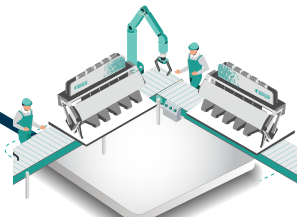
Validation and solution

You send us your technical requirements and product photos, including any defects. If your application has been processed by our machinery before we can refer to our database of over 10,000 samples to propose one of our tried and tested solutions. If your commodity has not been tested by us before, we invite you virtually via live stream to run a small-scale sample test. Alternatively, you can visit one of our 14 applications labs located all around the world.

Based on the test results, we collaborate with you to create a bespoke SORTEX solution that you are confident in, that will suit your unique processing requirements and increase your business performance.
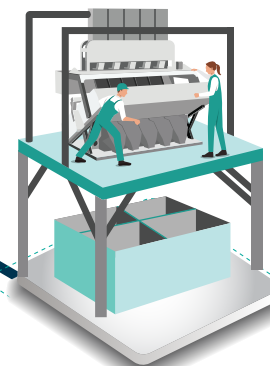
Manufacturing

With 32 manufacturing sites around the world, we have a very high in-house production capacity, including development of intricate cameras and sensors. Our optical sorters are not built on stock, but rather based on your specific needs.

Operation

Our sorters are intuitively designed for easy operation and flexibility with quick product changeovers. We offer operator training courses conducted by our Service Engineers on-site at your plant.

Discovery

You discover Bühler via our experienced Sales Managers, through marketing collateral, at an event, or from our website. Together we discuss your problem areas and sorting needs.

Installation

Using integration drawings, the machines are fitted and tested by our experienced and highly trained local language speaking Service Engineers. They connect the machine to your plant's automation system using PLC or other plant networks.

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