



Nuts and Dried Fruit  
**Sorting Solutions.**

# Nuts and Dried Fruit Sorting from Bühler. **Equipment and Solutions.**

1	The Bühler Advantage	3
2	Nut and Dried Fruit Applications	4
3	Specialist Applications	5
4	Dehydrated fruit applications	6
5	SORTEX® F Optical Sorter	8
6	SORTEX® A Optical Sorter	10
7	SORTEX® E Optical Sorter	11
8	Innovative Technologies	12
9	Model Variants and Specifications	14
10	SORTEX® Customer Care	15



# 1 Bühler in partnership with processors. **An integral part of the nut and dried fruit processing industry.**

Bühler is a leading global supplier of optical sorting solutions to the food and non-food processing industries and has been at the forefront of pioneering optical sorting technology since 1947.

With a commitment to substantial investment in research and development, Bühler's proprietary sorting technology delivers excellent results in removing the most challenging defects and foreign materials in a wide range of applications.

Nut and dried fruit processors, whether primary or secondary, can be confident of world-class performance when placing Bühler's SORTEX® optical sorters in their processing line for in-shell, natural and blanched nuts, as well as dried fruit applications.

## **Key benefits**

- Exceptional color, shell and foreign material detection
- Flexible solutions for small and large scale processors
- The most hygienic optical sorters, lowering the risk of contamination

## 2 Flexible optical sorting solutions. At all stages of the processing line.



### In-shell

SORTEX® optical sorters reduce the levels of foreign materials and rotten kernels amongst in-shell applications to improve the efficiency further down the processing line.

Color, size and shape grading early on also ensures a consistent input to the cracking and shelling process with only the highest grade nuts being approved as fit for further processing.



### Natural

The most subtle visible defects are removed from natural nut applications as well as foreign materials which may have been missed by mechanical cleaners or introduced during further processing. SORTEX® optical sorters are equipped with the most advanced optical sorting technologies to ensure stringent safety and quality specifications are achieved every time.



### Blanched

Adhering skin, foreign material and subtle color defects especially those enhanced by the blanching process are removed with pinpoint precision for top quality blanched kernels ready for snacks, ingredients and toppings.



In-shell pistachios



In-shell almonds



Red skin peanuts



Walnuts



Pecans



Blanched peanuts



Blanched almonds



Whole cashews

### 3 Serious about food safety. **Specialist sorting applications.**



#### **Aflatoxin reduction**

Bühler has been at the forefront of pioneering aflatoxin reduction since the 1980s' after tests in Senegal, using the SORTEX® 1161, prove optical sorting could substantially reduce aflatoxin levels amongst ground nuts.



#### **Shell and foreign material removal**

Bühler's SORTEX BioVision™ detection system has revolutionized the nut processing industry, helping processors meet strict food safety standards with a zero tolerance approach for shell and foreign materials in the good product stream.

The technology can be positioned at all stages of the processing line, acting as a defense against shell, hull, membrane or foreign materials from the harvest process or as a final barrier against foreign materials such as glass and plastic which often occur during transportation or further processing.

## 4 Dehydrated fruit applications.

Dried fruit applications can be graded by size and color, removing discolored, burnt or misshaped product to improve product quality. Hazardous foreign materials such as embedded pits, attached stems, sticks, stones, glass and plastic are removed with force using Bühler's intelligent ejector technology.

■ Accept ■ Reject



Cherries



Raisins



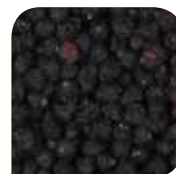
Figs



Apricots



Blueberries



Elderberries



**5** 4-in-1 defect and foreign material detection on our most hygienic platform.

## **SORTEX® F.**

The industry's most hygienic optical sorter, enhanced for nut and dried fruit processors with a high capacity 600mm or 1200mm viewing area, built-in climate control and dust extraction kits. Available with high performance technologies - SORTEX® BioVision™, SORTEX PolarVision™ and SORTEX InGaAs<sup>HD</sup>.



### **SORTEX® F.**

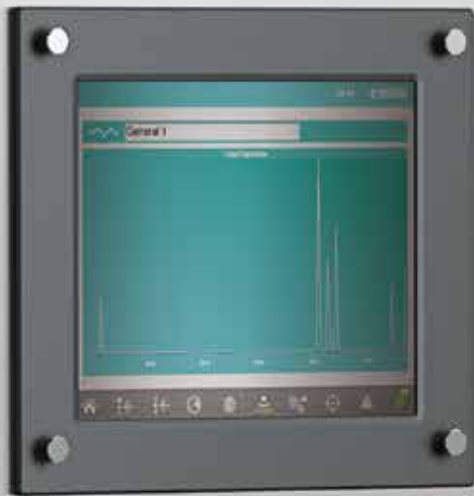
The SORTEX F optical sorter pushes the boundaries in hygienic design with the most accessible frame the market has ever seen, lowering the risk of contamination thanks to its hygienic grade fixings, sloped surfaces and easy cleaning access. Combine this with breakthrough sorting technology including SORTEX BioVision™ detection system offering processors 4-in-1 detection with advanced camera technology which targets color defects, shell, shape, along with the SORTEX PolarVision™ for unprecedented foreign material detection including wood, cardboard, plastics, pits and glass.

The pioneering sorter can be configured for all areas of the nut and dried fruit processing industry, from primary to secondary processors including manufactures of snacks, nut spreads and nut milks for a versatile solution which focuses on hygienic and efficient sorting, seamlessly, at all stages of the processing line.

- SORTEX BioVision™ detection system
- SORTEX PolarVision™
- Adjustable 600mm and 1200mm chute
- Open receptacle
- Custom-built color cameras
- High definition InGaAs<sup>HD</sup> cameras
- PROfile™ (shape) technology
- MultiVision™ technology
- LED-Xenon lighting
- 17 inch touch screen user interface
- Re-sort capabilities
- ProSortX™ operating software
- Climate control system



BUHLLER



SORTEX F  
*BioVision*



## 6 Color and foreign material removal. **SORTEX® A.**

Available in three different frame sizes and technologies, including the MultiVision™ and ColorVision™ InGaAs inspection systems, the SORTEX A provides nut and dried fruit processors with dedicated customized options to handle unique and challenging sorting requirements, regardless of processing size.



One module

Two / Three module

Four / Five module

### **SORTEX® A.**

Equipped with Bühler's custom-built inspection and lighting systems, the SORTEX A removes a range of defects including yellows, mold, light, dark and black spots and shriveled kernels as well as various foreign materials such as glass, stones and plastic.

Featuring Bühler proprietary technologies including Product Tracking, Auto-Calibration, High-Lumen LED Lighting and the new SORTEX ProSortX™ operating system, the SORTEX A offers ease of use, removing the need for manual intervention whilst delivering consistent high sorting performance.

- MultiVision™, ColorVision™ InGaAs and standard inspection systems
- High capacity feeding with up to 5 chutes
- Custom-built color cameras
- InGaAs cameras
- PROfile™ (shape) technology
- SmartEject™ technology
- Broadband LED lighting
- Re-sort capabilities
- ProSortX™ operating software

## 7 Flexible shell, color and foreign material removal. **SORTEX® E.**

The SORTEX E is designed for nut and dried fruit processors looking for a hygienic sorting solution at lower processing capacities. Available with Bühler's advanced SORTEX BioVision™ detection system which detects shell and foreign materials up to 50% smaller than other industry solutions today and SORTEX PolarVision™ for outstanding foreign material detection.



### **SORTEX® E.**

The SORTEX E offers processors a high performance sorting experience in a small footprint. Designed to bring the benefits of larger sorters to smaller processors, while delivering nothing but the highest quality product at all stages of the processing line.

Available with the advanced SORTEX BioVision™ detection system, SORTEX PolarVision™, state-of-the-art high definition InGaAs<sup>HD</sup> cameras and PROfile™ detection technologies, the SORTEX E is capable of handling multiple nut and dried fruit varieties for best in class foreign material detection.

- SORTEX BioVision™ detection system
- SORTEX PolarVision™
- 600mm chute
- Custom-built color cameras
- High definition InGaAs<sup>HD</sup> cameras
- PROfile™ (shape) technology
- SmartEject™ technology
- Broad spectrum lighting
- Re-sort option
- ProSortX™ operating software

## 8 Innovative Technologies. Leading the way through innovation.



### **SORTEX® Detection Systems**

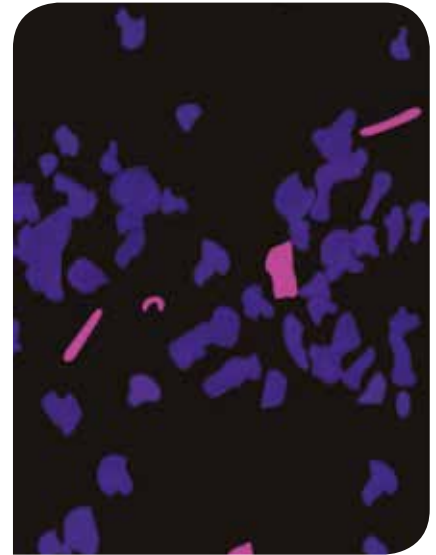
The advanced SORTEX BioVision™ and PolarCam™ detection systems are a unique configuration of detection technologies which includes BioCam™ or PolarCam™ combined with either high definition InGaAs<sup>HD</sup>, color cameras, or both.

The innovative BioCam™ technology is specifically designed for nuts, targeting the spectral and spatial differences between the nut and shell, while the PolarCam™ technology targets the spectral and spatial differences between dehydrated fruits and foreign materials.



### **Custom-built visible cameras**

Bühler's high resolution color cameras, which are designed and custom-built in house, remove gross and subtle color defects such as dark, rotten, yellow or blemishes and reduce aflatoxin contaminated kernels from a variety of applications to increase product quality, safety and uniformity.



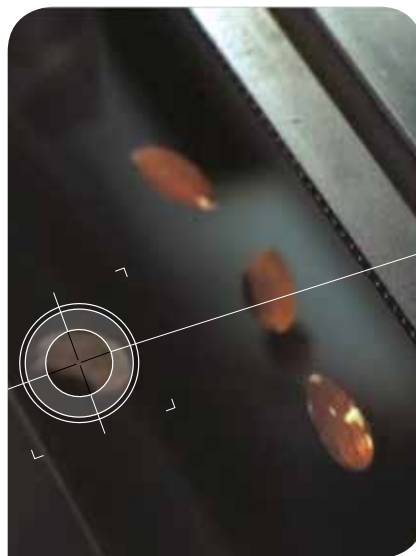
### **InGaAs<sup>HD</sup> Technology**

The next generation infrared detection technology from Bühler now comes in high definition with double the resolution to detect foreign materials down to half the size. With twice as many pixels, InGaAs<sup>HD</sup> detects the smallest pieces of hazardous materials that cannot be seen in the visible spectrum for an added layer of assurance.



## PROfile™ Technology

PROfile™ technology can intelligently detect and virtually separate touching objects, allowing for higher capacity shape sorting. It can also use a combination of multiple shape parameters to remove stems and under or oversized products at the same time.



## Intelligent Ejector Technology

SmartEject™ - high speed, high flow ejectors efficiently remove defects with pinpoint precision and accuracy.

Ejector+ technology, Bühler's most powerful ejectors are available on the SORTEX E and SORTEX F optical sorters to remove heavier objects such as stones and glass.



## SORTEX® ProSortX™ operating software

The latest update of Bühler's proprietary operating software comes with a fresh new interface that's modern, clean and intuitive to use. Featuring innovative FingerTipControl™ and all-new Bühler ATOM™ board for faster processing and navigation between screens.

# 9 Model Variants and Specifications.

## Models and variants

	SORTEX® F	SORTEX® E	SORTEX® A
SORTEX BioVision™	●	●	
Flexible Color Cameras	■	■	■
InGaAs <sup>HD</sup>	●	●	●
PROfile™ technology	●	●	●
LED-Xenon lighting	■		
Halogen lighting		■	
Broadband LED lighting	■		■
Climate Control	■	■	●
SORTEX ProSortX™	■	■	■
Remote access	●	●	●
ATEX		●	●
CE Certification	■	■	■

■ Standard    ● Optional

For the full feature list, contact your local representative.

## Dimensions, air and power requirements

	SORTEX F		SORTEX E (long chute)	SORTEX A		
	FB1	FB2	Includes in-feed vibrator	One module	Two/Three module	Four/Five module
<b>Width</b> (mm/in)	1610, 63	2216, 87	1514, 60	1000	1788, 70	2387
<b>Length</b> (mm/in)	3010, 118	2985, 117	3194, 126	1708	1708, 67	1708
<b>Height</b> (mm/in)	2112, 83	2112, 83	2657, 105	2088	2088, 82	2088
<b>Weight</b> (kg/lbs)	850, 1874	1200, 2645	680, 1500	500	927-970 2043-2138	1107-1150 2440-2535
<b>Typical air requirements (L/s)*</b> 72-102 psi (5-7bar)	32	65	32	8	16-24	32-40
<b>Typical Power consumption (kW)**</b> (200-240V; 50/60 Hz single phase)	2.4kW	6kW	2.5kW	1.5kW	2.3-3.1kW	

\* Figures will vary based on throughput and input contamination levels.

\*\* Figures will vary based on machine specifications.

## 10 SORTEX® Customer Care. Secure tomorrow's profits today.

Bühler customers have access to a network of over 140 Sales and Service offices worldwide, offering customizable service packages, stock on spares and upgrade kits, to ensure your optical sorters perform at maximum possible efficiency. Training courses and Competence Centers offering application and product trials are also available at regional sites and from local offices around the world.

### TotalCare™

Create a customized service package, composed of individual service features from the list below. From maintenance visits, downtime cover to refurbishments and preventative - basic to fully comprehensive. Designed to ensure your optical sorters perform at its maximum performance.

#### TotalCare Protect

##### Minimize Downtime

Based on an agreed number of annual visits, Bühler engineers will replace key wear parts, provide consultation and advise on future maintenance requirements.

#### TotalCare Perform

##### Performance Optimization

Aspiring to keep downtime to under 24 hours, sorters will be safeguarded against any failed components. Bühler engineers will ensure first-rate performance once the repair is carried out.

#### TotalCare PerformPLUS

##### Ejector Refurbishment

Making certain that sorters are running at peak performance, ejectors are replaced when the stipulated life-cycle is reached. Performance is maintained for the future.

#### TotalCare Anyware

##### Supervised Functionality

Provides a working record of operational information as well as reports that enable machine health to be monitored and preventative maintenance scheduled.

#### TotalCare AnywarePRO

##### Remote Access and Assistance

Sorter performance can be viewed remotely by customers and Bühler engineers. Faults can be diagnosed and performance optimized in any location using a laptop, tablet or smart phone.

**All contract options are available for variable durations.**

### SORTEX® Spare Parts Promise

Customer satisfaction is our priority. This is why we strive to deliver both spare and wear parts within 48 hours - maximizing your profitability.

### SORTEX® Upgrade Kits


Bühler have designed various upgrade kits, for existing customers who are seeking to upgrade sorters with an additional module, new technology features or processing software.

### SORTEX® Spare Parts

Various kits to suit different optical sorters are available for customers who wish to have spare parts available on site.

### Optical Sorting Training Courses

Available from various regional Bühler locations. From operator to management, basic to advance, speak to your local representative for course selection and availability.



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