Optical Sorting.

Agricultural Seeds.
Outstanding Performance.
Seed sorting from Bühler.

Bühler provides optical sorting solutions for seed processors who demand the highest standards of seed quality. With a focus on maximising the seed yield, both in terms of cleaning and germination in the fields, the SORTEX range is able to sort many varieties of agricultural seeds; field crops, vegetable seeds, herbage seeds and many others.

Bühler’s commitment to substantial investment in R&D ensures that its advanced optical sorting technology produces excellent results in removing even the most challenging of seed defects and foreign material. Bühler can offer these solutions to small or large-scale processors.

Key Benefits
- Maximising germination and enhancing the appearance in seed lots
- Improving the yield
- Consistent performance
- Increased productivity and lower operational costs
- Multiple, configurative machine options

Sorting solutions
Bühler offers flexibility to seed processors; depending on individual requirements, optical sorting can contribute to product quality before or after mechanical grading.

Untreated
Before mechanical grading
- On certain applications, using optical sorting before mechanical grading can reduce the potential loss in yield from mechanical process

Untreated
After mechanical grading
- Optical sorting can remove defects which have been missed, not targeted or caused by the mechanical process, achieving a homogenous appearance and high germination level

Field Crop Seeds
- Corn
- Soya
- Wheat
- Cotton
- Paddy
- Sunflower
Special Applications

Bühler can cater to more specialised requirements, such as the sorting of treated seeds after the coating stage - subject to the treatment type and seed condition. The sorters are also capable of handling very small quantities, for analysis. Please contact your local representative to discuss specific requirements.

**Treated**

*After coating*

- Removes partially coated seeds
- Reduces the level of cross contamination (by colour separation)
- Removes refuge seeds from other chemically treated seeds

**Batch processing**

*Small Capacities*

- The SORTEX range can be customised to run small batches
- Reduces hand sorting on small batches
- The single module sorter can handle capacities as low as 100kg/hour for analysis

**Vegetable seeds**

- Carrot
- Onion
- Lettuce
- Sweet corn
- Spinach

**Herbage seeds**

- Grass
Partner for solutions. 
Increasing profitability.

Maximising germination and enhancing the appearance in seed lots
- The combination technologies including the latest MultiVision inspection system, Enhanced InGaAs and PROfile technology, LED and Broad Spectrum lighting ensures the selection of the highest quality seed
- SORTEX optical sorters improve the appearance in seed lots by ensuring the seed is homogeneous in size, shape and colour
- The Bühler optical sorting solutions deliver a high efficiency in the removal of visual defects such as diseased seeds, insect damaged seeds, misshapen seeds, brokens, foreign material and unwanted seed types
- Excellent results can also be achieved in removing even the most challenging of seed defects, e.g. defects the same colour as product
- Efficiency is further maximised by reducing cross contamination of seeds
- Careful handling of the seed also improves the overall levels of germination

Increased productivity and lower operational costs
- SORTEX optical sorting can improve on the performance of mechanical cleaners and manual operations, delivering better output with lower overall costs
- The efficiency of a SORTEX machine will minimise the factory floor footprint, in comparison with larger mechanical cleaners
- The Graphical User Interface (GUI) enables fast product changeovers and covers a wide range of user defined modes
- Assisted by the Anyware remote connection, Bühler engineers can respond quickly in support of a machine, maximising up-time and further enhancing productivity

Multiple, configurative machine options
- The SORTEX optical sorter can easily be switched between modes, programmed to sort different variants of agricultural seeds and is capable of simultaneously rejecting grossly-visible defects, subtly-visible defects, same-colour defects and shape defects
- A range of cutting-edge inspection technology deliver an “all-in-one” sorting solution for all defects and foreign material, making it unnecessary to switch filters to target different defect types
- With its modular design, the SORTEX range can handle multiple capacities. While a single module can be used to run small batch samples for lab analysis, as low as 10kg batches on vegetable seeds, a multi-module machine can handle an industrial throughput of up to 20 tonnes/hour on corn seeds
- A SORTEX machine can easily be configured to operate in one of many languages

Improving the yield
- The high precision ejection system minimises false rejects of good seed, delivering a very highly-concentrated reject stream
- Due to minimal loss of good seeds on first pass, most seed applications do not require a re-sort; however a re-sort option is available if necessary

Consistent performance
- SORTEX optical sorters deliver a stable and reliable operation with automatic calibration and wiping
- The Climate Control System is provided to maintain a stable temperature inside the optical and electronic cabinets, enabling the optical sorters to operate successfully in extremes of ambient temperature
Clean.
Productive.
Consistent.
SORTEX A MultiVision.
Subtle colour detection and shape sorting.

- MultiVision Inspection
- LED Lighting
- PROfile (shape)

Also available in visible monochromatic and ColorVision range

- Advanced MultiVision inspection system for subtle colour detection, improve appearance and reduce cross contamination
- Offered with PROfile (shape) technology as a standard feature to remove difficult-to-detect foreign material and misshapes
- A range of lighting options including LED, fluorescent and Broad Spectrum lighting targeting a wide range of defects for various types of seeds
- State-of-the-art Enhanced InGaAs (NIR/SWIR) technology and lighting maximises product safety
- Available in 3 to 5 modules offering the highest throughput and flexibility in the sorting configuration
- Low voltage digital drive technology vibrators and enhanced background for even feed and improved module to module sorting consistency
- Climate Control System ensures a consistent performance and stability for maximum up-time
- Improved dust management increases capacity and reduces downtime by using self wiping windows and the sealed optical boxes minimise maintenance even in dustier environments
- CE marked with option to meet ATEX/Hazloc/NRTL requirements

Corn

Accept
Reject
SORTEX A MultiVision InGaAs.
Targeting sclerotia and other foreign material.

Technical details

<table>
<thead>
<tr>
<th>Air requirements</th>
<th>Power consumption (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72-102 psi (5-7 bar)</td>
<td>(200-240V; 50/60 Hz single phase)</td>
</tr>
<tr>
<td>A3</td>
<td>25 l/sec @ 85 bar</td>
</tr>
<tr>
<td>A4</td>
<td>35 l/sec @ 85 bar</td>
</tr>
<tr>
<td>A5</td>
<td>45 l/sec @ 85 bar</td>
</tr>
</tbody>
</table>

Compressed air consumption is approximate and varies depending on throughput and input contamination level. Power consumption can vary depending on the machine configuration.

Dimensions and weight

<table>
<thead>
<tr>
<th>Weight</th>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kg, lbs)</td>
<td>(mm, in)</td>
<td>(mm, in)</td>
<td>(mm, in)</td>
</tr>
<tr>
<td>A3</td>
<td>850, 1874</td>
<td>2387, 94</td>
<td>1685, 66</td>
</tr>
<tr>
<td>A4</td>
<td>1000, 2205</td>
<td>2387, 94</td>
<td>1685, 66</td>
</tr>
<tr>
<td>A5</td>
<td>1150, 2535</td>
<td>2387, 94</td>
<td>1685, 66</td>
</tr>
</tbody>
</table>

Weight can vary depending on the machine configuration.

- MultiVision Inspection
- LED Lighting
- Enhanced InGaAs
- PROfile (shape)
- Broad Spectrum Lighting
- Climate Control

Sunflower

Accept

Reject
SORTEX Z+.
Maximum flexibility for colour sorting.

- Available in four sizes for monochromatic or bichromatic ranges
- Designed for handling nearly all types of seeds at any stage of the process line
- High resolution, visible monochromatic and bichromatic cameras, combined with InGaAs technology, enable efficient colour sorting and removal of challenging foreign material
- PROfile technology enhances the detection of unwanted objects using shape characteristics
- Climate Control System ensures a consistent performance and stability
- Broad Spectrum Lighting enables viewing of a wide range of defects
- Dust extraction system improves management of dusty products
- Capable of performing different sorts simultaneously in the same machine, including re-sort of the reject
- Reverse sorting capability for recovery of good product

Soya

Accept

Reject
SORTEX Z+R.
Targeting colour defects and foreign material.

Technical details

<table>
<thead>
<tr>
<th>Typical Air requirements 72-102 psi (5-7 bar)</th>
<th>Power consumption (kW) (200-240V; 50/60 Hz single phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z+1 8.6 l/sec</td>
<td>1.5 [2.2]²</td>
</tr>
<tr>
<td>Z+2 17.3 l/sec</td>
<td>2.5 [3.7]²</td>
</tr>
<tr>
<td>Z+3 26.0 l/sec</td>
<td>2.5 [3.7]²</td>
</tr>
<tr>
<td>Z+4 34.6 l/sec</td>
<td>3.0 -</td>
</tr>
</tbody>
</table>

Compressed air consumption is approximate and varies depending on throughput and input contamination level.

² For the SORTEX Z+R range

Dimensions and weight

<table>
<thead>
<tr>
<th>Weight (kg, lbs)</th>
<th>Width (mm, in)</th>
<th>Depth (mm, in)</th>
<th>Height (mm, in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z+1 612,1349</td>
<td>850, 22.8</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
<tr>
<td>Z+2 800, 1764</td>
<td>1680, 66.14</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
<tr>
<td>Z+3 900, 1984</td>
<td>1680, 66.14</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
<tr>
<td>Z+4 1050, 2315</td>
<td>1980, 78.0</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
</tbody>
</table>

Climate Control System for the SORTEX Z+R range adds ~570mm to the width and ~95kg to the weight.

Note: The SORTEX Z+R model is only available in three sizes.

Rapeseed

Accept

Reject

Agricultural Seeds Optical Sorting 9
Visible Cameras

Bühler’s cameras are designed and built in-house to meet customers’ specific needs. High resolution optic sensors deliver the colour registration needed to detect the most subtle colour defects. When combined with InGaAs technology these sensors allow SORTEX optical sorters to detect many commonly found foreign materials that compromise the appearance and cleanliness of the end product.

InGaAs Technology

Enhanced InGaAs (NIR - Near Infra-Red/ SWIR - Short-Wave Infra-Red) technology detects a wider range of contaminants than previously possible and is particularly effective in identifying the most challenging of seed defects. It provides a much better separation of good product from foreign material of the same colour.

PROfile Technology

PROfile technology can intelligently detect and virtually separate touching seeds, allowing for a higher capacity shape sorting. Another added feature of the PROfile technology is the capacity to use a combination of multiple shape parameters to reduce under, oversized or misshapen seeds at the same time.

LED Lighting

The SORTEX A MultiVision range offers a high intensity solid state LED lighting system. Energy efficient and durable, Bühler’s LED system generates less thermal heat but still produces more light, resulting in sorting consistency over a longer period of time.
SORTEX Customer Care.
Secure tomorrow’s profits today.

Solutions and support to ensure that your optical sorter is performing to maximum efficiency, delivering maximum productivity and making a maximum return on investment.

Bühler’s worldwide Customer Care organisation delivers the highest quality local support by offering a variety of services under SORTEX Total Care*.

**SORTEX Total Care**

SORTEX Total Care offers customers the opportunity to create their own service package, composed of individual service features, to best suit their needs.

Customers have the flexibility to create their most (cost) effective programme - whether that covers just those areas of prime concern, or a fully-comprehensive cover.

Comprehensive cover is suitable for customers who require continuous operation of the optical sorter where the processing line is of the utmost importance. This way, customers can ensure that their investment is fully protected.

Customers can tailor their individual package from the following options.

- **WearCare - Preventative Maintenance**
  A fixed number of visits per year. During the visit an engineer will carry out checks, adjustments and when necessary replace consumable or wear parts.

- **RepairCare - Emergency Repair**
  In the unlikely event of the machine failing, an engineer will visit and repair the optical sorter.

- **EjectorCare - Ejector Service and Repair**
  When the ejectors reach their refurbish point an engineer will visit to replace the ejectors with the appropriate number of units for the whole machine.

- **AnywareCare - Anyware Health Check and Alerts**
  The Anyware system allows the performance of optical sorters to be monitored remotely.

  This diagnostic system facilitates a quicker response to any issues that might emerge. It automatically emails an alert message to the server, if an optical sorter develops a fault, or begins to operate outside normal working parameters.

  An authorised engineer reviews the information in the alert, and advises whether adjustment is needed, or if the problem needs further attention.

**SORTEX Spares Kits**

For customers who require spare parts available on site, Bühler’s technologists have created appropriate spares kits for the different machinery available.

**SORTEX Upgrade Kits**

Customers seeking the latest technology available on their optical sorter - whether software or extra functionality - benefit from a range of upgrade kits available.

* All contracts are available for different durations