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, configurable 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

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**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.

<table>
<thead>
<tr>
<th>Vegetable seeds</th>
<th>Herbage seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrot</td>
<td>Grass</td>
</tr>
<tr>
<td>Onion</td>
<td></td>
</tr>
<tr>
<td>Lettuce</td>
<td></td>
</tr>
<tr>
<td>Sweet corn</td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td></td>
</tr>
</tbody>
</table>

**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
Partner for solutions.
Increasing profitability.

Maximising germination and enhancing the appearance in seed lots

- Advanced custom-built technology – visible cameras, high resolution InGaAs technology, unique PROfile technology (with the possibility of combining colour and shape) – ensures the selection of the highest quality seed.
- SORTEX optical sorters will 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, broken, 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.

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.
- On certain models within the SORTEX range, 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.

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, configurable 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.
- Technological offerings include true bichromatic cameras which 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.
Clean.
Productive.
Consistent.
The SORTEX Z+ uses leading edge technology to deliver effective solutions to processors in the seed industry. The bichromatic cameras and PROfile technology detect subtle colour and shape defects to a high efficiency. The high-speed, serviceable ejectors ensure precision sorting even at a high capacity, for the smallest seeds.

- 12.1" user-friendly touch screen interface
- Bichromatic visible cameras
- PROfile technology
- Product re-sorting option
- User defined modes
- Single phase supply with low power consumption
- External USB port for data retrieval

Corn

Accept

Reject

Actual styles may vary from those shown.
SORTEX Z+ specifications:

Technical details

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

Dimensions and Weight

<table>
<thead>
<tr>
<th>Type</th>
<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</td>
<td>612, 1349</td>
<td>850, 22.8</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
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<tr>
<td>Z+2</td>
<td>800, 1764</td>
<td>1680, 66.14</td>
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<td>Z+3</td>
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<td>2198, 86.5</td>
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<td>Z+4</td>
<td>1050, 2315</td>
<td>1980, 78.0</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
</tbody>
</table>

The compressed air consumption of the sorter varies depending upon throughput and input contamination.

Soya

Accept

Reject
Using InGaAs (NIR/SWIR) technology, the SORTEX Z+R removes defects of the same colour as product and is able to target these defects efficiently for the smallest of seeds. The Climate Control System provides consistent performance in extreme ambient temperatures.

- 12.1" user-friendly touch screen interface
- InGaAs technology
- Bichromatic visible cameras
- PROfile technology
- Climate Control System
- User defined modes
- Single phase supply with low power consumption
- External USB port for data retrieval
SORTEX Z+R specifications:

### Technical details

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<tr>
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<th>Power consumption (kW) (200-240V; 50/60 Hz single phase)</th>
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<tr>
<td>Z+1</td>
<td>8.6 l/sec</td>
<td>2.2</td>
</tr>
<tr>
<td>Z+2</td>
<td>17.3 l/sec</td>
<td>3.7</td>
</tr>
<tr>
<td>Z+3</td>
<td>26.0 l/sec</td>
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<th>Width (mm, in)</th>
<th>Depth (mm, in)</th>
<th>Height (mm, in)</th>
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<tr>
<td>Z+1</td>
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<tr>
<td>Z+3</td>
<td>995, 2194</td>
<td>2250, 88.6</td>
<td>2198, 86.5</td>
<td>2031, 80.0</td>
</tr>
</tbody>
</table>

Actual styles may vary from those shown.

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Rapeseed

![Accept](image1) ![Reject](image2)

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Innovative technologies.
Removing unwanted seeds and foreign material.

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 sorters to detect many commonly found foreign materials that compromise the appearance and cleanliness of the end product.

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.

InGaAs Technology

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 much better separation of good product from foreign material of the same colour, in comparison with a visible camera.

Ejectors

The Bühler ejector is custom-designed and precision-built for high speed, easy serviceability and long life. Through constant development, the ejector’s life span has been increased significantly. This efficiency of operation and maintenance enables the low cost of ownership of SORTEX sorters.
Bühler’s worldwide Customer Care organisation delivers the highest quality local support by offering a variety of service packages. The SORTEX Total Care and SORTEX Care programmes combine local support with a range of services, embracing the latest in communications technology.

**GOLD - Ensure maximum up-time**
SORTEX Total Care Gold offers the most comprehensive support to ensure that your investment is fully protected. It promises maximum up-time and delivers proactive support of the highest quality. It is designed for those customers whose sorter is critical to production.

**SILVER - Minimise down-time**
SORTEX Total Care Silver ensures high quality focused services that maintain the sorter in optimum condition. The SORTEX Total Care Silver package offers extensive service features that address sorter maintenance and guard against problems.

**BRONZE - Essential support**
SORTEX Total Care Bronze offers a valuable level of cost effective protection to areas of prime concern. Self selectable service features can create a programme that best suits operational requirements.

### SORTEX Customer Care Packages

<table>
<thead>
<tr>
<th>Service Features</th>
<th>Gold</th>
<th>Lite*</th>
<th>Silver</th>
<th>Lite*</th>
<th>Bronze**</th>
<th>SORTEX Care Plus**</th>
<th>SORTEX Care**</th>
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<tbody>
<tr>
<td>Anyware Fault Alerts</td>
<td>■</td>
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<td>Anyware Health Checks</td>
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<td>Wear Care (Wear Parts)</td>
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<td>Repair Care (Repair Parts)</td>
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<tr>
<td>Repair Visits</td>
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<tr>
<td>Maintenance Visits</td>
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<td>■</td>
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<tr>
<td>Advanced Operator Training</td>
<td>■</td>
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</tr>
</tbody>
</table>

* For customers whose ejector service interval is more than 24 months
** Any combination is available

All contracts are available for different durations.