Optical Sorting.

Rice.
Bühler optical sorting solutions.
Rice sorting at its best.

Bühler is the global leader in optical sorting solutions for the rice processing industry. The Sortex range is equipped with the most advanced technology, such as auto-calibration, product tracking and low noise cameras; features unique to Bühler.

The commitment to substantial investment in R&D ensures that this advanced optical sorting technology produces outstanding results in removing even the most challenging of defects and foreign material.

Key Benefits
- Delivering premium quality and appearance on all varieties of rice
- Maximising the yield
- Consistent performance
- Increased productivity and lower operational costs
- Multiple, configurable machine options
- Highest capacity

Rice sorting solutions

Bühler offers rice processors flexibility of choice, without compromising on quality. The Sortex range of optical sorters is suitable for small, medium or large-scale processing and is able to cater for a wide variety of rice applications, including raw, parboiled and steamed.

Raw rice sorting
In the application of raw rice, Sortex optical sorters excel in sorting all varieties of rice - detecting and removing typical and challenging defects such as discoloured, bran streaks and foreign material.

Parboiled rice sorting
For parboiled applications, Sortex optical sorters successfully removes typical defects, such as bran streaks, discoloured and foreign materials.

The Sortex optical sorter also enables the user to achieve the highest standard of rice quality by removing the most subtle defect types with precise control.

The range of defects removed through Sortex optical sorting

- Subtle to dark purple and grey
- Pale to dark yellow
- Degrees of red and bran streaks
Sortex optical sorters are equipped with the latest technology, intelligently designed to optimise rice sorting. Along with a market leading and long standing reputation and excellent after sales service packages, Bühler will prove to be a great partner.

Steamed rice sorting
In steamed rice applications, Sortex optical sorters easily detect and remove a wide range of typical and challenging defects such as tip damage, discoloured, damaged grains and foreign material.

Full integration & product range
- Sortex optical sorters can be fully integrated into a rice milling process, enabling a fully automated product line.
- A full range of equipment for any stage within rice processing is also available; cleaning, hulling, whitening, polishing, grading and packing, including aspiration and conveying.
Partner for solutions. 
Increasing profitability.

Delivering premium quality and appearance on all varieties of rice
- The Bühler optical sorting solution is highly effective in removing discoloured, yellow, grey, purple, peck, chalky, bran streaks, immature and others - thereby greatly enhancing product appearance.
- Excellent results are achieved in improving food safety, by removing foreign material such as stones, glass, plastic and other unwanted material.
- This high quality sorting is achieved by using cutting-edge technology, designed and developed in-house; high resolution and low noise visible cameras, stable foreground and background lighting, reliable feed and ejector systems.
- Bühler’s Broken Rice Monitor offers feedback based on trends of the percentage of broken grains. Should the set tolerances be passed an alert will be displayed.

Maximising the yield
- The high precision ejection system minimises false rejects of good grain, delivering a highly concentrated reject stream.
- Availability of secondary, tertiary and simultaneous reverse sorting helps to minimise loss of good grains.
- Bühler’s feed system improves yield by delivering an even distribution of product through the viewing area.

Consistent performance
- Sortex optical sorters deliver stable and reliable operation, with product tracking, automatic calibration and auto-wiping of the viewing area.
- The design of Sortex optical sorters helps maintain their performance, in the long term. Their sealed optical boxes ensure that all optical components are kept clean and dust free, avoiding the associated reduction in performance that would ensue.

Increased productivity and lower operational 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 can manage a wide range of Sortex-developed and 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 range of optical sorters can easily be switched between modes, programmed to sort different variants of rice while simultaneously rejecting gross to subtle defects.
- 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, from as low as 500 kg/hour, a multi-module machine can handle an industrial throughput of up to 20 tonnes/hour.
- A Sortex machine can easily be configured to operate in one of many languages.
Sortex range of optical sorters - first choice in rice sorting.
SORTEX A.
Targeting the most subtle of defects.

- Especially suited for higher capacity sorting - up to 25% higher capacity per chute with patent-pending feed technology whilst maintaining a similar reject concentration
- Auto-Calibration and Product Tracking keeps sorter performance consistent, even if input changes
- High-resolution, low noise cameras detect subtle and challenging defects
- Enhanced lighting, for better detection, a receptacle specially designed to slow the rice and reduce product breakage and enhanced feed technology for uniform product flow
- Broken Rice Monitor - an alert system, to give a warning when predefined trends of broken, discoloured and spot defects in the input rice are exceeded
- Product re-sorting option (secondary or tertiary) to maximise product yield
- Sealed optical boxes protect components against dust, increasing sorting consistency and uptime
- Ease of use, with large touch screen buttons for easier operation in rice mills
- British design and build
- CE/NRTL certified with optional ATEX/HazLoc certification

Typical sorting example: White rice

Accept

Reject
**Technical details**

<table>
<thead>
<tr>
<th>Machine</th>
<th>Air requirements (N L/s)</th>
<th>Power consumption (kW) (200-240V; 50/60 Hz single phase)</th>
<th>Rice capacity (TPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4</td>
<td>34 N/L/s*</td>
<td>3.4kW</td>
<td>6.0 - 16 TPH***</td>
</tr>
<tr>
<td>A5</td>
<td>43 N/L/s**</td>
<td>3.8kW</td>
<td>7.5 - 20 TPH***</td>
</tr>
</tbody>
</table>

* at 5 bar for 12 tph of rice, 5% input contamination  
** at 5 bar for 15 tph of rice, 5% input contamination  
*** depending input contamination and required purity

**Dimensions and weight**

<table>
<thead>
<tr>
<th>Machine</th>
<th>Width (mm, in)</th>
<th>Depth (mm, in)</th>
<th>Height (mm, in)</th>
<th>Weight (kg, lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4</td>
<td>2387, 94</td>
<td>1685, 66</td>
<td>2088, 82</td>
<td>1150, 2535</td>
</tr>
<tr>
<td>A5</td>
<td>2387, 94</td>
<td>1685, 66</td>
<td>2088, 82</td>
<td>1150, 2535</td>
</tr>
</tbody>
</table>

**Typical sorting example: Brown rice**

Accept

Reject
SORTEX B.
Capacity, consistency, precision and reliability.

- Five-module design allows for higher capacity sorting and greater variation of configuration for all grades of rice
- Auto-Calibration and Product Tracking keeps sorter performance consistent, even if input changes
- Broken Rice Monitor - an alert system, to give a warning when predefined trends of broken rice are exceeded
- Cameras designed and built in-house to detect chalky, peck, pale yellows and other colours, discoloured tips and many types of foreign material
- Ease of use, with large touch screen buttons for easier operation in rice mills
- Equipped with a receptacle, specially designed to slow the rice and reduce product breakage and with predefined modes for fast product changeovers
- Product re-sorting option (secondary or tertiary) to maximise product yield
- British design
- CE certified

Technical details

<table>
<thead>
<tr>
<th>Machine</th>
<th>Air requirements 5 - 7 bar (72-102 psig)</th>
<th>Power consumption (200-240V; 50/60 Hz single phase)</th>
<th>Rice capacity (TPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B5</td>
<td>43 N L/s*</td>
<td>2.9kW</td>
<td>7.5 - 20 TPH*</td>
</tr>
</tbody>
</table>

* at 5 bar for 12 tph of rice, 5% input contamination
** depending on contamination levels and required purity

Dimensions and weight

<table>
<thead>
<tr>
<th>Machine</th>
<th>Width (mm, in)</th>
<th>Depth (mm, in)</th>
<th>Height (mm, in)</th>
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</thead>
<tbody>
<tr>
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<td>1685, 66</td>
<td>2088, 82</td>
<td>1150, 2535</td>
</tr>
</tbody>
</table>
Product overview.

<table>
<thead>
<tr>
<th>Optical Sorter Features</th>
<th>SORTEX A</th>
<th>SORTEX B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced visible low noise camera</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>InGaAs camera</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td>Enhanced feed system</td>
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<td></td>
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<tr>
<td>Enhanced lighting</td>
<td>□</td>
<td></td>
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<tr>
<td>Climate control</td>
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<tr>
<td>CE certification</td>
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<tr>
<td>NRTL/ATEX/HazLoc certification</td>
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<tr>
<td>SORTEX Total Care</td>
<td></td>
<td>□</td>
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</tbody>
</table>

- □ Available as standard.  ● Available as an option.

**Optical Sorter Features Glossary**

**Visible camera**
Cameras using the visible spectrum for the detection of product defects.

**Enhanced visible low noise camera**
High definition low noise cameras using the visible spectrum for the detection of product defects to deliver a quality sort.

**InGaAs camera**
High definition cameras, combined with InGaAs technology uses Near Infra-Red(NIR)/Short-Wave Infra-Red (SWIR) to detect a wider range of foreign materials such as sticks, stones, plastics and foreign grains.

**Enhanced feed system**
Patent-pending feed system increases product capacity and delivers an even and predictable flow of product to the cameras.

**Enhanced lighting**
Double foreground lighting system, designed to deliver bright, even lighting to the product, optimising camera performance.

**Climate control**
A system designed to maintain key areas of the machine within their optimum temperature range, ensuring consistent results.

**CE certification**
"Conformité Européenne" - a declaration that the equipment meets the relevant standards set out in European Directives.

**NRTL/ATEX/HazLoc certification**
NRTL: Declarations that the equipment meets relevant international standards. ATEX/HazLoc: Declarations that the equipment is specified as safe to operate in potentially explosive environments.

**SORTEX Total Care**
A variety of service packages tailored to customer needs.
Innovative technologies & benefits. Maximising yields and profits.

Visible low noise cameras

High-resolution, custom-designed cameras

Bühler’s optical systems are designed and built in-house to meet customers’ requirements. Bühler optical systems promise lower noise and, with enhanced lighting, provide better detection of spot defects and pale yellow defects, whilst minimising false ejection of good product.

Cameras with InGaAs technology detect a wider range of contaminants than previously possible and are particularly effective in identifying the most challenging of rice defects.

Unique system features especially for rice sorting

Exemplary ease of use with features designed for rice sorting

Product Tracking and Auto-Calibration systems are unique to Bühler. These features track changes in rice and re-adjust the sort to ensure the sorter performance remains consistent.

The Broken Rice Monitor is an alert system that offers feedback based on trends of the percentage of broken grains. Should the set tolerances be exceeded, an alert will be displayed.

Expert product handling

Less product breakage, uniform flow, higher capacity sorting

Intelligently designed, with many features dedicated to achieving optimum rice sorting; cleverly-designed chutes and patent-pending feed system, to maintain a uniform product flow, for better detection of defects and to allow a higher capacity sort, lighting for better detection of defects and an accept receptacle specially designed to reduce product breakage.

Accurate and efficient ejector systems

High speed and accurate ejectors

Bühler’s ejectors are designed in-house, specifically for rice and grain sorting. This translates into exceptionally high performance and accuracy, low maintenance time and high reliability, resulting in increased yield and profits.

To further reduce running costs, Bühler’s ejector refurbishment programme restores tired ejectors to full efficiency, and returning them to full service.
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 Total Care Gold, Silver and Bronze and SORTEX Care packages allow customers to select a support service tailored to their exact operational needs. The components of each service are detailed below and customers can select those most appropriate. Contact your local Sortex representative for a quotation.

### 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>
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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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<td>Ejector Care</td>
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<td>Repair Visits</td>
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<td>Maintenance Visits</td>
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<td>Advanced Operator Training</td>
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* For customers whose ejector service interval is more than 24 months
** Any combination is available

All contracts are available for different durations