OUR EXPERTISE FOR TOMORROW’S SOLUTIONS

Product & Application Catalog

www.tomra.com/recycling
# CONTENT

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMRA Organisation</td>
<td>4</td>
</tr>
<tr>
<td>Driving the change for around 50 years</td>
<td>7</td>
</tr>
<tr>
<td>Technologies developed at TOMRA and by TOMRA</td>
<td>9</td>
</tr>
<tr>
<td>Waste market</td>
<td>11</td>
</tr>
<tr>
<td>AUTOSORT</td>
<td>13</td>
</tr>
<tr>
<td>AUTOSORT CYBOT</td>
<td>15</td>
</tr>
<tr>
<td>AUTOSORT SPEEDAIR</td>
<td>17</td>
</tr>
<tr>
<td>AUTOSORT LASER</td>
<td>19</td>
</tr>
<tr>
<td>AUTOSORT COLOR</td>
<td>21</td>
</tr>
<tr>
<td>AUTOSORT BLACK</td>
<td>23</td>
</tr>
<tr>
<td>AUTOSORT FINES</td>
<td>25</td>
</tr>
<tr>
<td>AUTOSORT RDF</td>
<td>27</td>
</tr>
<tr>
<td>AUTOSORT FLAKE</td>
<td>29</td>
</tr>
<tr>
<td>INNOSORT FLAKE</td>
<td>31</td>
</tr>
<tr>
<td>Metal market</td>
<td>33</td>
</tr>
<tr>
<td>FINDER</td>
<td>35</td>
</tr>
<tr>
<td>X-TRACT</td>
<td>37</td>
</tr>
<tr>
<td>COMBISENSE</td>
<td>39</td>
</tr>
<tr>
<td>COMBISENSE CHUTE</td>
<td>41</td>
</tr>
<tr>
<td>Research and Development - Directing the future of business</td>
<td>43</td>
</tr>
<tr>
<td>We are TOMRA, your trusted partner</td>
<td>45</td>
</tr>
<tr>
<td>Our test centers</td>
<td>47</td>
</tr>
<tr>
<td>Our global service team</td>
<td>48</td>
</tr>
<tr>
<td>Our sales process</td>
<td>51</td>
</tr>
</tbody>
</table>
Today we live in an age with the highest level of consumption our planet has ever experienced. Following linear economic models, our natural resources are recklessly exploited, downcycled instead of recycled. At TOMRA, we aim to protect our valuable resources and keep them in the loop. Our dedicated team of more than 4,000 employees provides a broad range of sensor-based solutions allowing for optimal resource recovery. Joining with impactful organizations and conducting research with partners, we passionately contribute our expertise to advance the recycling industry. Due to an increase in consumer awareness and legislation pushes, we make it our responsibility to respond to key market and consumer trends, which trigger fundamental yet vital changes necessary for more sustainable handling of our finite resources. In support of these trends, we strive towards creating production and consumption solutions seen through a circular lens. Together we are well-positioned for upcoming megatrends and ready to continue leading the resource revolution. Our people, products and services make a profound impact. Together with you, we can change the future.

Let’s embrace tomorrow and create value out of waste.
Innovators in the field of sensor-based sorting solutions for the recycling industry, we TOMRA are developing and continuously optimizing our wealth of expertise since 1972. The demand for our solutions has grown vastly from base markets to emerging markets. Currently, there are more than 6,000 TOMRA machines installed worldwide, giving us a global market share of more than 60%. Our technology and equipment have proven to be an instrumental force in the world’s most advanced recycling plants.

With 19% annual revenue growth from 2004 to 2019, we are in the fortunate position to invest even more into pioneering technologies, enter new markets and shape new business models. Our growth continues with new recycling legislative targets, geographic expansion and increased quality awareness.

We proudly look back on about 50 years of innovation and are confident our expertise will drive positive change in this dynamically evolving industry.
FLYING BEAM®
Our field-proven and highly efficient FLYING BEAM® technology features an integrated light source positioned inside the scanner enabling a homogenous light distribution across the conveyor belt, thus leading to an excellent performance and stable sorting. Particularly energy efficient, FLYING BEAM® reduces the power consumption up to 70%. The innovative scanning point principle of FLYING BEAM® allows simultaneous detection of materials across the entire belt feed. By continuously monitoring the illumination and sensor response, real-time information of the machine’s operation status is always available.

GAIN
Our artificial intelligence-based technology GAIN is a future-forward option for AUTOSORT units. Based on neural networks, GAIN is in a position to independently learn from huge amounts of data how to conduct prescribed sorting tasks across multiple demanding applications. Proven to boost performance, GAIN improves sorting accuracy and adds significant value to the sorting process.

SHARP EYE
With a seamless and intense focus on the scanning area of the conveyor belt, SHARP EYE identifies critical chemical property differences and even the finest molecular differences in materials. Utilizing higher light density and point-scanning systems, SHARP EYE not only separates single-layer PET trays from bottles, but also sorts mixed PET into different polymer types when combined with an AUTOSORT unit featuring FLYING BEAM® technology. Even when processing mixed materials, sorting efficiencies exceeding 95% are attained.

TOMRA Insight
The process to separate a mixed material stream into valuable resources requires optimization of various elements across the system. Our new, web-based TOMRA Insight platform turns your sorters into connected devices that generate valuable data and process it into actionable information allowing the optimization of your overall yield. A safe and secure connection of TOMRA sorters, ensuring full privacy around customer data and enabling fast and efficient access to information, allows you to optimize the production process and excel within your market segment.

DUAL PROCESSING TECHNOLOGY
TOMRA’s Dual Processing Technology unites the methods of Object and Area Processing for a more precise classification and sorting of materials. With Object Processing analyzing objects while considering their shape and dimension, it proves to be particularly beneficial for the identification of compounds. Area Processing on the other hand only processes pixels of the same material type and contiguous areas even at high throughput rates without single objects. The combination and simultaneous operation of these types of processing in TOMRA’s Dual Processing Technology enables the machine to take a rule-based decision on which method to use and to thus achieve constant sorting results even at high throughput rates and with complex compounds.

SUPPIX®
SUPPIX® image processing technology allows for eight times higher resolution and eliminates noises caused by mechanical and electrical influences. With even the finest particles being identified and separated with great precision, increased product yields and higher purity levels are easily achieved.

LASER OBJECT DETECTION
For the recovery of black plastics, rubber, glass and other materials, TOMRA’s Laser Object Detection (LOD) technology identifies what is undetectable by conventional NIR scanners and fills an unmet void and surpasses NIR limits for materials such as black plastics, rubber and glass. Through combining NIR and LOD sensors, it generates advanced sorting information that boosts sorting processes to new levels. Unlike standard technologies, LOD does not demand high energy draw and delivers high quality sorting results in a cost-effective and low energy consuming way for a variety of applications. LOD requires little investment to extend your application range considerably, as it fits perfectly with AUTOSORT and FINDER units.

FLUID COOL®
This technology features an illumination unit to deliver a constant and stable light source for maximized quality and yield. Coupled with a dual technology sensor system, FLUID COOL® provides unsurpassed color detection and recovery of materials with high purity levels - even with very fine material grains.

DEEP LAISER®
DEEP LAISER® is the next generation technology available for AUTOSORT units applicable for 3D object detection and sorting tasks solved with artificial intelligence. Originating from Laser Object Detection technology, DEEP LAISER® is an integral part of the system and goes even one step ahead by detecting objects in a more precise way. In addition to its detection capabilities, its data supports sorting objects across various applications resulting in superior sorting precision.

TECHNOLOGIES DEVELOPED AT TOMRA AND BY TOMRA
Innovation was, is and will ever be at the center of sensor-based sorting technology. At TOMRA, we put our extensive experience, technological proficiency and passion for the environment into the development of our outstanding and advanced sorting solutions. At our production facilities in Mülheim-Kärlich (Germany) and Bratislava (Slovakia), we manufacture 750 machines and their core technology annually. Thanks to the strength and commitment of our expert team, our cutting-edge technology is developed, produced and manufactured entirely in-house. Both production and development of our cutting-edge technology are the result of a strong team that works on new solutions and with great commitment - every day.

Combining our extensive application and industry knowledge with in-house manufacturing, we provide first-hand sorting solutions. Every TOMRA unit meets the highest quality and safety standards possible, while also setting new industry benchmarks.
20% of plastic packaging could be profitably re-used and 50% could be profitably recycled if designed for after use systems.

By 2025 solid waste generation will increase by 70% compared to 2010 levels.

Global waste generated reached unsurpassed levels, which is mainly due to the way we manufacture and consume our valuable and limited resources. Thus, we are all part of the problem, but part of the solution too.

At TOMRA, we surely can’t solve all the waste management problems, but we can contribute to it and make it our priority to devote our skills and experience to the development of frontrunning sensor-based sorting solutions by recovering precious materials from nearly any kind of waste streams, we are turning waste into value again.
The newest generation of AUTOSORT combines leading-edge features and technologies in one machine. Compact and flexible in construction, AUTOSORT allows for an uncomplicated integration into existing and new plants. Equipped with our proven FLYING BEAM® technology, this next generation AUTOSORT enables intensified light information for heightened performance and operational efficiency.

Did you know

Globally, 2.01 billion tonnes of municipal solid waste are generated every year.


**DESCRIPTION**

Continuing our pioneering tradition, AUTOSORT CYBOT is the first waste sorting robot on the market to combine four essential technologies at once. Seamlessly interacting with AUTOSORT units and equipped with a robot arm, sensors detect objects based on their properties before the fast picking robot arm subsequently sorts the objects into one of four separate target fractions. Its capability of identifying and sorting four distinct materials makes AUTOSORT CYBOT the ideal solution for achieving the highest sorting accuracy and purity levels.

**TECHNOLOGIES**

- DEEP LASER®
- FLYING BEAM®
- SHARP EYE SUPPIX® (optional)

**MAIN APPLICATIONS**

Robot for re-sorting of product streams previously sorted with AUTOSORT

**Packaging**

thermoplastics, beverage cartons, board

**Thermoplastics**

PET, PP, PVC, PS, LDPE, LLDPE, HDPE, trays, bottles, homo vs. co-polymer, injection or blow molding qualities

**DID YOU KNOW**

If there is no action taken now, global waste production will reach 3.4 billion tonnes in 2050, a 70% increase.

**MACHINE SIZES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>2,403mm</td>
</tr>
<tr>
<td>Length</td>
<td>3,947mm</td>
</tr>
<tr>
<td>Height</td>
<td>3,485mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>2,000kg</td>
</tr>
<tr>
<td>Sorting Fractions</td>
<td>4+1</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

**DON’T RISK**

Don’t risk missing out on continuous output efficiency!
**Valves & Nozzles**

TS200/TS400  12.5mm/25mm

* The data is indicative and application-dependent. Exact data upon request.

**DID YOU KNOW**

Annually, as many as 1,000,000 sea creatures are killed by plastic bags and other plastic garbage disposed of in the ocean.

**Main Application**

- Packaging/Film
  - LDPE

- Paper
  - Cardboard, deinking, mixed paper

**Description**

Light materials often don’t lie still and are hard to detect when transported on high-speed conveyor belts. With the new AUTOSORT SPEEDAIR add-on for AUTOSORT machines, fan-driven air inlets generate a steady stream of air above the rapidly moving conveyor belt to stabilize light materials, making it easier to identify fractions. Reducing material movement on a fast-moving conveyor belt moving thus brings higher throughput rates and purity levels.

**Machines Sizes**

<table>
<thead>
<tr>
<th>Width</th>
<th>Length total</th>
<th>Length belt</th>
<th>Max. Height</th>
<th>Weight*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Width</td>
<td>2,750mm</td>
<td>9,300mm</td>
<td>6,000mm</td>
<td>5,200kg</td>
</tr>
<tr>
<td>1400 Width</td>
<td>3,150mm</td>
<td>9,300mm</td>
<td>6,000mm</td>
<td>5,600kg</td>
</tr>
<tr>
<td>2000 Width</td>
<td>3,750mm</td>
<td>9,300mm</td>
<td>6,000mm</td>
<td>6,100kg</td>
</tr>
<tr>
<td>2800 Width</td>
<td>4,550mm</td>
<td>9,300mm</td>
<td>6,000mm</td>
<td>7,600kg</td>
</tr>
</tbody>
</table>

Valves: T2500/T5400  12.5mm/25mm

**DID YOU KNOW**

Annually, as many as 1,000,000 sea creatures are killed by plastic bags and other plastic garbage disposed of in the ocean.

**Don’t Risk**

Don’t risk losing valuable material on high-speed belts!
**MAIN APPLICATION**

Glass from Municipal Solid Waste
mixed Glass

**DID YOU KNOW**

The waste generated by production and human consumption is exactly what we work with and what our machines process to help its transformation back to valuable products.

---

**AUTOSORT LASER**

**DESCRIPTION**

Equipped with an independent background system combined with laser, electromagnetic and NIR-technology, AUTOSORT LASER enables the effective processing of household and commercial waste. Separating metals, plastics, ceramics, stones, porcelain and glass from transparent polymers is no longer a challenge.

**MACHINE SIZES**

<table>
<thead>
<tr>
<th></th>
<th>Width</th>
<th>Length</th>
<th>Height</th>
<th>Weight*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1200</strong></td>
<td>2,400mm</td>
<td>2,300mm</td>
<td>2,345mm</td>
<td>2,810kg</td>
</tr>
<tr>
<td><strong>1800</strong></td>
<td>3,200mm</td>
<td>2,300mm</td>
<td>2,145mm</td>
<td>3,272kg</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

**TECHNOLOGY**

**FLYING BEAM®**

**DON'T RISK**

Don't risk missing on a sorting solution developed for unique and niche sorting tasks!

**MAIN APPLICATION**

Glass from Municipal Solid Waste
mixed Glass

**DID YOU KNOW**

The waste generated by production and human consumption is exactly what we work with and what our machines process to help its transformation back to valuable products.
**MAIN APPLICATION**

Glass from Municipal Solid Waste
mixed Glass

**DID YOU KNOW**

With resources being finite, turning to them and defining the way to best use them for greater sustainability becomes paramount. Their value and quality has to be kept.

---

**AUTOSORT COLOR**

**DESCRIPTION**

Further processing the glass material subsequently sorted by the AUTOSORT LASER, the AUTOSORT COLOR purifies the sorting result by color separation with unprecedented effectiveness, offers high throughput rates and guarantees a minimum of 95% purity.

---

**MACHINE SIZES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Length</th>
<th>Height</th>
<th>Weight*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>2,450mm</td>
<td>3,500mm</td>
<td>2,402mm</td>
<td>4,990kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valves</th>
<th>Nozzles</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS400</td>
<td>6.25mm</td>
</tr>
</tbody>
</table>

*The data is indicative and application-dependent. Exact data upon request.

---

**DON’T RISK**

Don't risk operational disruptions, downtime and costs from glass in your sorting machines.

---

**TECHNOLOGY**

**FLUID COOL® LED**

---

**Don’t risk QR code to scan**
**AUTOSORT BLACK**

**DESCRIPTION**
Previously undetectable by NIR sorting technology, black plastics can now be identified and sorted by the AUTOSORT BLACK plastic sorter. The machine is capable of differentiating between black plastics such as black PE, black PP, black PET and PS without pre-shredding. This unit not only fills a gap in waste sorting technology – it creates value. With its high throughput and enhanced resolution, AUTOSORT BLACK delivers a quick ROI for black plastics.

**TECHNOLOGY**

**MACHINE SIZES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Width</th>
<th>Length</th>
<th>Height</th>
<th>Weight*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>2,400mm</td>
<td>2,300mm</td>
<td>2,145mm</td>
<td>2,610kg</td>
</tr>
<tr>
<td>1800</td>
<td>3,200mm</td>
<td>2,500mm</td>
<td>2,145mm</td>
<td>3,272kg</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

**DON’T RISK**
Don’t risk losing out on the value of black plastics!
AUTOSORT FINES

**Description**

Applying features of the AUTOSORT family, the AUTOSORT FINES sorts small (polymer) fractions across multiple applications and generates high purity levels based on the unchallenged FLYING BEAM® technology and high-speed valves. The machine has no external lamps, which results in high dust protection, lower maintenance and less downtime.

**MACHINE SIZES**

<table>
<thead>
<tr>
<th>1200</th>
<th>1800</th>
<th>2400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>2,000mm</td>
<td>2,600mm</td>
</tr>
<tr>
<td>Length Belt</td>
<td>4,000mm</td>
<td>4,000mm</td>
</tr>
<tr>
<td>Length</td>
<td>6,420mm</td>
<td>6,420mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>3,990kg</td>
<td>4,815kg</td>
</tr>
<tr>
<td>Power Consumption*</td>
<td>4.3kW</td>
<td>6.1kW</td>
</tr>
</tbody>
</table>

| Valves     | 75200      | 75400      |
| Nozzles    | 6.25 (11)  | 6.25 (11)  |

* The data is indicative and application-dependent. Exact data upon request.

**Don’t risk**

Don’t risk missing the opportunity to recover even the smallest fractions.

**Main Applications**

Recycled plastics have become an increasingly valuable feedstock for industries, both at home and abroad.

**Quick Scan Code**

Don’t risk missing the opportunity to recover even the smallest fractions.

**QR Code to Scan**

**Did you know**

Recycled plastics have become an increasingly valuable feedstock for industries, both at home and abroad.

**Technology**

FLYING BEAM®

**Main Applications**

Electronic Scrap - WEEE
PS, ABS, PC ABS, PPO, PPE, PC, PBT, PMMA, PP, PE
Contributing to an optimized quality management, the AUTOSORT RDF online analysis tool detects and analyzes fuel material with regards to the calorific value, water and chlorine content. AUTOSORT RDF helps overcome the challenge of assuring quality and provides accurate and timely measurements of critical values during running times.

**MACHINE SIZES**

<table>
<thead>
<tr>
<th>Size</th>
<th>Width</th>
<th>Length Belt</th>
<th>Weight*</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>1,400mm</td>
<td>5,000mm</td>
<td>135kg</td>
<td>1.3kW</td>
</tr>
<tr>
<td>1000</td>
<td>1,800mm</td>
<td>5,000mm</td>
<td>170kg</td>
<td>1.5kW</td>
</tr>
<tr>
<td>1400</td>
<td>2,200mm</td>
<td>5,000mm</td>
<td>200kg</td>
<td>1.6kW</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

**DON’T RISK**

Don’t risk incinerator downtime caused by varying quality in refuse-derived fuel!
MAIN APPLICATIONS

PET Flakes  
- purifying PET Flakes

PO Flakes  
- purifying PE/PP Flakes

PVC Window Frames  
- purifying PVC

DID YOU KNOW

Continuing current practices there will be more plastic than fish in the ocean by 2050.

AUTOSORT FLAKE

DESCRIPTION

Regardless of grain sizes, the AUTOSORT FLAKE simultaneously masters three challenges: detecting color, metals and material information. Its unique combination of foreground and background illumination allows for the separation of even more flake variations, thus considerably enhancing sorting performance.

TECHNOLOGY

FLYING BEAM®

MACHINE SIZES

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>1,900mm</td>
</tr>
<tr>
<td>Length</td>
<td>2,000mm</td>
</tr>
<tr>
<td>Height</td>
<td>2,300mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>1,850kg</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>10kW</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

DON'T RISK

Don't risk valuable material loss by not relying on the highest resolution available for flake sorting.

 Petr flakes  
- purifying PET Flakes

Polyethylene Terephthalate (PET) is a plastic that is commonly used to make bottles, food containers, and clothing. It is also often used in the production of polyester fibers and films. PET is a lightweight and durable material that is resistant to UV light and oxygen.

Flake purifying PET Flakes

Flake purifying PE/PP Flakes

Flake purifying PVC

Main Applications

Continuing current practices there will be more plastic than fish in the ocean by 2050.

DID YOU KNOW

Don’t risk valuable material loss by not relying on the highest resolution available for flake sorting.
In Europe, up to 500,000 tonnes of plastic, equal to 66,000 rubbish trucks, enter the ocean every year.

DID YOU KNOW

PET Flakes / PO Flakes
purifying PET Flakes
purifying transparent and opaque Flakes
sorting of mixed color Flakes

MAIN APPLICATIONS

PEF flakes / PO flakes
purifying PET flakes
purifying transparent and opaque flakes
sorting of mixed color flakes

Innosort Flake

All-in-one solution
Next level quality
Low initial investment

Designed especially for high-quality recovery of PET flakes, INNOSORT FLAKE combines color and material sorting to reliably remove PVC, metals and opaque flakes from waste streams. It eliminates vast proportions of contaminants with its high-resolution FLYING BEAM® technology capable of 2mm polymer recognition. With capacity up to 6 ton/hour, ultra-high-resolution camera and NIR sensors, INNOSORT FLAKE significantly reduces PET flake material loss to less than 2% thus increasing yields.

MACHINE SIZES

<table>
<thead>
<tr>
<th>Width</th>
<th>Length</th>
<th>Height</th>
<th>Weight*</th>
<th>Power* (3-phase)</th>
<th>Power* (1-phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1,751mm</td>
<td>2,144mm</td>
<td>980kg</td>
<td>2.2kVA</td>
<td>3.0kVA</td>
</tr>
<tr>
<td>1500</td>
<td>2,279mm</td>
<td>2,144mm</td>
<td>1,100kg</td>
<td>3.5kVA</td>
<td>5.0kVA</td>
</tr>
<tr>
<td>2000</td>
<td>2,843mm</td>
<td>2,144mm</td>
<td>1,300kg</td>
<td>4.7kVA</td>
<td>5.1kVA</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

TECHNOLOGY

FLYING BEAM®

Don’t risk investing in complex PET sorting processes, when our all-in-one solution sorts by both material and color.

DID YOU KNOW

In Europe, up to 500,000 tonnes of plastic, equal to 66,000 rubbish trucks, enter the ocean every year.
Only 3% of aluminum scrap cannot be recycled.

75% of aluminum produced is currently still being used.

**Metal Market**

Hard challenges solved to protect precious resources of all metal types.

Challenges many recyclers face include increasing recycled metal quality standards and providing pure mono-fractions. A global metal production of three-digit ton rates provides the capability to apply the right technology to recycled material and meet these standards.

For us, the metal recycling’s principle of saving virgin material and generating high-purity materials is central to the development of our metal application machines and technologies. Our metal sorting machines offer a way to recycle material to higher purity rates. In turn, less precious virgin materials are consumed, less costs expended and the environment is protected - a win-win situation for all.
Each year, worldwide Auto Recycling Industry recycles more than 25 million tons of waste materials which are collected from out of order cars.

**MAIN APPLICATIONS**

- **ASR**
  metal recovery
- **Electronic Scrap - WEEE**
  PCB, wire, aluminum
- **Wire Recovery**
  cable & wire material
- **Wood**
  wood chips
- **Ash Recycling**
  recovery of ferrous- & non-ferrous metals

**DID YOU KNOW**

FINDER dominates in sorting high purity fractions regardless of the materials complexity or grain size. Utilizing patented technologies, FINDER detects metal objects with ultra-precision, resulting in exceptionally high yields and purity levels. Ultra-flexible thanks to its modular design, the machine is applied for various mixed waste streams and metal applications.

**FINDER**

Multiflexible sensor system
Software based object processing
Modular design

**DESCRIPTION**

FINDER dominates in sorting high purity fractions regardless of the materials complexity or grain size. Utilizing patented technologies, FINDER detects metal objects with ultra-precision, resulting in exceptionally high yields and purity levels. Ultra-flexible thanks to its modular design, the machine is applied for various mixed waste streams and metal applications.

**TECHNOLOGY**

**SUPPIX®**
Z-TECT
INTELLIGENT OBJECT RECOGNITION

**MACHINE SIZES**

<table>
<thead>
<tr>
<th></th>
<th>1200</th>
<th>1800</th>
<th>2400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>2,000mm</td>
<td>2,600mm</td>
<td>3,200mm</td>
</tr>
<tr>
<td>Width Belt</td>
<td>1,200mm</td>
<td>1,800mm</td>
<td>2,400mm</td>
</tr>
<tr>
<td>Length</td>
<td>6,420mm</td>
<td>6,420mm</td>
<td>6,420mm</td>
</tr>
<tr>
<td>Length Belt</td>
<td>4,000mm</td>
<td>4,000mm</td>
<td>4,000mm</td>
</tr>
<tr>
<td>Height</td>
<td>2,120mm</td>
<td>2,120mm</td>
<td>2,120mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>3,800kg</td>
<td>4,600kg</td>
<td>6,100kg</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>5kW</td>
<td>5.5kW</td>
<td>7.5kW</td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

**DON’T RISK**

Don’t risk investing in a static system when FINDER offers enough flexibility and high performances across diverse metal applications.
**MAIN APPLICATIONS**

**E-SCRAP PACK**
flame retardants

**ORGANIC PACK**
inert material, organic material

**WOOD PACK**
cleaning of wood chips

**ALUMINUM PACK**
aluminum alloys, aluminum vs heavy metals, recovery of ferrous & non-ferrous metals, PCB, wire, aluminum, aluminum alloys vs heavy metals

**HIGH POWER PACK**
aluminum alloys, aluminum vs heavy metals, recovery of ferrous & non-ferrous metals, PCB, wire, aluminum, aluminum alloys vs heavy metals

**FINES PACK**
aluminum vs heavy metals
5-40mm

**DID YOU KNOW**

Aluminum can be endlessly recycled without losing in quality or properties.

---

**X-TRACT**

**DESCRIPTION**

Dedicated for fulfilling higher sorting performances and equipped with TOMRA’s DUOLINE Technology and Multi-Density-Channels, the X-TRACT sorts even the most complex material mixes for a broad range of metal applications with outstanding precision and reliability. High throughput levels as well as top-quality end products are the results of the perfect interaction of the well-established Dual Processing Technology and exclusive software. The new integrated ACT user interface provides critical information and real-time process data enabling constant control.

---

**TECHNOLOGY**

**DUAL PROCESSING**

**DUOLINE**

**MULTI-DENSITY CHANNELS**

---

**MAIN APPLICATIONS**

**e-scrAp PACK**
flame retardants

**flame retardants**

**organic material**

**inert material, organic material**

**wood chips**

**cleaning of wood chips**

**aluminum alloys, aluminum vs heavy metals, recovery of ferrous & non-ferrous metals, PCB, wire, aluminum, aluminum alloys vs heavy metals**

**aluminum alloys, aluminum vs heavy metals, recovery of ferrous & non-ferrous metals, PCB, wire, aluminum, aluminum alloys vs heavy metals**

**aluminum vs heavy metals
5-40mm**

---

**DON’T RISK**

Don’t risk losing out on the recovery of valuable metals when advanced technology can help.
**MAIN APPLICATIONS**

**End-of-life Vehicle Scrap**  
unalloyed steel, plastics, glass, compound materials

**Electronic Scrap - WEEE**  
PCB, wire, grey metals, copper, brass

**Non-ferrous Metals**  
grey metals, copper, brass

**Zorba**  
grey metals, copper, brass

---

**DID YOU KNOW**

Recycling a can requires 95% less energy and water than create one from virgin materials.

---

**COMBISENSE**

- **Active temperature control**
- **Stable color range**
- **Optimized operational costs**

---

**DESCRIPTION**

Offering unsurpassed color detection and multi-parameter fraction separation, COMBISENSE eliminates most contaminants from even the most challenging ELV, WEEE and metal waste streams. By allowing granulates to pass through the sorting system twice, high purity levels and a maximum of mono fractions recovery are achieved.

---

**TECHNOLOGY**

**FLUID COOL®**

**DUAL PROCESSING**

---

**MACHINE SIZES**

<table>
<thead>
<tr>
<th>1200</th>
<th>Width</th>
<th>2,480mm</th>
<th>Valves</th>
<th>TS1500</th>
<th>Nozzle Pitches</th>
<th>8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width Belt</td>
<td>1,200mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length Belt</td>
<td>3,960mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>5,650mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>1,830mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight*</td>
<td>3,770kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Consumption</td>
<td>10kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The data is indicative and application-dependent. Exact data upon request.

---

**DON’T RISK**

Don’t risk investing in multiple machines for extracting vast amounts of valuable metals when COMBISENSE can separate numerous fractions in subsequent steps.
**Main Applications**

- **Granulated Copper Material**
  - Fines metal fractions
- **Mixed Metal Sorting**
  - Copper, brass, grey metals
- **Red Metal Sorting**
  - Copper, brass

**Did You Know**

Primary production of copper requires 80-90% more energy than recycling copper. Saving 40 million tonnes of CO₂ annually is equal to taking 16 million passenger cars off the road.

**Description**

Suitable across multiple metal applications, COMBISENSE CHUTE excels in extracting high purity metal fractions from a multi-parameter material mix regardless of fraction complexity. With its CRGB camera, COMBISENSE CHUTE detects materials as small as 2 mm and sorts it based on color, shape and size. By offering an unprecedented number of sorting programs, COMBISENSE CHUTE stands for unsurpassed levels of variability.

**Machine Sizes**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Width Infeed</th>
<th>Width</th>
<th>Length</th>
<th>Height</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200</td>
<td>1,200mm</td>
<td>2,350mm</td>
<td>1,990mm</td>
<td>2,990mm</td>
<td>5.7kW</td>
</tr>
</tbody>
</table>

**Technoogy**

**Fluid Cool® Dual Processing**

**Don't Risk**

Don't risk managing multiple sorting units when COMBISENSE CHUTE provides numerous programs in one machine.

**Active Temperature Control**

- Valves
- Nozzle Pitches

- TS100
- 4 mm

*The data is indicative and application-dependent. Exact data upon request."
Change and development is the key to achieving and maintaining a leading position in the market. Only when thinking ahead of a fast pacing market and fulfilling new market requirements in a prompt way and with the right solutions, the recycling industry can be advanced and brought to the next level.

Our R&D department remarkably shapes our business. We create innovations that offer solutions for current unresolved tasks by conducting profound research, based on which technologies are developed or optimized. All our products are the reflection of dedicated work and help us achieve future growth, reinforcing our competitiveness and positioning as an industry pioneer.

Developing solutions in-house helps you benefit from direct reaction, faster integration of new techniques and bundled expertise – expertise exclusively developed by and at TOMRA.
We are more than a supplier. We are your trusted, reliable partner offering high competence and full service at any place and any time.

Trust in...
...our experience
More than 50 years of experience has helped us gather the necessary knowledge to successfully contribute to the furtherance of the recycling industry through state-of-the-art technology.

...our success
Being responsible for the development of the world’s first high capacity near infrared (NIR) sensor for waste sorting applications, we are claimed to be an industry pioneer with a dedication to extracting high purity fractions from almost any kind of waste streams.

...our values
All our actions are a reflection of our company values:
We commit ourselves to care for the environment, to be transparent and open in communication – we act responsibly. We dare to explore and to find new solutions to find solutions to current and future challenges – we are innovative. We believe in what we do, we engage and inspire to participate in making a change – we are passionate.
Finding customized solutions across various applications and suitable for any kind of sorting plant is key to us. In our test centers, our experienced application engineers are at hand to conduct comprehensive tests with your material. Based on valuable information gained during the testing process, innovative workflows maximizing operational productivity are developed and the most efficient sorting solutions for your specific needs defined.

YOUR BENEFITS
• Test your own material
• Detailed test reports
• Development of individual process design

TOMRA TEST CENTERS: Germany, China, South Korea
PARTNER TEST CENTERS: US, Japan

OUR TEST CENTERS
Delivering world-class sorting solutions is only part of our commitment to you. As a comprehensive service partner, our dedicated service team keeps your system running at its best. At TOMRA, we go above and beyond with individualized care to ensure your success.

Our global team of more than 160 service engineers are strategically located at 16 service hubs around the world. Available on short notice, they provide excellent assistance in the pre-sales, in-sales or post-sales phase to ensure maximum performance and minimum downtimes at plannable costs.
Consultation
With our profound and established experiences accumulated from more than 6,000 machine installation in more than 100 countries, we provide expert advice and find the best applicable solution for your plant.

Material tests
If required, we offer trials of your sample material in our test facilities. We create a flow sheet featuring the optimal sorting process for your field of application and sorting task.

Evaluation
We provide an investment analysis to help identify maximum benefits or potential issues integrating sorting machines can have on your operations.

Customized package
We offer full-service solutions consisting of machinery, delivery, spare parts and first-class after-sales service.

Commissioning
A team of field service, optimizer, customer project manager, and sales engineers participate in commissioning process and sets up your machine(s). Subsequent in-depth training familiarizes you with maintenance and operating process.

After-sales service
With a presence in 16 service hubs around the globe or assisting remotely, you benefit from comprehensive after-sales support with a rapid response time.

OUR SALES PROCESS
We turn challenge into opportunity, mixed waste streams to pure end materials, waste into value – together with and for you!

As your trusted partner, we not only help you meet short-term objectives but also deliver long-term success and reliably accompany you throughout the sales process, from planning to implementation to ongoing optimization.
As a technology leader, TOMRA Sorting Recycling continues to be pioneer in sensor-based sorting in the waste and metal recycling industries. With over 6,000 units installed in more than 100 countries, our expertise and superior service allow us to deliver high-performance sorting and analytical solutions to our customers in a broad range of applications.