TOMRA

Circular sorting solutions for today and tomorrow

Product & Application Catalog

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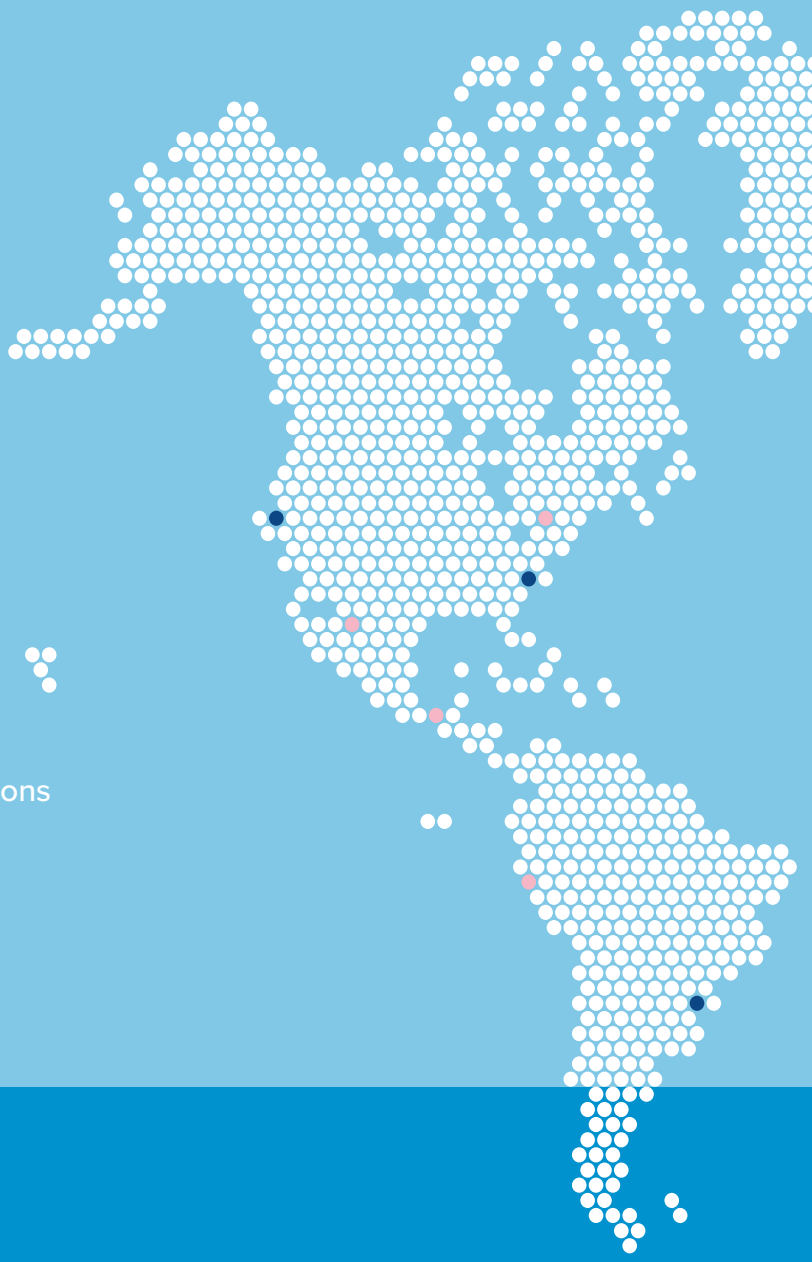
TOMRA Organization

At TOMRA, we see the value in each product and material and aim to keep them in continuous use. As an industry pioneer and with 50 years of experience in resource management, we are highly committed to leading the change and manufacturing a broad range of sensor-based solutions that recover valuable recyclables from mixed waste and metal streams. Given the 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. Joining impactful organizations, partnering with key players in the value chain, and continuing with our pioneering work, we passionately contribute our expertise and a new generation of technological advancement to further develop the recycling industry. 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.

8,200 machines globally

50 years experience

Driving the change for more than 50 years



TOMRA Sorting Recycling Locations

Agents and distributors

Innovators in the recycling industry and with more than 50 years of experience in circular waste management, we develop and continuously optimize sensor-based sorting solutions to recover valuable materials from mixed waste and metals streams.
Over the last decades, the demand for our solutions has grown vastly from base markets to emerging markets. Almost 10,000 sorting units are expected to be installed in sorting and recycling facilities in more than 100 countries worldwide. The machine's high-performing technologies enable to accurately recover metals, plastics, wood, and many more materials from waste streams. They are an instrumental force in the world's most advanced recycling plants, giving us a global market share of 60% and a leading position in the industry.
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 a history that is marked by numerous game-changing innovations and are confident our expertise will continue to drive positive change in this dynamically evolving industry.

We accelerate the transition to a circular future

A circular economy is a sustainable model of production and consumption that uses, reuses, repairs, and recycles to ensure that materials stay within a closed loop with minimal environmental impact, and minimal waste. At TOMRA, we focus on the improvement and expansion of our waste management solutions to achieve that circularity.

Six steps to circular
A vital part of transitioning towards a circular economy is closing the loop on plastic waste. Here are six essential steps to improve circularity, including our Holistic Resource Systems, which incorporate the collection, sorting, and recycling of plastic waste.

In the circular economy:

1. Products are designed prioritizing reuse, repair, and durability, and created using less materials, of different varieties, including recycled content.

2. Products are released and sold to consumers in a variety of outlets, including retail stores, e-commerce sites, etc.

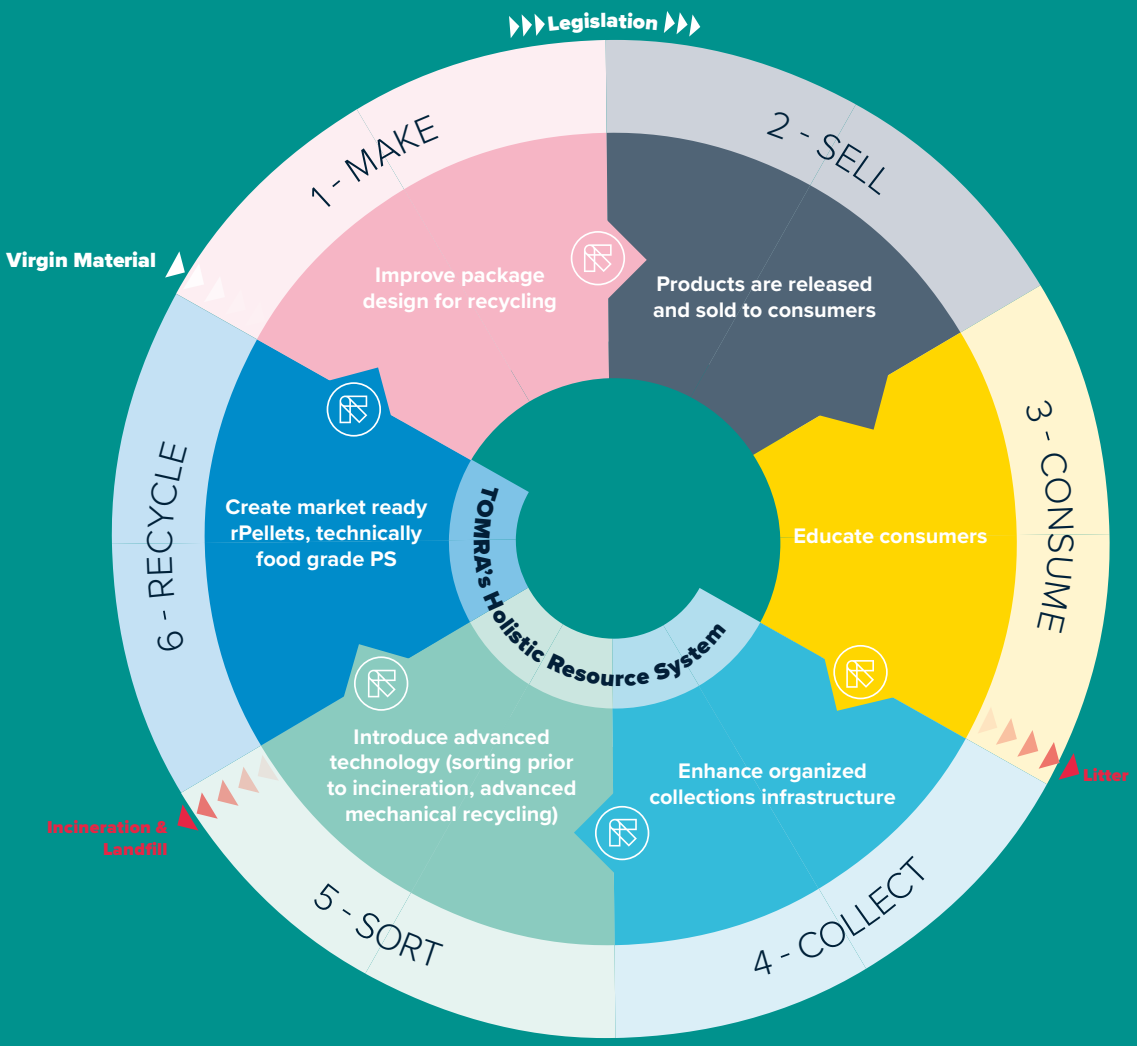
3. Once consumed, products can be reused or repurposed and made available for recycling.

4. Used product materials are collected via deposit return systems, separate collections, or as mixed waste.

5. Collected materials are identified and sorted into clean fractions.

6. Sorted materials are purified and upgraded into new products of similar quality.

As a frontrunner in the circular revolution, we:



Explore and develop technologically advanced solutions

Holistic Resource Systems (HRS) integrate waste management techniques designed to respond to the challenges of managing resources and minimizing their impact on the planet. They are based on current policies and approaches on both national and regional levels that deal with existing products, materials, and waste flows. HRS is comprised of Deposit Return Systems (DRS), Separate Collections, and Mixed Waste Sorting (MWS).

In 2021, we saw what was possible when key players in the value chain come together to make a significant impact in the market by launching one of the most advanced mechanical recycling plants when it comes to post-consumer polymer waste. This plant, in Lahnstein, Germany, processes both rigid and flexible plastic waste from households, and unlike many current recycling plants, it produces the advanced solutions necessary for use in high-demanding plastic applications in various industries. With high purity, low odor, high product consistency, and light color fractions, these Borcycle™ M grade recycled polymers meet customer

quality requirements across the value chain.

This advanced mechanical recycling plant has also been home to important trials, such as the ones carried out, in partnership with Styrenics Circular Solutions (SCS), to demonstrate the full recyclability of High-Impact Polystyrene (HIPS), which is an integral part of achieving food contact material.

Co-create and share best practices and knowledge

EPR Unpacked: A Policy Framework for a Circular Economy

EPR is a transformative policy principle that can ensure the full circularity of packaging materials, and in our new white paper, EPR Unpacked: A Policy Framework for a Circular Economy, we explore the elements necessary to support its implementation, and much more. This paper also serves as a guide for policymakers designing or developing EPR schemes, offering a multi-dimensional perspective and practical insights to help achieve the best results.

Holistic Resource Systems

Right now, only 14% of plastic packaging is collected for recycling. That means 86% of this valuable resource is getting lost to landfill or incineration. That's why TOMRA, in partnership with Eunomia (an independent research consultancy based in the UK), developed Holistic Resource Systems, with a focus on collecting as much recyclable material from our waste streams as possible. Our research found that together, three existing systems (Deposit Return Schemes, Separate Collections, and Mixed Waste Sorting) can help propel us towards a more circular economy.

Within the pages of this white paper, we describe how each method, when integrated together, can significantly reduce GHG emissions and how each is essential if we are to achieve the highest recycling rate possible (and reap the environmental benefits).

The Ultimate Guide to Mixed Waste Sorting

When we convert plastic waste into energy, or let its toxic components seep into our soil, we do nothing to reduce emissions, or curb the effects of climate change.

In Holistic Resource Systems, we outlined the three systems that can increase the amount of plastic we collect. In this white paper, we focus on one of those systems, a system that can help avoid up to 730 million tonnes of CO2 emissions by 2030: Mixed Waste Sorting (MWS).

We describe the challenges that the waste sector faces in achieving sustainability targets, and highlight the solutions that MWS offers.

TOMRA Talks Circular

TOMRA Talks Circular is a podcast that explores the challenges, solutions, and latest technology and innovations that could help close the loop on plastic waste. The topics we cover are as varied as the guests we talk to (industry experts, business owners, activists, and many others from around the world). We believe these conversations can help enlighten, engage, and motivate not just those in the waste management industry, but anyone who is interested in the move towards a circular economy.

Establish new and rewarding partnerships

At TOMRA, we have multiple partners throughout the value chain, with unique visions, motivations, and challenges, because we know that to drive circular innovation and solve big problems like climate change, waste, and pollution, we need to work together.

Podcast

White papers

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.

FLYING BEAM™
Our field-proven and highly efficient FLYING BEAM™ technology features an integrated light source positioned inside the scanner enables 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.

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.

SHARP EYE™
With a seamless and intense focus on the scanning area of the conveyer 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.

GAIN™
Our artificial intelligence-based technology GAIN™ is a future-forward option for AUTOSORT™ units. Based on neuronal 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.

SUPPIXX™
SUPPIXX™ 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.

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.

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 its 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.

DEEP LAISER™
DEEP L**AI**SER™ is the next generation technology available for AUTOSORT™ units applicable for 3D object detection and sorting tasks solved with artificial intelligence. Originating from the Laser Object Detection™ technology, DEEP L**AI**SER™ 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.

Waste market

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.

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

AUTOSORT™

FLYING BEAM™ • SHARPE EYE • DEEP LAISER™

New generation FLYING BEAM™

Integrated Deep Learning Technology

Extended resolution for fines sorting

Optional Integrated Calibration Technology™

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.

Optional add-on technologies expand material identification capabilities and ensure sorting performances that remain stable over a longer period of time.

Don’t risk not being prepared for future market trends.

1000	
Weight*	120kg
Length*	555mm
Width*	1,562mm
Height*	615mm

1400	
Weight*	120kg
Length*	555mm
Width*	1,576mm
Height*	615mm

2000	
Weight*	180kg
Length*	555mm
Width*	2,292mm
Height*	615mm

2400	
Weight*	230kg
Length*	555mm
Width*	2,651mm
Height*	615mm

2800	
Weight*	240kg
Length*	555mm
Width*	3,011mm
Height*	615mm

Valves
TS200/TS450/TS1500

Nozzles
12.5mm/25mm/6.25mm

* The data is indicative, application- & configuration-dependent. Exact data upon request.

Main applications

Packaging
thermoplastics, beverage cartons, paper, board, glass

Municipal Solid Waste
thermoplastics, mixed paper, cardboard, metals

Thermoplastics
PET, PP, PVC, PS, LDPE, LLDPE, HDPE, trays, bottles, injection or blow molding qualities, PET-Bottles vs PET-Trays

Paper
cardboard, deinking, mixed paper

Commercial & Industrial Waste
thermoplastics, paper, cardboard

Construction & Demolition Waste
inert material, wood, thermoplastics, metals

Organic Waste
inert material, organic material, impurities

Refuse Derived Fuel
sort to get constant calorific value and low chlorine content

Bulky Waste
wood, paper, board, thermoplastics

Wood
wood, wood chips, wood from ASR

Electronic Scrap
WEEE thermoplastics

PE-Silicone Cartridges vs. HDPE

AUTOSORT™ *CYBOT*

DEEP L**AI**SER™ • FLYING BEAM™ • SHARP EYE™ • SUPPIXX™ (optional)

Multisensor system

Modular construction

New generation FLYING BEAM™

600	
Width	2,403mm
Length	3,947mm
Height	3,485mm
Weight*	2,000kg
Sorting Fractions	4+1

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

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 subsequentlysorts 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.

Don’t risk missing out on continuous output efficiency.

Main applications

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

Packaging
thermoplastics, beverage cartons

Thermoplastics
PET, PP, PVC, PS, LDPE, HDPE, trays, bottles

AUTOSORT™ *SPEEDAIR*

FLYING BEAM™ • SHARPE EYE • DEEP L**AI**SER™ (optional)

Closed air loop

High belt speed

Low risk of material blockage

Coming soon AUTOSORT SPEEDAIR 2400 Width

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.

Don't risk losing valuable material on high-speed belts.

1400

Width	1,800mm
Length Belt	5,000mm
Length	7,400mm
Weight*	215kg
Power Consumption	1.6kW

2000

Width	2,800mm
Length Belt	5,000mm
Length	7,400mm
Weight*	270kg
Power Consumption	1.7kW

2800

Width	3,600mm
Length Belt	5,000mm
Length	7,400mm
Weight*	300kg
Power Consumption	1.9kW

Valves

TS200/TS400

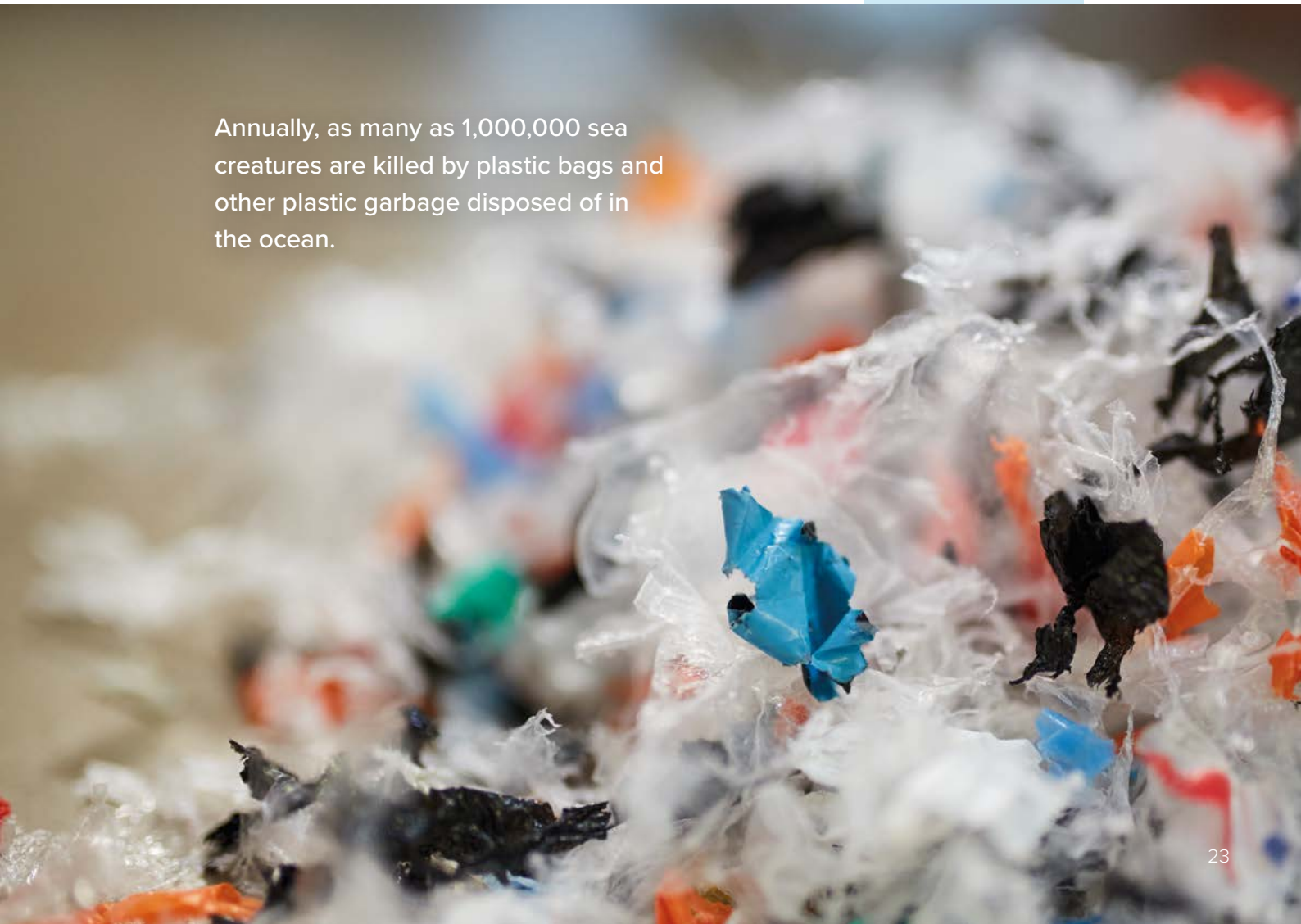
Nozzles

12.5mm/25mm

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

Main applications

Packaging/Film
LDPE



AUTOSORT™ *BLACK*

MIR TECHNOLOGY

Inhouse development of core components

Sorting of grain sizes >25 x 25mm

Optimized heatsink system

1200	
Width	2,400mm
Length	2,300mm
Height	2,145mm
Weight*	2,810kg

1800	
Width	3,200mm
Length	2,300mm
Height	2,145mm
Weight*	3,272kg

Valves	**Nozzles**
TS400	6.25mm

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

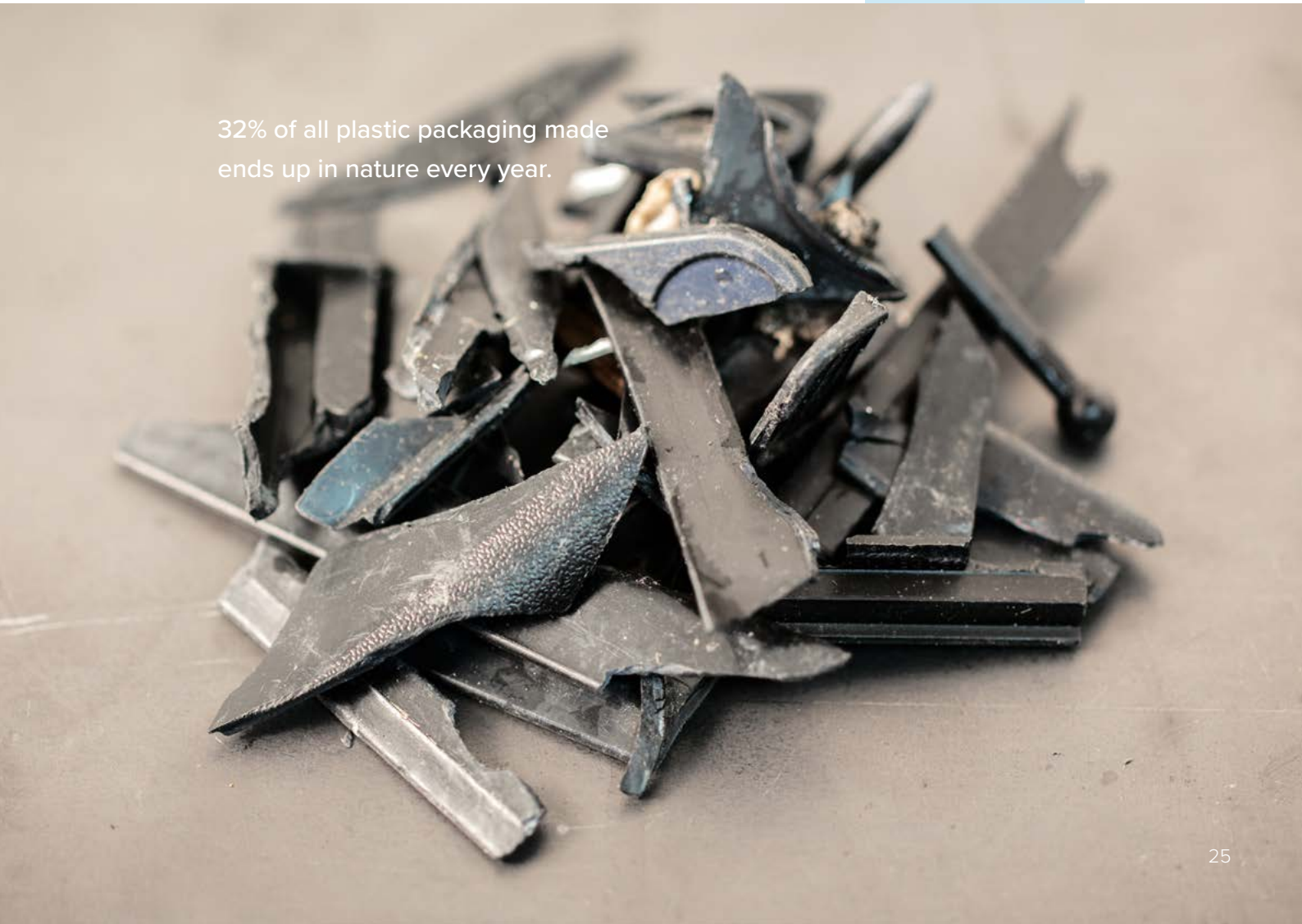
Previously undetectable by NIR sorting technology, black plastics can now be identified and sorted by the AUTOSORT™ *BLACK* plastic sorter. The machine is capable of differentiating between black plastics such as black PE, black PP, black PET and PS without pre-shredding.* This unit not only fills a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

Don’t risk losing out on the value of black plastics.

* Max. dimension 120 mm

Main applications

Polyolefin Packaging
PE, PP



AUTOSORT™ *RDF*

FLYING BEAM™

Connect to POSSIBILITIES

FLYING BEAM™ technology

Inhouse development of core components

Constant online monitoring

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.

Don’t risk incinerator downtime caused by varying quality in refuse-derived fuel.

600

Width	1,400mm
Length Belt	5,000mm
Weight*	135kg
Power Consumption*	1.3kW

1000

Width	1,800mm
Length Belt	5,000mm
Weight*	170kg
Power Consumption*	1.5kW

1400

Width	2,200mm
Length Belt	5,000mm
Weight*	200kg
Power Consumption*	1.6kW

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

Main applications

Online Analysis
RDF (analyzing calorific value, chlorine and water content)

Around 25.8 million tonnes of plastic waste are generated in Europe every year.

Upgrading plastics with the most advanced flake sorters

TOMRA delivers the most advanced flake sorting solutions for consistent and exceptional sorting performance, maximizing purity levels and profits. Designed to sort even the smallest PET, PO and PVC flakes, AUTOSORT™ *FLAKE* and INNOSORT™ *FLAKE* are the ideal solution for upgrading plastics such as PET and PO applications.

Per year, TOMRA's flake sorters process an amount of flakes that can fill up **5.6 Empire State Buildings**.

Per month, TOMRA's flake sorters process an amount of flakes that can fill up more than **194 olympic-size swimming pools**.

AUTOSORT™ *FLAKE*

FLYING BEAM™

Single-point detection

Active temperature control

Extended resolution

AUTOSORT™ *FLAKE* is a high-performance and most versatile flake sorter and offers a unique technology combination consisting of our highest resolution FLYING BEAM™ sensor, a full-color camera, and a highly sensitive metal sensor. The combination of these outstanding technologies enables a fast and simultaneous multi-sensor evaluation of the input material and the precise removal of contaminants such as paper, wood, metal, and all foreign polymers. Thanks to the machine's outstanding features it fulfills the market requirements in a variety of applications, in addition to guaranteeing high and stable throughputs. AUTOSORT™ *FLAKE* is the ideal solution for high-end applications where quality demands are extremely high.

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

1200

Width	1,900mm
Length	2,000mm
Height	2,300mm
Weight*	1,850kg
Power Consumption	10kW

Valves	Nozzles
TS100B	4mm

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

Main applications

PET Flakes
purifying PET flakes

PO Flakes
purifying PE/PP flakes

PVC Flakes
purifying PVC

New INNOSORT™ *FLAKE*

FLYING BEAM™

Our new INNOSORT™ *FLAKE* is our most **flexible** color and polymer flake sorting machine. With its powerful combination of sensors and dual-sided full-color cameras, it removes foreign materials and separates flakes by material type, color and transparency. INNOSORT™ *FLAKE* creates high purity flakes ready for extrusion, even from contaminated mixed streams.

With our additional TOMRA Insight service, you gain full access to critical sorting data and live monitoring of material streams for enhanced data-driven performance.

Don't miss out on improving your profit margins and maximizing opportunities in plastic recycling.

Flexibility to sort various polymers

Unrivaled color sorting performance

New data-drive flake analysis

1000	
Width	2,080mm
Length	1,900mm
Height	2,220mm
Weight*	1,300kg
Power* (3-phase)	6.0 kVA

1500	
Width	2,640mm
Length	1,900mm
Height	2,220mm
Weight*	1,920kg
Power* (3-phase)	8.5 kVA

2000	
Width	3,200mm
Length	1,900mm
Height	2,220mm
Weight*	2,400kg
Power* (3-phase)	9.0 kVA

Valves	**Nozzles**
TS120B	4.75mm

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

Main applications

PET Flakes / PO Flakes / PVC Flakes and others

purifying PET flakes

purifying transparent and opaque flakes

sorting of mixed color flakes

From waste wood to resource

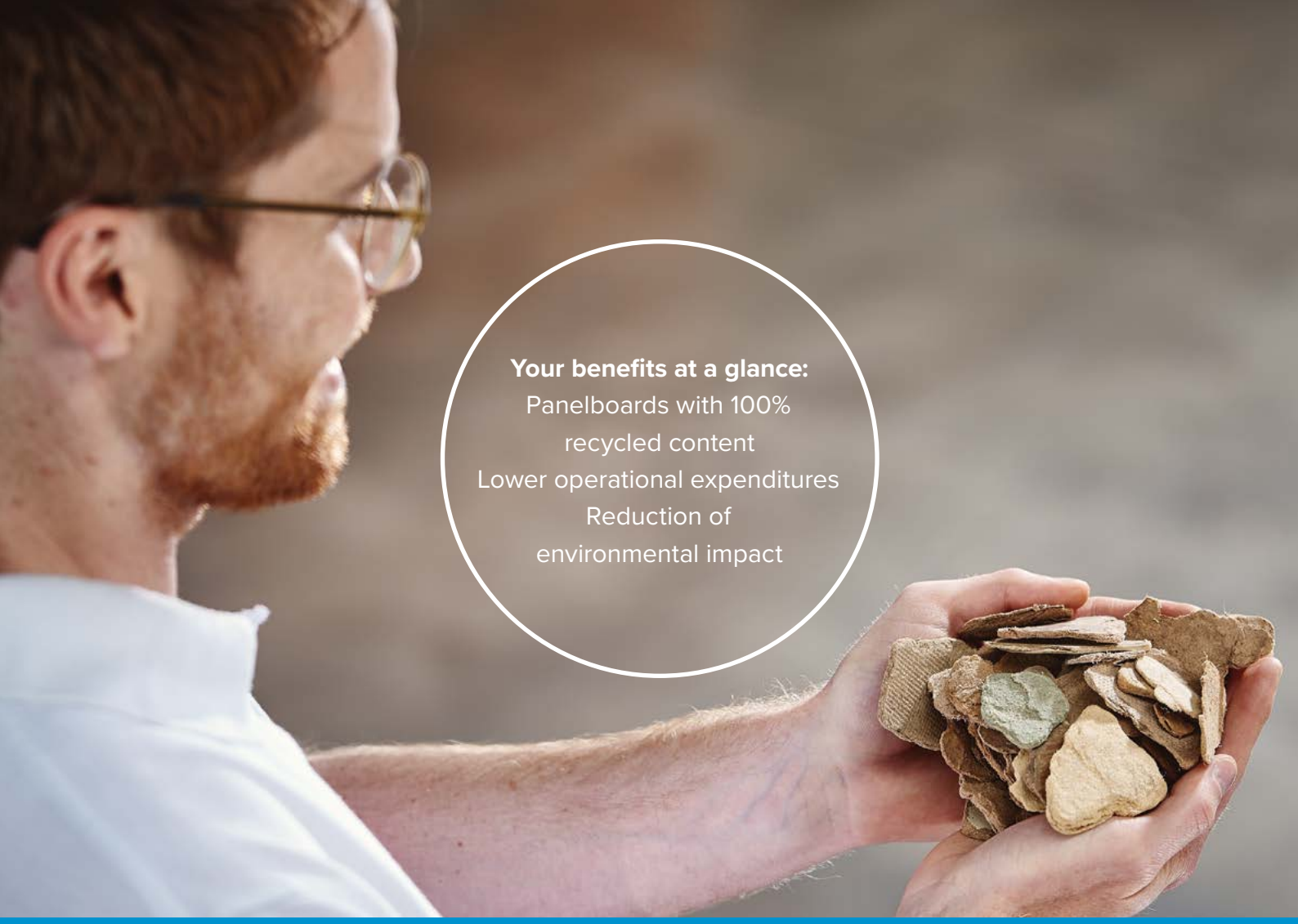
X-TRACT™ and AUTOSORT™ with GAIN™ bring wood full circle

Recycling wood at the highest possible qualities requires innovative systems that allow for the creation of pure mono fractions applicable for the production of wood-based panelboards.
As an industry pioneer with more than a decade of experience in wood waste sorting, we offer a comprehensive wood sorting solution consisting of X-TRACT™ and AUTOSORT™ with its add-on unit GAIN™. Intelligent technology and data-driven software support panelboard manufacturers and recyclers in maximizing yield and purities in wood recycling.

Step 1: X-TRACT™ for wood
Purifying waste wood

Harnessing the power of x-ray transmission (XRT) technology, X-TRACT™ measures the atomic density of materials to detect waste wood and remove impurities like inert materials, metals, and glass.

With a capacity of up to 30 metric tons per hour depending on the material stream, X-TRACT™ delivers exceptional results in waste wood sorting.



Step 2: AUTOSORT™ and GAIN™ Intelligent separation of wood by type

As a complementary solution to AUTOSORT™, GAIN™ deep learning technology utilizes neural networks to differentiate wood chips based on material type. The sorting system effectively separates Wood A from Wood B and recovers MDF from processed wood. It is the ideal solution for creating non-processed wood fractions with up to 95% purity levels.

Metal market

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.

Recycling aluminum **saves 95% of energy** compared to primary production

75% of aluminum produced is currently **still being used**

FINDER™

SUPPIXX™ • Z-TECT • INTELLIGENT OBJECT RECOGNITION

Multiflexible sensor system

Software based object processing

Modular design

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.

Don't risk investing in a static system when FINDER™ offers enough flexibility and high performances across diverse metal applications.

1200	
Width	2,000mm
Width Belt	1,200mm
Length Belt	4,000mm
Length	6,420mm
Height	2,120mm
Weight*	3,800kg
Power Consumption	5kW

1800	
Width	2,600mm
Width Belt	1,800mm
Length Belt	4,000mm
Length	6,420mm
Height	2,120mm
Weight*	4,600kg
Power Consumption	5.5kW

2400	
Width	3,200mm
Width Belt	2,400mm
Length Belt	4,000mm
Length	6,420mm
Height	2,120mm
Weight*	4,600kg
Power Consumption	7.5kW

3000	
Width	3,800mm
Width Belt	3,000mm
Length Belt	4,000mm
Length	6,420mm
Height	2,120mm
Weight*	6,900kg
Power Consumption	10kW

Valves	Nozzles
TS400	6.25 (1:1)
TS1500	6.25 (1:2)

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

Main applications

ASR
metal recovery (from stainless steel, insulated copper wire)

Electronic Scrap
PCB, wire, aluminum

Wood
wood chips

Ash Recycling
recovery of ferrous- & non-ferrous metals

Each year, worldwide Auto Recycling Industry recycles more than 25 million tons of waste materials which are recovered from end-of-life vehicles.

New X-TRACT™

DUAL PROCESSING • DUOLINE™ • MULTI-DENSITY CHANNELS

DUAL PROCESSING technology

Inhouse development of core components

Zorba Fines processing

1200	
Width	2,000mm
Width Belt	1,200mm
Length Belt	4,000mm
Length	6,420mm
Height	2,120mm
Weight*	7,400kg
Power Consumption	9kW

Valves	Nozzles
TS450	6.25 (1:1)
TS1500	6.25 (1:2)

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

With a long-standing legacy in exceptional performance, the new X-TRACT™ sets the stage for accelerating the production of secondary aluminum. By combining breakthrough innovations and software-driven intelligence, the sorting system gives you the ultimate control in separating aluminum from super lights and heavy metals. Increased capacity per meter width and belt speeds up to 3.8 m/s ensure high-throughput sorting of complex materials, including adjacent and overlapping objects. Through simultaneous object and area processing, its automated decision-making capability gives you the flexibility to choose between high purity and/or high recovery sorting.

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

Main applications

Aluminum
detects heavy metals, alloys, copper wires, PCBs and removes magnesium

E-Scrap
detects PCBs, flame retardants

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

Maximize your potential in aluminum scrap sorting

When it comes to decarbonizing aluminum, TOMRA's comprehensive knowledge of metal recycling and sorting technology offers you unmatched expertise.

Gain a leading edge in aluminum scrap recycling with our in-house developed XRT and dynamic LIBS sorting technology. Designed to maximize purity and yield, our sorting systems enable direct remelting and ensure a quick return on investment.

AUTOSORT™ *PULSE*

Dynamic LIBS technology

Bulk infeed system

3D object scanning

1200	
Width	2,230mm
Length	8,584mm
Height	2,530mm
Weight*	14t

Valves	Nozzles
TS450	6.25mm (1:1)

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

The all-new AUTOSORT™ *PULSE* is our unique dynamic LIBS technology for sorting aluminum scrap by alloy. Specially developed through intensive collaboration with the world's largest scrap recyclers and smelters, this high-throughput sorting system features a powerful combination of sensors and AI-based tools to advance aluminum alloy recycling.

Don't miss out on its outstanding performance in separating 5xxx and 6xxx aluminum alloys

Main applications

ELV Recycling
Aluminum alloy sorting
(Zorba, Twitch, ...)

Smelter
Aluminum alloy sorting for post concumer scrap
(taint tabor, extrusion profiles, ...)

Aluminum alloy sorting for post production scrap
(automobile stamping scrap, ...)

High-throughput sorting of aluminum by alloy

COMBISENSE™

FLUID COOL™ • DUAL PROCESSING

Active temperature control

Stable color range

Optimized operational costs

1200	
Width	2,480mm
Width Belt	1,200mm
Length Belt	3,960mm
Length	5,650mm
Height	1,830mm
Weight*	3,770kg
Power Consumption	10kW

Valves	Nozzle Pitches
TS1500	8 mm

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

Offering unsurpassed color detection and multi-parameter fraction separation, COMBISENSE™ eliminates most contaminants from even the most challenging ELV, e-scrap 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.

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

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

Electronic Scrap
PCB, wire, grey metals, copper, brass

Non-ferrous Metals
grey metals, copper, brass

Zorba
grey metals, copper, brass

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

Over 20% of all employees work in in-house R&D

Directing the future of business

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 TOMRA, your trusted partner

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.

Innovation

Passion

Responsibility

Test before you invest – our test centers

Finding customized solutions across various applications suitable for any sorting plant is critical. In our seven global test centers, our experienced application engineers are at hand to conduct comprehensive tests with your material before you invest in our sorting technologies. From throughput capacity to application feasibility and purity rates, you'll evidential data based on which we define the most efficient sorting solution for your specific needs. Your benefits are at hand: testing before investing reduces risks and validates your process to make your operation perform at its best. One partner. Numerous testing possibilities.

As diverse as your sorting requirements and applications, TOMRA test centers are uniquely qualified to deliver the right solution. From general material testing at facilities around the world to dedicated plastic flake sorting in our newest facility in Italy, we provide the respective framework to help you find your optimal sorting solution.

TOMRA Test Centers:
Germany, China,
South Korea, Italy

Partner Test Centers:
US, Japan

Your benefits
Test your own material
Detailed test reports
Development of individual process design


TOMRA

Connect to POSSIBILITIES

Your benefits at a glance:

Data-based process optimization

Customizable reports

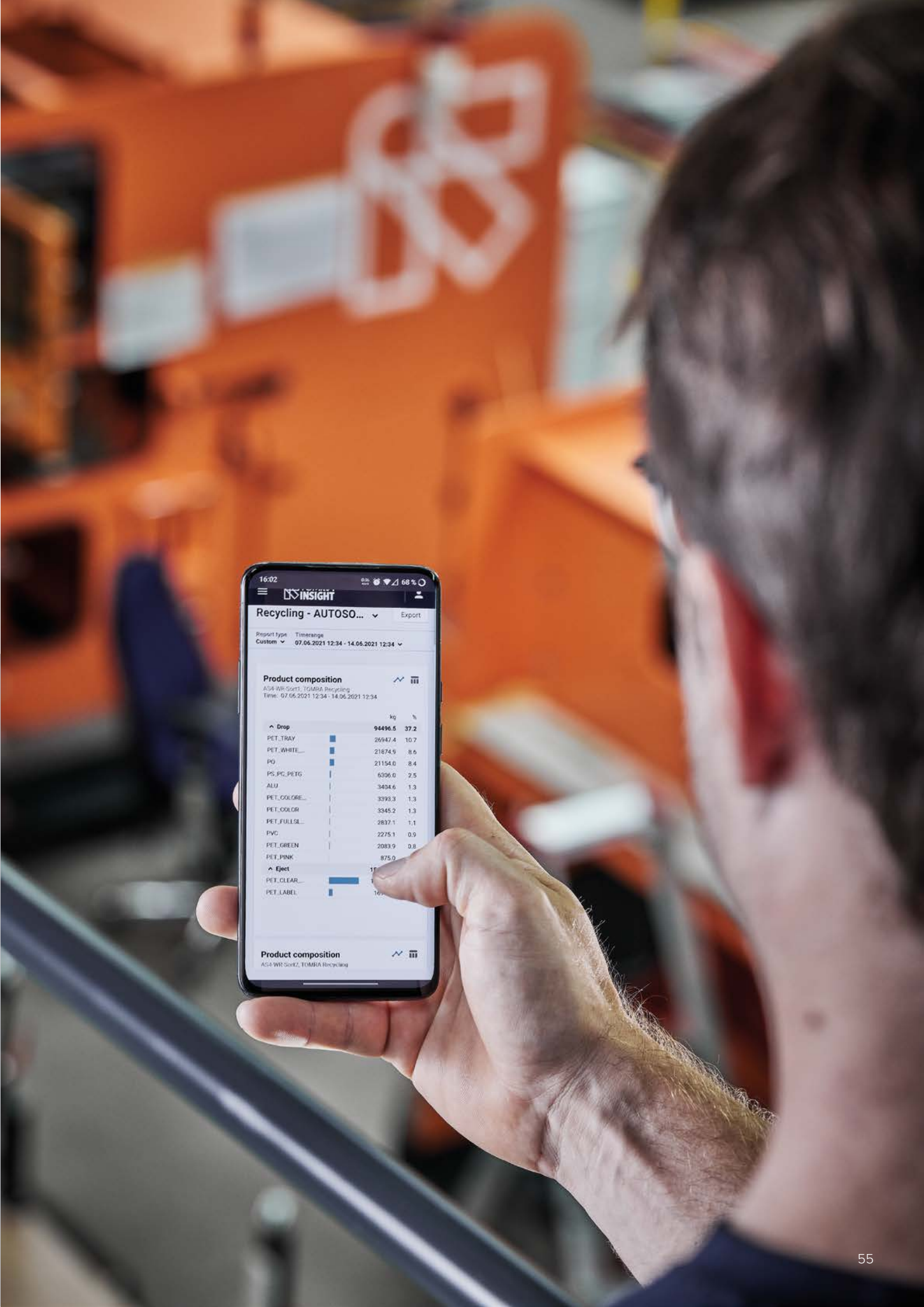
Improved maintenance processes

Specialist support with our experts

Connect to maximum performance

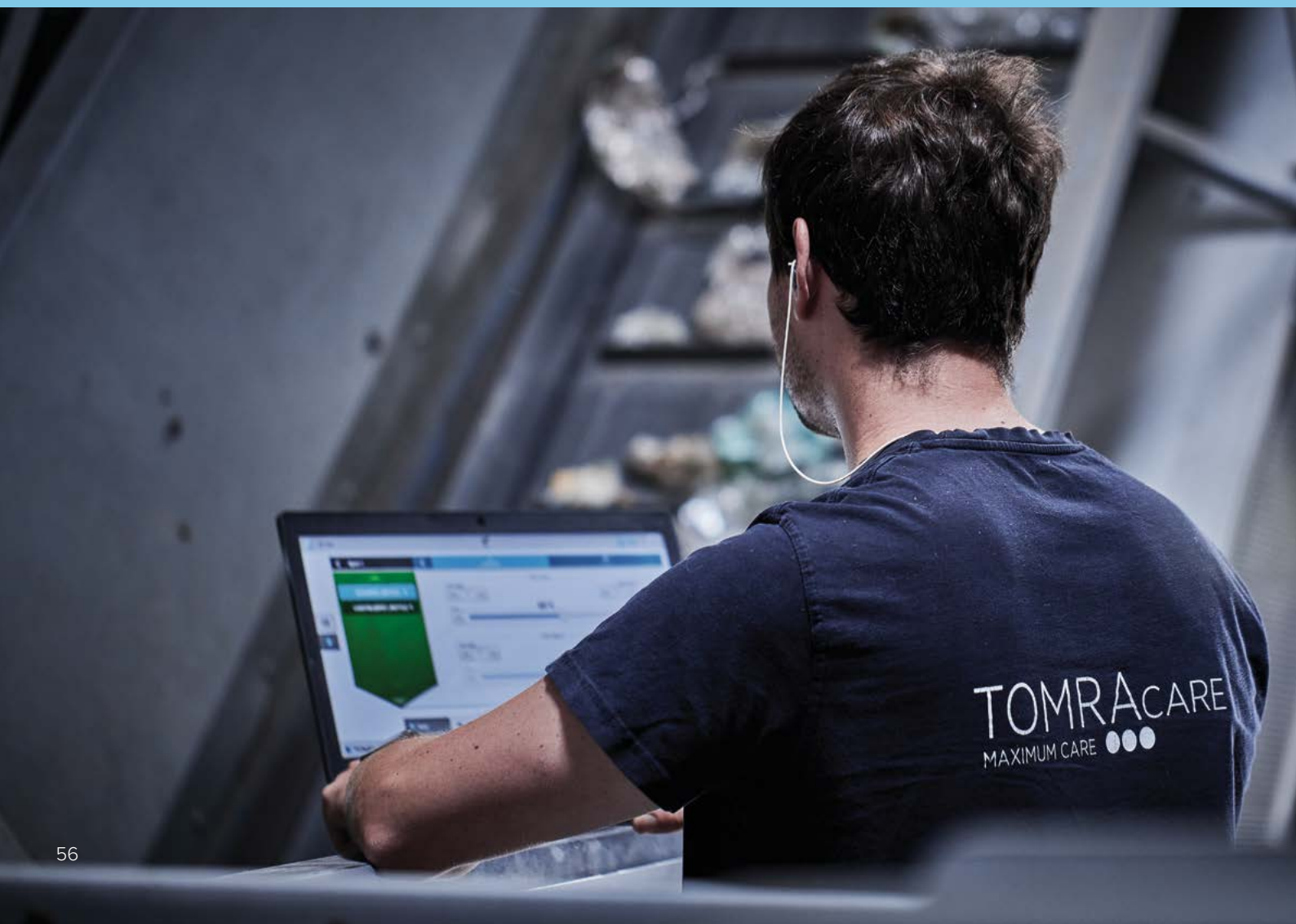
The digital era of waste and metal sorting begins with connected sorting units and data optimization. Connecting your machines with TOMRA Insight, our cloud-based data platform enables you to keep a close eye on the performance of your sorting lines, anywhere, anytime.

TOMRA Insight gathers valuable sorting data and translates it into actionable information. Detailed reports about your sorting line's performance are always available, making it easier to resolve potential issues and identify future maintenance requirements.

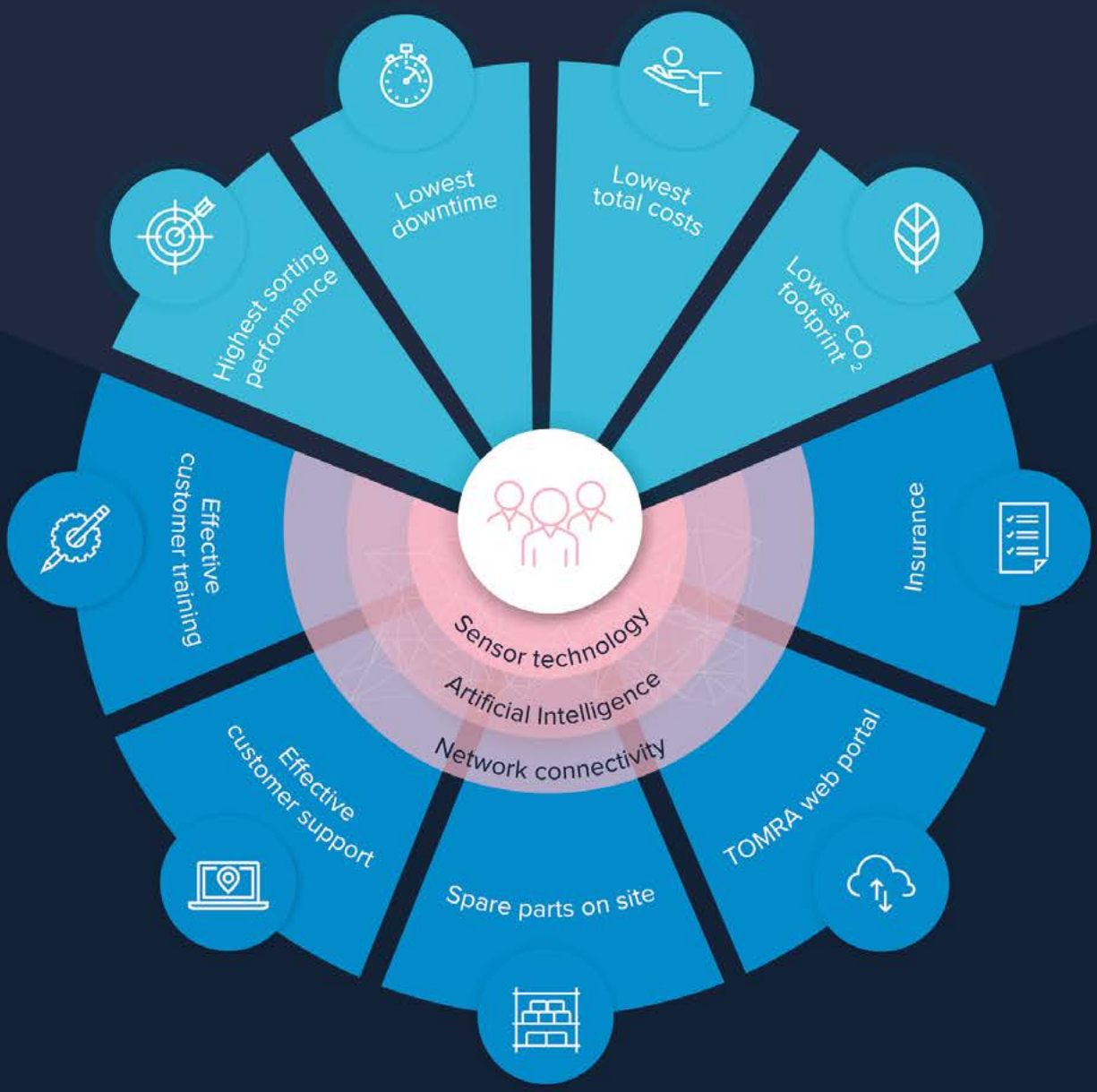

16:02
INSIGHT
Recycling - AUTOSO...
Export
Report type
Custom
Timerange
07.06.2021 12:34 - 14.06.2021 12:34
Product composition
AS4-WR-Sort1, TOMRA Recycling
Time: 07.06.2021 12:34 - 14.06.2021 12:34
kg
%
Drop
94496.5
37.2
PET_TRAY
26947.4
10.7
PET_WHITE_...
21674.9
8.6
PO
21154.0
8.4
PS_PC_PETG
6306.0
2.5
ALU
3404.6
1.3
PET_COLORE_...
3393.3
1.3
PET_COLOR
3345.2
1.3
PET_FULLSL...
2837.1
1.1
PVC
2275.1
0.9
PET_GREEN
2083.9
0.8
PET_PINK
875.0
Eject
PET_CLEAR_...
PET_LABEL
Product composition
AS4-WR-Sort2, TOMRA Recycling

We care-TOMRA Service

Delivering world-class sorting solutions is only part of our commitment to you. Keeping your plant performing at its best and maximizing yield is another important pillar to give you a distinct competitive edge. Thanks to TOMRA Care, our extensive service portfolio, we provide you with the necessary toolkit to bring your plant to peak performance, reduce your operation's carbon footprint and downtimes. From training and technical support to self-learning software, spare part kits, first-class support, financing to installation, and beyond, our full-service package is at your fingertips.



Customer goals



TOMRA's core service

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.

Consultation
With our profound and established experiences accumulated from more than 8,200 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.

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