

ZENROBOTICS®
A TEREX BRAND



Heavy Picker

The world's strongest sorting robot that can easily separate multiple waste fractions



Safe Sorting

Heavy Picker

ZenRobotics Heavy Picker is the world's first robotic waste sorting solution designed exclusively for waste sorting. It is a strong multipurpose robot for large and bulky waste that can sort several high-purity fractions simultaneously with the help of heavy-duty arms, various sensors and artificial intelligence, also known as ZenBrain.

ZenBrain helps waste processors increase their waste sorting efficiency with its Artificial Intelligence. The more you sort, the smarter your robot, like the Heavy Picker becomes.

Our Heavy Picker provides a simple, unmanned sorting process and makes waste sorting safer, more accurate and profitable. ZenRobotics Safe Sorting Robots automate waste sorting and make outdated inefficient and unsafe manual sorting a thing of the past.



Key Facts

- 1-3 Robotic Arms
- Trainable to recognise unlimited fractions
- Online reporting tool for analysis of waste
- RGB, VIS and hyperspectral cameras
- 3D sensor system and metal detection
- Feed rate control with upstream feeding and sorting equipment
- Up to 99% recovered material purity

Benefits

- Increase Recovery Rates
- Improve Sorting Quality
- Uninterrupted Sorting
- Enable 24 / 7 Operations
- Minimise Pre-shredding
- Reduce Human Risk to Harsh Environments
- Safe Sorting
- 3 Solutions to Choose From

Waste Types

Heavy Picker easily adapts to a wide range of sorting needs. It can sort multiple fractions, various shapes and different sizes at the same time – and even prioritise the most valuable objects to maximise profits. The Heavy Picker also minimises the need for pre-shredding waste or pre-sorting the waste with an excavator. The robot is suitable to most waste types, particularly those that consist of bulky material.



Construction and Demolition Waste (C&D)

Metals, Wood by grade, Rigid Plastics, Mixed Inert.

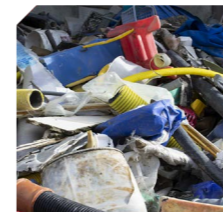
Sorting multiple high-quality recyclables from bulky C&D waste like different qualities of wood, plastics, metals and stone together in one go.



Commercial and Industrial Waste (C&I)

Metals, Rigid Plastics, OCC, Wood by grade.

Sorting multiple high-quality recyclables from bulky C&D waste like different qualities of wood, plastics, metals and stone together in one go.



Rigid Plastics

Plastics from Mixed Waste, Plastics by Polymer, PP, PET, PVC, PE, Plastics by Size, Shape and/or Colour.

Automated sorting of rigid plastics by shape, size and colour to increase recycling purity and recover fractions sellable in the aftermarket.



Scrap Metal

Brass, Aluminium, Zinc, Copper, Stainless Steel, Iron Scrap, Copper Wires, Contaminants.

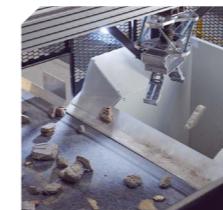
Automated recycling of ferrous and non-ferrous metals to recover sellable high-value recyclables and replace inefficient manual processes.



Wood Waste

A-Wood, B-Wood, Hazardous Wood.

Separating mixed wood into grade level sub-fractions to improve recycling quality and remove hazardous objects.



Mixed Inert

Stones, Bricks, Asphalt, Gypsum, Concrete.

Separating mixed inert waste into several sub-fractions and lifting objects weighing up to 30 kg to improve sorting quality and employee safety.



Bag Sorting

Different colour plastic bags.

Robots are super-efficient in sorting bags by color. The main advantage is that robots can pick bags from a flow which also includes loose waste. Sorting can be achieved on one spot in a single pass, which means less space is required, compared to systems which include many conveyors and multiple sorting devices.

How to robotize with the Heavy Picker

Your operations stand to benefit from AI-based sorting, whatever your starting point. Whether you want to modernise your existing facility with smart robotics or invest in a new fully automated recycling plant, we have you covered. Here are three options for how you can robotize your waste operations, as demonstrated by several operators around the world.

Option No.1: Standalone Solution



Standalone solution is the right one for:

- Facilities with small to midsize waste streams to get economies of scale via automation
- Not making huge investments on complex plant design and expensive civil works
- A simple project with quick delivery and installation

Order a fully automated and independent waste sorting station.

This turnkey solution is the fastest and easiest way to get all the benefits of AI-powered sorting at a low operation cost. The fully automated sorting station, powered by ZenRobotics Heavy Picker, is totally independent from other operations - meaning it can run unmanned 24/7. It's flexible and easy to operate, and quickly ready for use. Each Heavy Picker arm has 4 chutes, with the HP3 achieving up to 6900 picks per hour.

Option No.2: Retrofitted Solution



Retrofitted solution is the right one for:

- Bringing benefits of AI-based sorting to existing facilities and sorting lines
- Waste sorting processes that are currently manual but could be automatic
- Reducing human risk by allocating hazardous tasks to robots

Integrate Heavy Picker into your existing facility.

This customised solution integrates modern waste sorting robots into existing facilities and their sorting lines. In practice, that means retrofitting the Heavy Picker to your current processes to increase efficiency and reduce or replace manual processes. These robots fit right into even demanding surroundings, extending sorting capacity and improving employee safety.

Option No.3: Greenfield Solution



Greenfield facility solution is the right one for:

- Operators investing in modern, industrial scale recycling infrastructure
- Designing a new greenfield installation around robotics and automation
- Drastically increasing your sorting capacity

Design a new large-scale facility around the Heavy Picker

Investing in a fully robotized industrial scale recycling facility takes waste operations to a new era. You can dramatically increase your sorting capacity while skipping the rigid processes and inefficiencies of conventional facility setups altogether. ZenRobotics is your go-to partner in designing and building your processes around AI-based robotic waste sorting technologies.

How does it work?

- 1 Heavy Picker sensor unit scans the waste stream
- 2 ZenBrain analyses data & controls the robots
- 3 Heavy Picker's gripper picks the desired objects



Control and monitor your operation on your smartphone

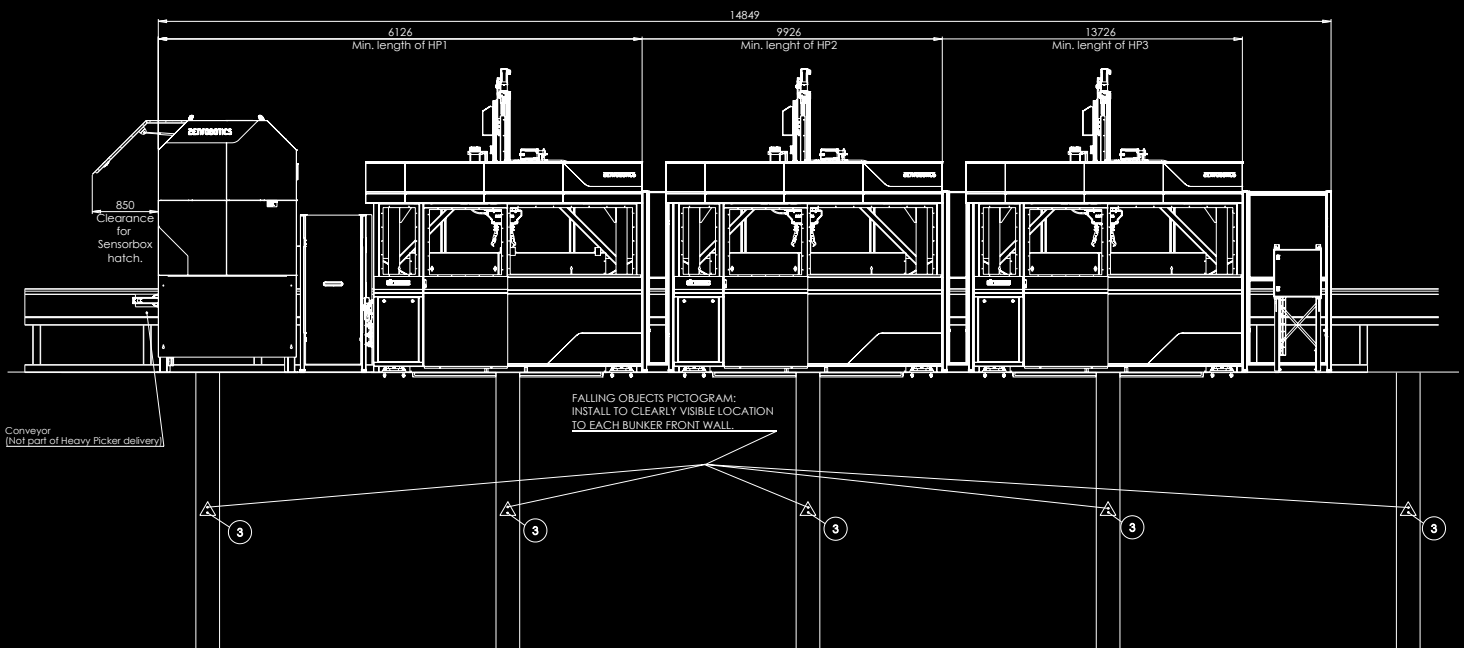
Control your Heavy Picker with an easy-to-use user interface. Sitespecific performance data can be easily accessed anywhere in the world with the ZenRobotics Reporting Tool that can be reached online on your PC, tablet or smartphone.

HEAVY PICKER

Technical Specifications:

Robot Arms	1, 2 or 3	Discharge Chutes	Up to 4 per Arm
Sensor Units	1	Max. Object Weight	30 kg (66 lb)
Gripper Type	Mechanical Gripper	Max. Object Size	1500 mm x 500 mm x 300 mm (60' x 20' x 12')
Max. Speed per Arm	2300 Picks per Hour*	No. of Recognised Fractions	Unlimited
Sorting Belt Speed	0.1 – 0.6 m/s (20-118 fpm)	Installed Power (1 robot)	10 kw (13.4 hp)
Unit Length	6125 mm – 13725 mm (20' 1" – 45')	Air Consumption (HP1/HP2/HP3)	Pressure of air supply: 7 bar (100 psi) 60/120/180 l/min (2/4/6 CFM)
Unit Weight	4700 kg – 11300 kg (10400 lb – 25000 lb)	Noise Level	<80 dB(A)

* Actual picking speed dependent on material feed



The delivery of a complete Heavy Picker system includes a sensor unit, a control system, 1 to 3 robot arms, chute collars and a safety cage.

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