

airo-mrf » AIRO-MRF Solution

At the unmanned Robot Material Recovery Facility AIRO-MRF, over 30 units of 'Atron' completely replace the recycling sorting tasks that were previously performed by humans.



Aetech airo - mrf : Goal to double the resource recycling rate



After the robots transfer and decompress the waste, it is sorted by magnetic, ballistic, and wind separators



Using the AI sorting robot 'Atron' and a circular conveyor belt, only the required items are selected.



After being crushed, cleaned, and dried, the sorted transparent PET is turned into high-purity flakes.

- Gain flexible uptime
- Reduce landfill and incineration resources by 2X
- Maximize recycling from 30% to 70%
- Respond to climate change with carbon reduction



Leading the future of circularity

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AI waste optical sorting robots, the first to be commercialized in Korea and with the highest installation count



wai-kor waste ai-korea

- AI algorithm optimized for Korean waste characteristics
- Object recognition accuracy of 99.3%
- Over 2.8 million+ Korean waste data samples used for training

3nity Three elements (AI, Robot, HW Design) + triNITY

- Seamless integration of three core technologies
- Maximize throughput with adaptive control based on waste properties
- Custom hardware and software solutions, with easy maintenance

Expected benefits

240% increase in sorting speed

279% reduction in sorting costs

126% increase in sorting operation time

Certification

- WIPO Global Awards Winner (2024.07)
- Designated as an innovative product by the Korean Public Procurement Service (2024)



AETECH's innovative waste management solution has been recognized both in Korea and internationally

Waste to be sorted / Single Atron Specification

- Waste to be sorted into 7 types (PET, PE, PP, PS, Other, Glass, Can etc)

- 43 subcategories based on shape, color, and usage for sorting (PET : thin clear, regular clear, green, brown, white, mixed colors) (Glass bottles : clear, brown, green, blue, mixed colors etc) , aluminum cans

- Power : single-phase 220V · three-phase 380V (Maximum power output 22kW)

- Robot frame : W1900 X D1900 X H3000 (mm)

- Vision frame : W1100 X D650 X H1100 (mm)

- Weight : Less than 1.5 tons | payload capacity 4kg

HW Design

Realizing AI and robots so they can operate in the real world HW design and manufacturing for each component of ATRON Developing solutions for installing ATRON on-site

Robot

Adaptive robot control tailored to waste shape and conditions
Development of robot motions to maximize waste processing throughput
Conveyor and equipment control

Object recognition accuracy of 99.3% | Up to 96 types of waste can be sorted per minute



Real-time AI monitoring screen



AI

Deep learning-based waste location detection and classification
Plastic component analysis and object tracking on the conveyor
Analysis of waste statistics data

Commercialization track record



Songpa District 2 unit



Namyangju City 3 unit (Private sector)



Seongnam City 2 unit



Incheon City 3 unit (Private sector)



Cheongdo County 3 unit



Namwon City 1 unit

Additional commercialization plans confirmed

- Incheon City 2 unit (Public)
- Ulsan City 4 unit
- Hwaseong City N unit (planned)
- Jeju City 5 unit (planned)