

Danu Robotics

H.E.R.O. Series 2

AI guided, 2 arm, "Retrofit" robotic waste sorting system



- **AI guided Computer Vision system**

Computer Vision software (CV) identifies objects by shape, edge and dimension. More accurate than a bounding box, delivering more successful picks.

- **Modular, Multi-picker system**

Multi arm system is being developed to pick across the whole DMR mix, our first system focus on picking plastic packaging and aluminium cans.

- **Fast, Accurate, Picks Per Day (PPD)**

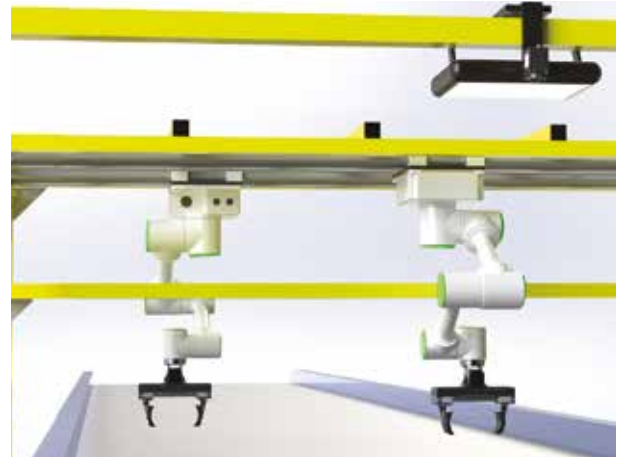
Robotic waste sorting is up to 4x more operationally efficient and less costly than manual labour, running 3 shifts/day.

- **Energy Efficient and Recyclable**

Our lean systems are designed to be highly energy efficient and 90% of our hardware is recyclable.

- **Easy Maintenance, Plug&Play technology**

AI and software is continually improved and optimised. hardware is easy and quick to maintain.



Danu Robotics designed and built the H.E.R.O. (High-performance, Environmentally friendly, Reconfigurable Operator) series robotic waste sorting system to be the most operationally efficient on the market. Fast & accurate but also scalable, easy to install/maintain and with a low Capex investment to ensure the transition from manual sorting is as easy as possible. The gantry infrastructure is fully patented.

Danu measures successful Pick Per Hour/Day, recorded at the bin rather than by the robot's action ensuring the system's value is accurately assessed.

Danu's Series 2 system requires less than a metre of conveyor to operate and with guards can retrofit into existing MRF lines alongside human pickers.

Technical Specifications

CV Systems

Camera 1; Basler Ace 2 RGB with c125-0418-5m-p lens
Camera 2; Realsense D435i, Time-of-Flight camera (depth estimation)

Workstation & HMI

Processor AMD Ryzen 9 7900X, 12C/24T, 4.7GHz – 5.6GHz. RAM 64GB DDR5 5600MHz. Graphic Card - Nvidia A5000
Control, scheduling & CV software by Danu

Danu waste sorting QA/QC will be operationally measured based on objects dropped in bin versus objects identified.

Robotic arms

IGUS gantry & trolley
Gripper & arms designed and built by Danu. SGS accredited harmonic joints and grippers are plug and play components.
Robot Arm Weight: 15kg
Robot Arm Reach: 900mm
System requires 3 phase power supply, earth and neutral, consuming >8kWh (20A)/day.

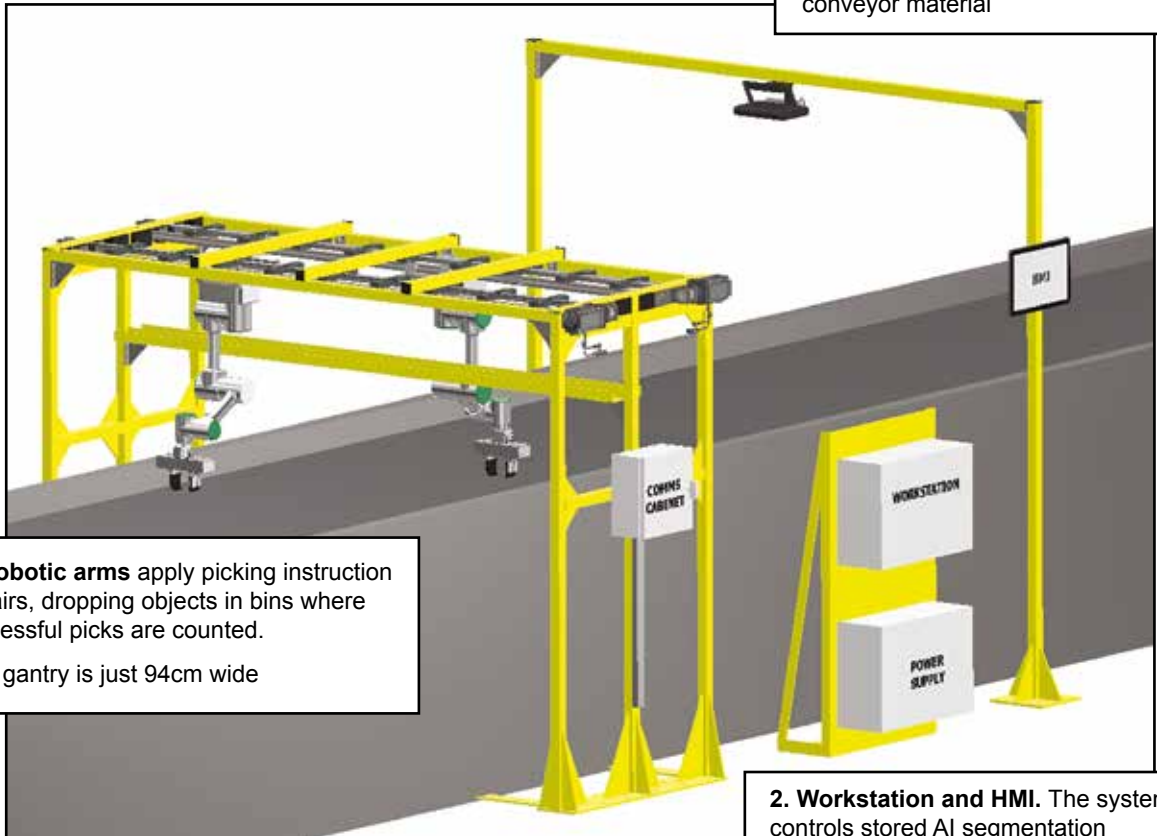


Object is within a bounding box

Object is outlined for positional accuracy

1. CV hardware detection.

Industry standard optics see the conveyor material



3. Robotic arms apply picking instruction in pairs, dropping objects in bins where successful picks are counted.

This gantry is just 94cm wide

2. Workstation and HMI.

The system controls stored AI segmentation models, applied before picking instructions are sent to the arms.



Visit our Demo Facility

Opening in April 2024, Danu's facility at the National Robotarium in Edinburgh will demonstrate their two arm 'Retrofit' system on dry mixed recyclable waste and soon the full system designed to sort across the whole mixed waste.

Demonstrations are invite only, however Danu will explore educational opportunities for any organisation invested in the drive to a circular economy and the role recycling plays.



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