

EARTH – *Electronic Appliance Recovery using Teams of Humans and Robots*

A human-robot workcell that removes high-voltage capacitors and heavy transformers from end-of-life microwave ovens — making WEEE recycling safer, traceable and easier to scale.

THE CHALLENGE AND WHY IT MATTERS

Dismantling microwave ovens is risky and repetitive. Operators handle high-voltage capacitors and heavy transformers by hand, often many times per shift. Recyclers usually track output by weight only, not by individual appliance.

Making this work safer, traceable and scalable matters for compliant WEEE treatment.

OUR SOLUTION AND VALUE PROPOSITION

EARTH combines a UR20 robot, AI perception and an operator HMI. At SUEZ's WEEE testbed in Bordeaux, we demonstrated the full workflow on real end-of-life microwaves (TRL-7):

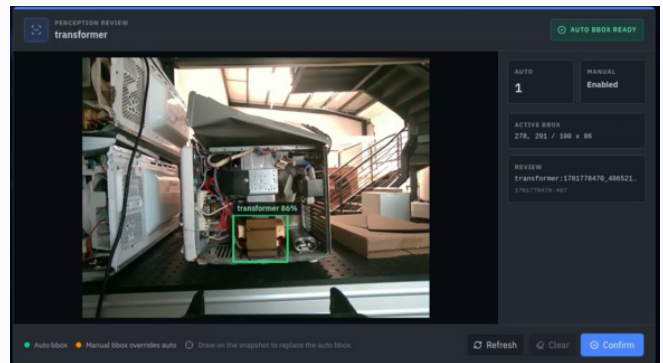
- ✓ The robot finds, grasps and removes the capacitor and transformer
- ✓ The operator supervises and keeps pause/stop control
- ✓ Each unit is identified and logged
- ✓ A Docker package runs on the customer's robotics platform

Result: less exposure to hazardous parts, faster setup, and per-appliance traceability instead of weight-only tracking.

ADDED VALUE FROM JARVIS

EARTH integrated the JARVIS Vision / Perception tool (KUKA) for transformer detection.

JARVIS provides the 2D detection; euroDAO turns it into 3D robot targets and runs the grasp workflow. This helped move from lab validation to the on-site TRL-7 demo faster.



KEY RESULTS

- ✓ **48-51% faster** cold-start setup (vs. conventional teach-pendant programming).
- ✓ **53% fewer** manual touches on high-voltage capacitors (contact time also down ~35-48%).
- ✓ **100% full** traceability records per microwave.

PILOT AT A GLANCE

Lead organization: euroDAO

Consortium: euroDAO (tech provider) + SUEZ (end-user); JARVIS Vision (KUKA)

Sector / use case: WEEE recycling — robot-assisted microwave dismantling

JARVIS module(s): Vision / Perception tool

Demonstration environment: SUEZ WEEE testbed, Bordeaux (France) — TRL-7

POTENTIAL MARKET OPPORTUNITIES

First customers: WEEE recyclers handling small domestic appliances, where operator safety and EU traceability (Digital Product Passport) matter.

The same approach can extend to other e-waste with high-risk or heavy components — and, with broader perception and grippers, to wider recycling and remanufacturing lines.

MORE INFORMATION

Website: eurodao.com

Contact: info@eurodao.com

Videos: <https://www.youtube.com/@JARVISHorizonEuropeProject>