GRINNER

Why GRINNER?

- Some battery types contained in items of e-waste, in particular lithium-ion (Li-ion) and nickel-metal hydride (NiMH) batteries, can ignite or explode when damaged and cause fires at e-waste treatment plants.
- Such fires at best severely disrupt waste services and at worst can cause **millions of Euros of damage and serious injury or even death.**

As it stands, there is no available solution to eradicate the fires caused by these so-called « zombie batteries ».

Extent of the problem

A survey of 109 e-waste processors revealed that **36%** reported a severe battery related incident between 2016 and 2019.

Source: ecosystem France, French national roundtables on fire prevention

Extent of the problem

According to the survey the cost of fires ranged **from €190,000 to €1.3m** per incident.

Source: efosystem France, French national roundtables on fire prevention

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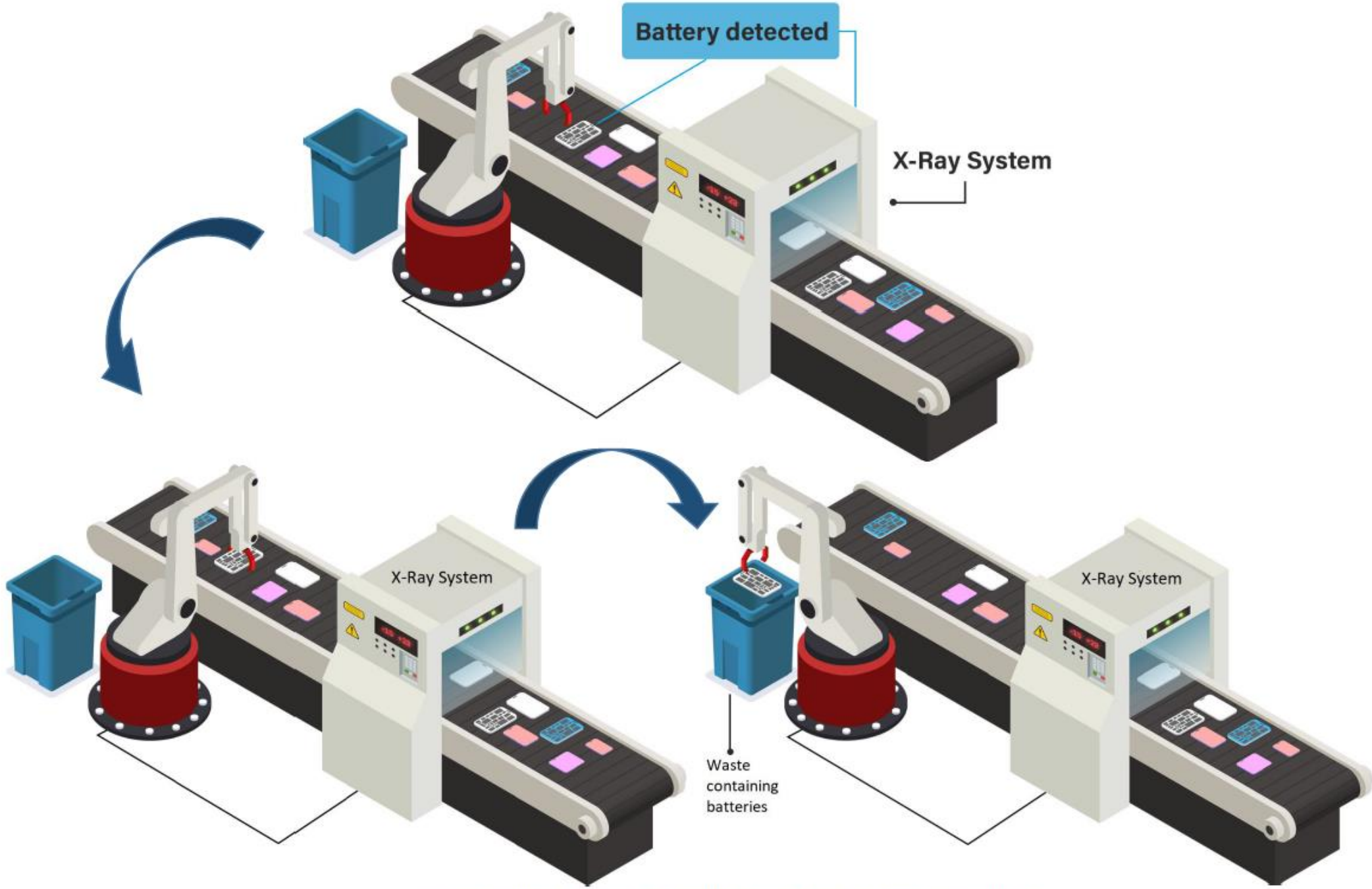
What will GRINNER do?

GRINNER’s Aim

The GRINNER project aims to commercialise an autonomous AI-enabled robotic sorting system capable of detecting and removing e-waste containing batteries from current waste streams before they enter machines that crush and consolidate waste, causing damage to batteries, and massively increasing the risk of fires.

The system will comprise:

- The fastest energy-resolved X-Ray detectors in the market;
- A Machine Learning-enabled software module that will analyse X-Ray data and effectively detect waste containing batteries while passing through the waste flow.

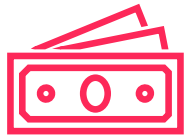


Grinner step-by-step process from battery detection to removal from the waste stream

GRINNER's Objectives

- Build an X-Ray data set of e-waste;
- Develop an AI software module for detecting batteries in e-waste;
- Develop a prototype system and install it in an e-waste facility to conduct live trials;
- Explore the potential for exploiting GRINNER as an economically viable, stand-alone product for e-waste treatment plants.

Other expected impact



Economic: GRINNER will effectively enable European e-waste processors to save millions of Euros every year by eliminating the fires caused by the misuse of batteries;

Health and safety: GRINNER will help prevent and minimise the occurrence of battery fires

Societal impact: replacing humans working in dangerous conditions will result in less injuries

Expected environmental impact

GRINNER will help:

- Preventing the toxic fluoride gas emissions that these fires cause;
- Reducing waste from materials destroyed by the fire, due to burned materials on-site and the materials used for fire extinguishing;
- Minimising contamination of water (e.g., runoff water used for fire extinguishing may contain substances from burned WEEE).

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About the project

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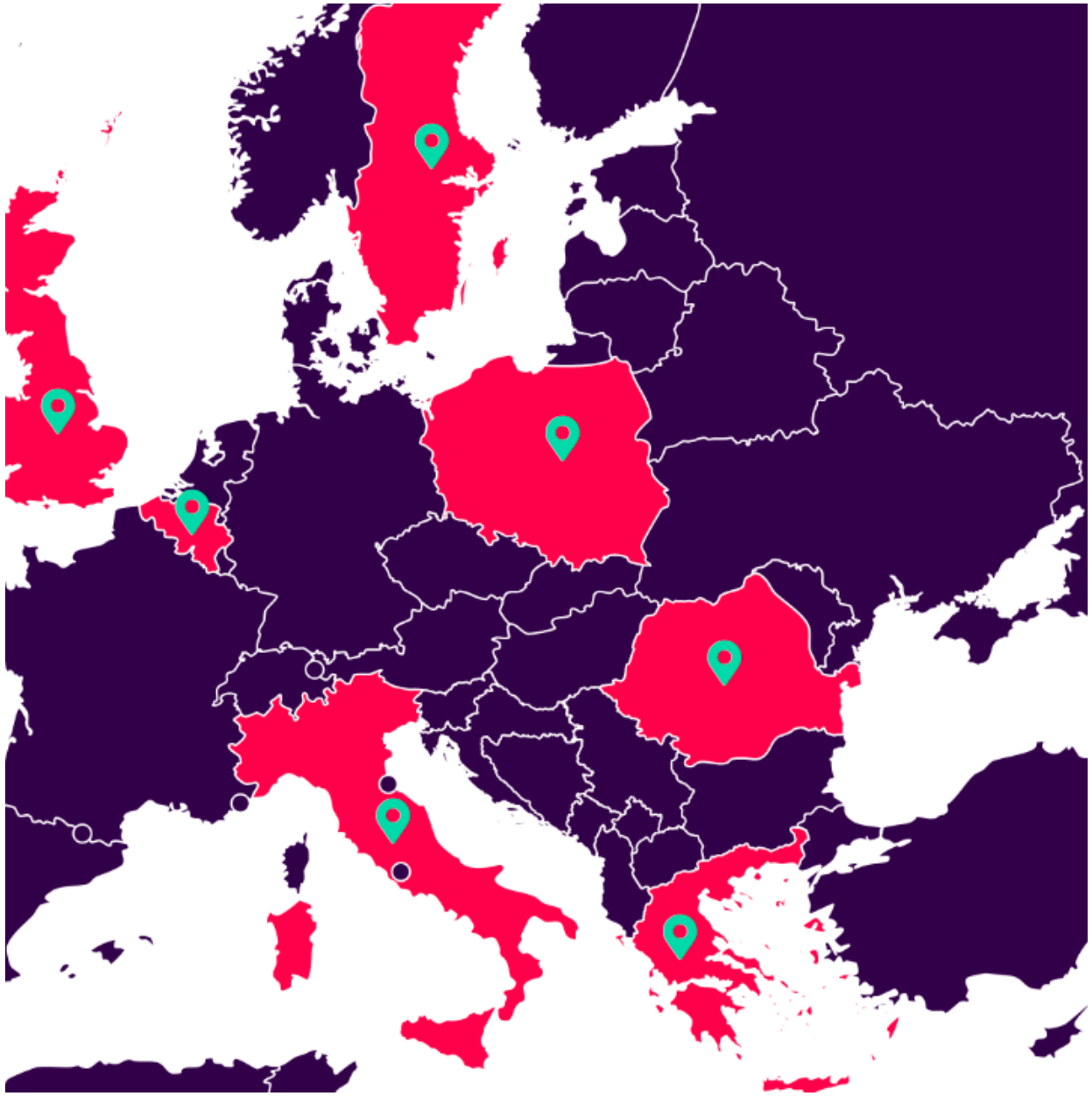
- Three-year project funded through the European Union’s Horizon Europe programme
- The project will conclude in August 2025
- Seven organisations from seven countries



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THANK YOU!

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