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Enhancing Europe’s resilience in Critical Raw Materials supply through AI-driven robotics

2 months ago

The Innovation project IBot4CRMs harnesses AI-powered, self-learning robots for urban mining to complement primary sources of Critical Raw Materials (CRMs) and strengthen their supply resilience and competitiveness in Europe.

To address this opportunity, iBot4CRMs is developing integrated AI-powered robotic systems designed to maximise the recovery and recycling of critical raw materials like neodymium magnets, copper, gold, and silver from urban waste.

The project will demonstrate how integrating AI, data analytics, and robotics can enhance recycling processes for Urban Waste, Incineration Slag, Metal Scraps, Waste Electrical and Electronic Equipment (WEEE), and Electric Vehicles (EVs). It will do so through seven validation scenarios carried out at four large-scale pilot sites in Turkey, Greece, Spain, and Portugal. This approach not only enables real-world validation but also paves the way for a cost-effective business strategy for large-scale deployment.

Critical raw materials are especially important as they enable many modern and future sustainable technologies that drive the decarbonisation of our value chains. By strengthening Europe’s resilience and competitiveness in the supply of CRMs, this project aims to address the challenges outlined in the Critical Raw Materials Act and the European Green Deal.

IBot4CRMs brings together 18 partner organisations from across Europe. The multidisciplinary nature of the consortium is one of its strengths, combining providers of state-of-the-art technology and sensors with active and innovative players in the recovery of valuable materials and recycling in real commercial use cases. Led by the NORCE, the 4-year Horizon Europe Innovation project kicked off with an initial gathering in Kristiansand, Norway, in January 2024.