

PRESS RELEASE

Eco-design and electronic waste reduction, with CIRC-UTS solutions promoting a circular industry

The project, funded by *Horizon Europe*, has developed tools, processes and models to apply circular economy in the automotive and mass electronics sectors

Milan, 6 March 2026 – Circular economy can be combined with the automotive and mass electronics sectors. This was confirmed by the **European CIRC-UTS project**, which has just been completed. It was launched in 2023 with funds amounting to **6 million euro** given by the *Horizon Europe* programme. The project's team of **international academic and industrial partners was coordinated by the DIG-Department of Management, Economics and Industrial Engineering at Politecnico di Milano**. The aim is to adopt processes that **reduce electronic waste, improve efficiency, and reuse components through eco-design**, besides showing how circular economy can be an applicable lever for industrial competitiveness.

Four pilot projects have been carried out to implement an **eco-design approach to electronic control units (ECUs) in cars, tyre pressure monitoring systems (TPMS), integrated micro-electronic components (IMEs) in products, and for sorting obsolete printed circuit boards (PCBs)**, particularly from washing machines, at the end of their life cycle. The entire life cycle of electronic components was taken into account, allowing partner companies to experiment with advanced technologies and circular economy solutions directly in actual industrial contexts.

Results achieved include the development of **an advanced technological process for removing chips from the electronic control units of cars. This was carried out using COBOTS**, collaborative robots that help operators dismantle said components. The aim is to automate repairs, speed up the procedure, and enhance sustainability.

In addition, **an artificial intelligence-based tool** was used to **recognise electronic components**. It was applicable to both ECUs and so-called IME (In-Mould Electronics) modules, i.e., flexible electronic elements found, for example, in foldable smartphones or curved computer screens. «We have developed software that, using an advanced camera and artificial intelligence, can identify the type of components on electronic boards, and determine whether they are present, missing or damaged», said **Paolo Rosa** at DIG, project coordinator for Politecnico di Milano. «**This is very important in the case of flexible boards as the components are microscopic** and invisible to the human eye». **It is the first time this type of electronic cards can be repaired**, thus reducing the production of electronic waste, and facilitating its reuse, consistently with the project's spirit.

To support the pilot projects, **digital platforms and concrete technologies** were developed to promote circularity. **The Electronics Circularity Toolbox** stands out among these, a set of digital tools including **augmented reality (AR), recycling process simulation software, EOL**

management analysis software and a digital twin for virtual product simulations. It will support companies in adopting a circular approach to product design from the outset, spanning material selection, assembly, repairs and end-of-life. CIRC-UITs has also generated circular business models, which can be applied by future start-ups for a new concept of industry.

CIRC-UITs also participated as a partner in defining the **ISO/AWI 24961 standard, which aims to ensure greater sustainability in the management and procurement of rare earth elements** for electronic components. Moreover, the project contributed to defining **new European and international standards** promoting product repair and innovative design procedures for electronic boards.

[LINK TO THE PROJECT WEBSITE](#)

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Project partners: OOFFIS, SAT, SUPSI, INNOVALIA, Holst Centre by TNO, TXT E-Tech Srl, Fiat Research Centre CRF, BOSCH GmbH, MacDermid Alpha – Electronic Solutions, AUMOVIO, MARAS (Material Recycling and Sustainability) BV, Beko Europe, BESU solutions GmbH, Autodemolizione Pollini, TRACXON BV, ERION, DIN EV, MADE competence centre of the POLITECNICO DI MILANO, PBKIK.

FOR MORE INFORMATION:

Raffaella Turati | +39 3402652568 | relazionimedia@polimi.it