

New Recovery Processes to produce Rare Earth-Magnesium Alloys of High Performance and Low Cost

For the past three years, Remaghic's partners (Fraunhofer ICT, Fundación TECNALIA, Catholic University of Leuven, Grupo Antolin, Relight, ITRB, Piaggio Aero, Pininfarina and Meotec coordinated by Fundación CIDAUT) have been working on the development of high-performing, low-cost magnesium alloys. The project melds the efforts of a consortium of world-class research and education organisations, as well as design and engineering firms to recycle magnesium metals from industrial waste, combining them with recycled rare earth elements (REEs) to create high-performance alloys. This work may be key in improving Europe's sustainability to reduce its dependence on external raw materials, supporting a closed economy model of reusing and recycling rather than treating these resources in a linear manner.

Remaghic has completed its work in August 2018, and the results have been promising. This project has proven that it is possible to improve the performance of recovered magnesium alloys by adding recycled REEs. These REEs can positively influence magnesium's mechanical performance (e.g., material strength), corrosion performance and biomedical compatibility (e.g., corrosion of magnesium alloys in vitro metallic materials such as bone screws).



The Remaghic project has the potential to revolutionise the way in which magnesium alloys are produced, impacting the engineering processes of everything, from cars to medical implants to aircraft. Remaghic has shown and validated an industrial facility specifically targeted to recycle magnesium alloys, demonstrating that there are alternatives to achieving good performance starting from secondary materials.

With the help of the research and results from the Remaghic project, many organisations can instead enhance their global recovery efficiency by reusing these scraps, closing the loop and creating new sustainability standards. This work will eventually contribute to the future creation of scraps classification, the implementation of policies that foster recycled materials, and to the development of a recycling culture in the European society.