



## Creating value from waste in the steelmaking industry: the ZHyRON project

**The ZHyRON project has been launched to pioneer a new process for recycling steelmaking by-products based on the use of green hydrogen.**

A new Eu funded project, called ZHyRON, aims to pioneer a valorisation pathway for steel-making by-products rich in iron and zinc, with the goal of enhancing the sustainability and circularity of the steel industry. It kicked off on 23 January in Zaragoza (Spain) with its team of nine companies and institutions from six European countries.

Although valorisation processes already exist in this field, they rely on high CO<sub>2</sub> emissions, compelling the metallurgical industry to transition to hydrogen as part of its journey towards carbon neutrality.

The project will thus explore solutions related to technical integration, economic viability, and environmental considerations. This will foster innovative business models and strategies for the extraction of still usable iron and zinc from metallurgical waste using hydrogen as reductant. From a technical point of view, the project's approach involves a combination of pyrometallurgical processes and hydrometallurgical stages: the recovered iron oxides will be transformed into direct reduced iron, suitable for consumption in electric arc furnaces, while the extracted zinc will be processed into zinc oxide concentrate for use in many sectors, from batteries to agriculture, with an eye to wastewater treatment and reuse.

These potential solutions offer several benefits, including the prevention of hazardous waste landfilling, a reduction in CO<sub>2</sub> emissions, and the establishment of a new circular economy loop. In the words of Maciej Kaplan, from GreenIron (Sweden) "The aim of the ZHyRON project is to transform the current linear steelmaking process into a circular and sustainable flow of resources", while the project's technical

coordinator, José Luis García Cimadevilla from ArcelorMittal, stresses that “By collaborating and utilising the expertise of each of the nine partners, we aim to develop a new process based on green hydrogen and electricity, without CO2 emissions and other environmentally harmful gases”.

Funded by the European Health and Digital Executive Agency (HaDEA) as part of the Clean Steel Partnership, ZHyRON brings together a consortium of nine partners from six European countries: Fundación CIRCE – Centro de Investigación de Recursos y Consumos Energéticos (Spain) as coordinator; ArcelorMittal Innovación Investigación e Inversión (Spain); ArcelorMittal Maizieres Research S.A. (France); Centre de Recherches Métallurgiques asbl (Belgium); GreenIron H2 AB (Sweden); BFI - Vdeh-betriebsforschungsinstitut GmbH (Germany); Hydrometal S.A. (Belgium); Jean Goldschmidt International (Belgium) and Fondazione ICONS (Italy).

ICONS will be in charge of the communication and engagement actions with stakeholders: “At ICONS we are very excited to take part in a such innovative and important project as ZHyRON”, says Ani Asatryan, PMO of the project “we are glad to be responsible for science communication and research results dissemination, to reach a larger audience for a such important field. We are also happy to lead the strategy for business innovation within ZHyRON, to foster as much as possible access to the market, ensuring a wide project legacy”.

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