PRESS RELEASE

MOWSES Project Launches to Revolutionize Green Steel for Europe's Sustainable Future

Groundbreaking Research will make Welded Scrap-Based Steel Safe for Application in Sustainable Infrastructure

Ghent/Belgium, 23 October 2024 **- The EU-funded MOWSES (Multi-faceted Assessment and Optimization of Welded Structural Green Steel Plates for Use in European Sustainable Infrastructure) project kicks off today to enhance the safe application of green steel in critical European infrastructure by focusing on welded joints of medium to ultra-high strength steels. The project is coordinated by OCAS NV, a joint venture between ArcelorMittal and the Flemish region. It brings together a well-balanced consortium of four industrial partners and four universities from four EU-countries, each partner bringing unique experience in steel production and research to the table. MOWSES is funded by the European Union under its Twin green and digital transition 2024 program with over 4.5 million euros and will run for four years.**

Traditional steelmaking by blast furnace – basic oxygen furnace – is heavily energy-intensive compared to recycled steel made via Electric Arc Furnace. Future clean steels will increasingly rely on scrap to reduce CO2 emissions by up to 50%, as outlined by the Clean Steel Partnership. However, using more scrap introduces impurities like copper, nickel and molybdenum, which can accumulate in recycled steel. These elements may reduce its toughness, especially in the heat-affected zones (HAZ) of welded joints, compromising the integrity of infrastructure applications.

In response to these challenges, MOWSES is pioneering research into modified alloying concepts to enable the safe use of green steel, even when it contains higher levels of residual elements from recycled scrap. The project will define the acceptable levels of residual elements for welded joints, and particularly their HAZ, to ensure the properties and durability of these critical components. The project is focused on infrastructure needs, particularly in the energy sector, where wind turbines and other structures depend heavily on welded steel plates.

Dr. Philippe Thibaux**,** coordinator of the project, emphasised the significance of the project: *“MOWSES is pivotal for shaping the future of green steel use, significantly reducing carbon emissions while maintaining the necessary properties and reliability in welded steel structures."*

The MOWSES project will employ and develop advanced analytical methods, such as machine learning, thermodynamic simulations, and finite element modelling (FEM) of microstructural behaviour, to predict how residual elements affect the steel's performance after welding. The goal is to create steel grades with improved weldability, toughness, and strength, even when sourced from lower-quality scrap. Advanced microstructure and mechanical characterization will also be key for this development, ensuring the steel can meet thorough safety and performance standards.

MOWSES not only aligns with Europe’s goal of achieving climate neutrality by 2050, but also strengthens the EU’s position in the global green steel industry, fostering innovation and sustainability in critical infrastructure projects.

***

Funded by
the European Union

PRESS RELEASE

Project Key Facts

Title: MOWSES: Multi-Faceted Assessment and Optimization of Welded Structural Green Steel Plates for Use in European Sustainable Infrastructure

Start: 01.10.2024

Duration: 48 months

Budget: 4.5 million

Coordinator: OnderzoeksCentrum voor de Aanwending van Staal (OCAS) NV

Project website: www.mowses-steel.eu

LinkedIn: MOWSES – Green Steel

Project Partners

Belgium

- OnderzoeksCentrum voor de Aanwending van Staal/ArcelorMittal Global R&D Gent
- Universiteit Gent

Germany

- Aktien-Gesellschaft der Dillinger Hüttenwerke
- RWTH Aachen University
- Universität des Saarlandes
- Eurice - European Research and Project Office GmbH

Netherlands

- Technische Universiteit Delft

Czech Republic

- Comptes FHT a.s.

Contact

Project Coordinator

Dr. Philippe Thibaux

E-Mail philippe.thibaux@arcelormittal.com

Phone +32 474558450

Project Management

Michaela Scheid

E-Mail M.Scheid@eurice.eu

Phone +49 6894 388 13-40

Funded by the European Union