

HURRICANE Project Launches Circular Energy Hub at ArcelorMittal Belgium: Driving Industrial Decarbonization and Community Benefits

A pioneering European initiative, HURRICANE (GA 101138494), is set to revolutionize how industries manage energy, water, and materials. Supported by the European Union's Horizon Europe programme, HURRICANE brings together 12 partners from 4 countries to create a circular energy hub around ArcelorMittal Belgium's Ghent site. This hub will recover and reuse industrial waste heat, benefitting both industry and local communities.

Turning Waste into Value

HURRICANE aims to reduce energy consumption, water usage, and raw material demand at ArcelorMittal Belgium's steel plant and across its surrounding industrial ecosystem. The project will develop and demonstrate cutting-edge heat recovery technologies, such as advanced heat exchangers and high-temperature heat pumps, to capture waste heat from steel production and other processes. This recovered energy will be distributed via a new heat grid to internal and external users, replacing fossil fuels and cutting greenhouse gas emissions.

HURRICANE fits perfectly within ArcelorMittal Belgium's roadmap to carbon neutrality by 2050, which consists of three axes: energy efficiency, electrification and smart carbon solutions. The HURRICANE project falls under the energy efficiency category.

Digital Innovation for a Circular Industry

HURRICANE will deploy smart digital tools to optimize the use of energy, water, and materials, and to expand the district heating network. These innovations will enable industries and cities to collaborate more efficiently, creating a blueprint for circular industrial hubs that can be replicated across Europe.

A Strong Partnership

Coordinated by ArcelorMittal Belgium, the project brings together leading research institutes, technology developers, public authorities, and community organizations. Each partner contributes unique expertise, from technology development and digitalization to public engagement and environmental assessment.

ArcelorMittal Belgium

"With HURRICANE, we are building a circular hub where industrial residual heat is not lost but given a new purpose. This project demonstrates how cross-sector collaboration leads to more sustainable use of energy and resources, with ArcelorMittal Belgium at the heart of this transition." (Frederik Van De Velde, CEO ArcelorMittal Belgium)

CRM

"Innovation, Industrial solutions and a Vision for the future are the watchwords of the more than 275 employees of the Centre for Research in Metallurgy. Since 1948, CRM Group has been supporting its customers from the creation of ideas to the implementation of innovative solutions by responding to their industrial challenges, whether economic, societal or environmental. The HURRICANE project is fully in line with the scope of our Smart & Sustainable Processing team. With its experience in cooling, heat exchange, data acquisition and optimized industrial processes, we contribute to the development of technological solutions reducing the carbon footprint of an integrated steel plant by studying solution to recover waste heat." Griet Lannoo, CTO CRM Group (www.crmgroup.be)

VITO

"Further valorization of residual heat is important to meet the climate goals. VITO is using unique software for the design and optimization of innovative heat recovery technologies that are implemented in pilot installations at ArcelorMittal. VITO will implement innovative control of the district heating network

to better balance the heat demand profile with the residual heat profile and to lower the return temperature in the network. Furthermore, VITO will investigate further extension of the district heating network using its advanced software for optimal routing and pre-design of the potential extensions. With these innovations we will support in the valorisation of residual heat and reduce the CO₂-emissions”
Leen Govaerts, Director Unit Water and Energy Transition, VITO (www.vito.be)

DBFZ

“DBFZ furnishes the HURRICANE project with socio-economic research and the development of a participatory gamification approach. The developed game catalyzes enhanced stakeholder dialogue while concurrently serving as a tool for data collection. Our research identifies enablers, barriers, and influencing factors for project implementation using PESTEL+I. Beyond political decisions, achieving climate neutrality and sustainable carbon cycles requires societal transformation and openness to climate-friendly innovations. This highlights the key role of our socio-economic studies in driving the HURRICANE project forward.” (Konrad Siegfried, Senior Scientist at DBFZ, www.dbfz.de)

UPM

“UPM leads the work package on environmental, techno-economic, and social analysis, with a strong focus on Life-Cycle Assessment to evaluate CO₂ emissions across the heat grid, and on the Digital Twin to monitor heat distribution to both internal and external end users while identifying opportunities for further improvement. This work is fully aligned with the Department of Industrial Engineering and Mathematical Science at Università Politecnica delle Marche, which fosters excellence in Industrial Engineering research, particularly through sustainable and data-driven management.” (Filippo Emanuele Ciarapica, Full Professor at Università Politecnica Delle Marche, Italy, <https://www.univpm.it>).

PDMFC

“At PDMFC, we see digitalization as the key enabler of industrial symbiosis and sustainability. In HURRICANE, leading the preparation and development of software tools, we are developing the digital backbone that connects data, processes, and partners across sectors. PDMFC is contributing to the creation of digital twins that enhance process monitoring and decision-making, while also supporting the development of a gamified platform that turns complex circularity concepts into engaging, data-driven experiences.” (Luis Miguel Campos, Head of R&D, PDMFC, Portugal, <https://www.pdmfc.com>)

Community of Zelzate

“ArcelorMittal is a major employer for residents of Zelzate. Part of the ArcelorMittal Ghent site is also located in the municipality of Zelzate. The main activity of the Local Government of Zelzate in the HURRICANE project is to provide data relevant to the heat network, if necessary, and to investigate the possibilities of connecting to the centre of Zelzate.”

Province of East-Flanders

“North Sea Port is a global port that significantly strengthens the economy of East Flanders. Besides employment, the surrounding area could also benefit from the residual heat from companies like ArcelorMittal. With a heat network we can heat houses and buildings in the surrounding area. This allows us to reduce our dependence on gas or oil from abroad and contribute to a climate-healthy East Flanders.” (Dagmar Beernaert, third deputy province East-Flanders, <https://oost-vlaanderen.be/duurzame-warmte>)

FINARMIT

“FINARMIT, a subsidiary of FINEG, a public investor dedicated to renewable energy and sustainability initiatives, proudly supports industrial decarbonization in Flanders by providing off-balance sheet

financing for a steam expansion turbine. This turbine is powered by high-pressure steam generated at Aquafin's sludge processing facility, and delivers medium-pressure steam to ArcelorMittal, while also supplying electricity back to the sludge facility.

The cleaner energy mix enhances the international competitiveness of ArcelorMittal Belgium's Gent site, helping to secure its continued operations in the region. Additionally, the installation serves as a backup heat source for the local district heating network, further strengthening the circular synergy between industry and society." Dirk Crollet, president of the board. <https://fineq.be/participaties>

Psychiatric Center Sint-Jan-Baptist

"As a close neighbour of ArcelorMittal, we are interested in the purchase of residual heat via a heat grid so that we can take further steps in terms of sustainability." (Luc Quarter,, director organisation)(www.pcsintjanbaptist.be)

WarmZelzate

"At WarmZelzate, we harness the waste heat from ArcelorMittal Belgium and put it to work, supplying low-carbon heat to off-takers in and around the factory. It's a bold step in turning industrial residual energy into a driver of decarbonization." (Jan Caerts, CEO Storm NV (Shareholder of Warm))

HEATEN

"Our HeatBooster HBL16 is the biggest piston-based high-temperature industrial heat pump on the market, delivering operational flexibility and performance in the one- to two-digit megawatt range. Partnering with ArcelorMittal Belgium on the HURRICANE project shows how this technology can turn surplus heat from steelmaking into a reliable, renewable energy source, proving that heavy industry can drive decarbonization while benefiting the wider community." (Magnus Wagner, VP Project Management & Execution, HEATEN, <https://heaten.com/>)

About HURRICANE

HURRICANE (Sector-coupling hub for circular use of thermal and industrial waste) is funded by the European Union's Horizon Europe programme under grant agreement 101138494. The project runs from January 2024 to December 2028.

For more information:

<https://hurricane-hub.eu/>

<https://www.linkedin.com/company/hurricane-project/>