European
Copper Institute
Copper Alliance

Copper's Role in the Transition to a Low-Carbon Economy

Copper plays a central role in today's transition to a low-carbon economy. Working with a variety of partners—such as the DecarbEurope initiative—the Copper Alliance has been promoting cost-effective ways of decarbonising Europe for more than a decade. Our member companies have been at the forefront of implementing low-carbon energy solutions. One of them, Aurubis, has a compelling story to tell on how an entire district in Germany could be supplied by industrial waste heat for the first time.

The Challenge

As part of the 'Flagships of Energy-Efficient Waste Heat Use' project, the German Energy Agency selected Aurubis and enercity, one of the largest municipal energy service providers in Germany, for a flagship project showcasing how an entire district could—for the first time—be almost completely supplied with industrial waste heat.

Providing heat to urban areas: Capturing industrial waste heat reduces CO_2 and provides energy-efficient heating

The Solution

The partners committed to using industrial waste heat from the Hamburg Aurubis plant to provide energy-efficient district heating to Hafencity East. To do this, heat will be extracted when sulphur dioxide gas is converted to sulphuric acid during copper smelting. As this heat is nearly free of carbon dioxide (CO_2), using it will save 20,000 tonnes of CO_2 emissions per year, both through its use at Hafencity East and at the plant, by replacing the natural gas currently used to produce steam. In Hafencity East alone, about 4,500 tonnes of CO_2 will be saved every year by 2029.

The Hamburg Aurubis plant has three production lines, each of which could provide 160 million kilowatt hours (kWh) annually. For the time being, one line will be sufficient to supply Hafencity East, but there is hope that the other two lines will also be converted in the future, once the technical, financial and contractual foundation has been established.

The plan is for the heat to start being extracted in April 2018. Aurubis is investing €17 million in converting the plant, including moving the heat pipeline to the plant boundary. 30% of this cost will be funded by the German Federal Ministry for Economic Affairs and Energy as part of the 'Flagships of Energy-Efficient Waste Heat Use' project.

enercity Contracting Nord GmbH—a 100% enercity holding located in Hamburg—will collect the heat, secure it and transport it for use. The company will build a new heat transport pipeline as well as a heat plant and storage capacity to balance the fluctuations in industrial heat volume, investing around €16 million, with approximately 30% being provided by the European Regional Development Fund.

The Result

Thanks to this project, Hamburg is set to become the first entire district to be almost completely supplied with industrial waste heat. Using all three lines could supply nearly 500 million kWh of heat and cut around 140,000 tonnes of CO_2 each year.

About the Copper Alliance

The Copper Alliance is a network of regional copper centres and their industry-leading members. It is responsible for guiding policy and strategy and for funding international initiatives and promotional activities. Headquartered in New York, the organisation has offices in four primary regions: Europe and Africa, Asia, Latin America and North America. Copper Alliance programs and initiatives are executed in more than 60 countries through its regional offices and country-level copper promotion centres.

About Aurubis

Aurubis AG is the world's leading provider of non-ferrous metals. Aurubis has more than 6,400 employees, production sites in Europe and the USA and an extensive service and sales system for copper products in Europe, Asia and North America. Its main area of expertise is the processing and optimal utilisation of concentrates with complex qualities. Consequently, it has a broad product portfolio. The portfolio includes precious metals, selenium, lead and a series of other products such as sulphuric acid and iron silicate. In addition, Aurubis is the world's largest copper recycler.