Industrial Symbiosis presents opportunities for copper industry

Industrial symbiosis, the concept of recovering and reusing discarded resources from one industrial operation by another, has the potential to significantly increase use of copper by-products. Global design, engineering and management consulting company, Arcadis, has released new research, commissioned by the International Copper Association (ICA), that discusses the opportunities and enablers of industrial symbiosis in the copper industry.

Industrial symbiosis, a process that typically occurs between different industries that work in close proximity, is an essential strategy to support the green energy transition. It can be applied to the repurposing of Electric Vehicle (EV) batteries at end of life as a means of retaining approximately 70 to 75 percent of their economic value. EVs use roughly two to three times more copper than an internal combustion engine vehicle. EV batteries can be repurposed for stationary energy storage, including grid, residential storage, commercial, renewables and thermal generation, further prolonging the use phase of copper.

Successful industrial symbiosis examples in the copper industry include the reuse of iron silicate, a by-product of the smelting process, for aggregate in road construction, cement production, concrete and abrasives. If iron silicate can be used as an additive in blended cements more prevalently, significant amounts of CO_2 emissions can be prevented from entering the atmosphere.

Alain Vassart, Senior Regulatory Consultant at Arcadis said, “While there are certain conditions needed for industrial symbiosis to occur, when applied correctly, it has the ability to solve tricky challenges for both the industries involved. In the case of iron silicate, it reduces the need to store millions of tonnes of copper slag and the need for the construction industry to source raw materials for the aggregate. There is exciting potential for industrial symbiosis in the copper sector, with opportunities to extend the concept further as technology and knowledge sharing increase.”

Several other copper by-products can be used for industrial symbiosis. Copper sulphate is obtained and sold as a reagent to the mining industry. While, zinc clinker powder, a copper slag by-product, can be used to extract metallic zinc.

Colin Bennett, Market Intelligence Director at ICA, said, “This is important research that highlights opportunities for the concept of industrial symbiosis and the copper sector to further engage with sustainable practices. Among market commentators, material demand is predicted to grow globally, and industrial symbiosis presents an opportunity to repurpose by-products.”

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About the International Copper Association

The International Copper Association (ICA) brings together the global copper industry to develop and defend markets for copper and make a positive contribution to the UN’s Sustainable Development Goals. Headquartered in Washington, D.C., ICA has offices in three primary regions: Asia, Europe and North America. ICA and its Copper Alliance® partners are active in more than 60 countries worldwide. For additional information, please visit www.copperalliance.org.

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