

Salzgitter AG and Umicore cooperate in iridium recycling

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Iridium recycling in electrolytic galvanic strip galvanizing by Salzgitter AG and Umicore (Image: Salzgitter AG/Umicore)

Salzgitter AG and Umicore's business unit MDS (Metal Deposition Solutions) have jointly established a process that enables the recovery of the rare precious metal iridium from anodes in electrolytic strip galvanizing.

In electrolytic strip galvanizing, a thin layer of zinc is applied to steel strips as corrosion protection using so-called MMO anodes. Galvanized steel strips are used, for example, in automotive body construction and the household appliance industry. The anodes, which are coated by Umicore MDS in a special process and manufactured to customer specifications, have a precious metal coating containing iridium as the most important component. These coatings have to be renewed regularly. Until now, it has not been possible to economically reprocess existing coating residues before recoating.

Recovering iridium from coating residues

Iridium is one of the rarest non-radioactive metals and is considered a strategically important raw material for transformation processes, for example as an electrode material for hydrogen electrolyzers. Its annual extraction volume worldwide is only up to 10.000 kg. This combination has recently led to a massive increase in the price of the precious metal on the global market, which makes it all the more interesting that new processes are making it possible to return iridium from coating residues to the material cycle. "And this is exactly where our idea comes in, which - to put it simply - involves recovering the iridium used on the anodes. We are talking about up to one kilogram per year," says Dr. Marc Debeaux, expert for electroplating processes at Salzgitter Mannesmann Forschung GmbH.

Iridium recycling used in practice

In a joint project between the anode manufacturer Umicore Galvanotechnik GmbH, Salzgitter Flachstahl GmbH and Salzgitter Mannesmann Forschung GmbH, processes and interfaces were created that allow iridium to be returned to the material cycle economically. "Recycling iridium is very complex and difficult. There are currently only a few providers on the market who specialize in this complex process. Thanks to our many years of expertise in the field of precious metal recycling, we were able to act as an intermediary here. Through joint trials and the development of internal processes, we ultimately succeeded in integrating the process into everyday operations at Salzgitter Flachstahl GmbH," explains Frank Friebe, Head of Electrocatalytic Electrodes at Umicore's MDS business unit. The cooperation shows how sustainable effects can be achieved through the targeted recovery of valuable materials, even outside the core processes, and provides an impetus for a more broadly conceived circular economy.

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