PRESS RELEASE

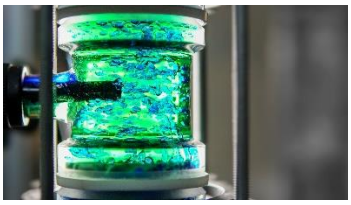
Advancing a circular economy for batteries:

H.C. Starck Tungsten presents innovative black mass recycling process

Column-based technology optimizes recovery rates and yields while reducing consumption of energy and auxiliaries

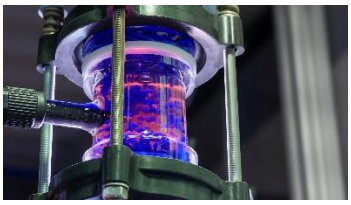
Frankfurt/Goslar, GERMANY, June 26, 2024 – A new proprietary black mass recycling technology that maximizes recovery rates and yields while minimizing the consumption of energy and auxiliary materials is being presented by H.C. Starck Tungsten at the Battery Recycling Conference & Expo on June 26 and 27 in Frankfurt, Germany.

Lithium-first approach, column technology and recovery of auxiliaries



The AREBAM* system, for which a number of patents have been filed, is based on three key innovations that make it particularly efficient and effective.

Firstly, a special pre-treatment of the black mass enables the extraction of lithium ions right at the beginning of the process in a “lithium-first approach”, which increases recovery rates to 95 percent compared to 65 percent for established methods and virtually eliminates the need for using soda. The recovery rates for nickel, cobalt and manganese reach similarly high values of over 95 percent.



Secondly, by replacing the usual mixer-settler technology with a sophisticated column system, the energy requirement for acid extraction is reduced by around 80 percent and the space-time yield is improved by a factor of five.

Thirdly, the highly efficient process minimizes the use of auxiliary materials by, for example, feeding caustic soda and sulphuric acid back into the recycling process in a closed loop, thus reducing the total consumption of acids and bases by 50 and even 90 percent respectively.

Significant reduction in CO_2 emissions compared to mining

In addition to the improvements over existing black mass recycling technologies, the AREBAM process offers massive advantages over the mining of virgin lithium, nickel, cobalt and manganese, as the associated greenhouse gas emissions are reduced by more than 90 percent over a ten-year period.

Julia Meese-Marktscheffel, Director Technology & Innovation Global at H.C. Starck Tungsten, comments: “High-performing, industrially scalable methods for black mass recycling are an essential prerequisite for the development of a circular economy for batteries. Our innovative, column-based technology is a milestone in this respect, as it significantly improves both the efficiency and effectiveness of the process compared to state-of-the-art approaches. We hope that our solution will help accelerate and expand the adoption of black mass recycling on an industrial scale."

**__A__daptive process for the __RE__cycling of economically strategic __BA__ttery __M__aterials*

2,336 characters incl. blanks

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About H.C. Starck Tungsten Powders

H.C. Starck Tungsten Powders is the world's leading manufacturer of high-quality tungsten powder tailored to individual customer needs. The company combines a century of experience in tungsten processing with high innovative power and technological expertise. Decades of experience in recycling and access to the world's largest tungsten reserves outside of China, owned by the company's parent group Masan High-Tech Materials, ensure stable supply with conflict-free raw materials. H.C. Starck Tungsten Powders employs around 540 people at three production sites in Germany, Canada and China plus sales offices in the U.S. and Japan. The company's headquarters is at its largest production site, in Goslar, Germany.
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