Explanation battery materials production flow at Umicore's Gigafactory in Nysa

Umicore produces cathode active materials which are used in Li-ion batteries for electric vehicles. Cathode materials are the main component of batteries. They determine their efficiency, reliability, durability and their size. Their properties enable performances such as speed, acceleration and for EVs ranging from compact cars to SUV's, from trucks to buses.

As society increasingly adopts electromobility, higher production volumes of cathode materials will be needed to meet the needs of the automotive industry worldwide. To illustrate those needs: a phone battery contains about 20 grams of cathode materials, an electric car battery can contain 100 kilograms or more.

Europe's first Gigafactory helps meet this growing demand. With its ultra-modern construction and state-of-the-art battery technologies, this plant meets the highest quality, safety and environmental standards.

Warehouse (footage)

This warehouses stores raw materials before they will be transformed into cathode active materials (CAM).

The raw materials consist of a cathode precursor on the one hand, and a lithium source on the other. The precursor is a metal powder that contains nickel, cobalt and manganese (NMC), which Umicore produces in its other facilities.

The warehouse can be used optimally thanks to the high storage systems: their height is up to 19 meters. This warehouse area totals 3,700m2 and can store about 8,600 pallets.

The warehouse is highly automated: a dedicated system manages the warehouse operations and streamlines the material flow. The forklifts are fully electric.

Pretreatment building (footage) = step 1 in the production process

The raw materials enter the production process are pretreated: the NMC precursors and lithium are meticulously mixed.

Firing building (footage) = step 2 in the production process

In this building, the mixture of both powders is carefully dosed in precise amounts, deposited in the trays on the conveyer belt, and processed through the various sections in the large furnaces, hence the word "firing". Key reactions in the furnace yield a crystalline structure of the cathode powder. Water vapor is a by-product.

Post-treatment (no footage) = step 3 and final step in the production process

After the furnace processing, a final homogenization and purification of the product takes place.

The cathode material passes through mechanical sieving and a final magnetic filtration to remove oversized fractions and any impurity. Our quality control pays the utmost attention to the purity of the cathode materials as their purity is essential to the performance of batteries.

Packaging (footage)

The final product is ready for packaging. The production operator connects an empty big bag to a connection station. Autonomous vehicles transport the big bag to the final packaging line. The big bag is bundled with the pallet and covered with stretch foil for further protection. The big bag is labelled and transported to the finished goods warehouse of 4,500 m2, ready to be sent to our customers.

Wind farms (footage)

This Gigafactory is fully carbon neutral: it uses 100% green electricity from a wind farm in Pągów, 90 km North from Nysa.

For more information

Media Relations

Caroline Jacobs +32 2 227 71 29 caroline.jacobs@umicore.com

Umicore profile

Umicore is the *circular* materials technology Group. It focuses on application areas where its expertise in materials science, chemistry and metallurgy makes a real difference. Its activities are organised in three business groups: Catalysis, Energy & Surface Technologies and Recycling. Each business group is divided into market-focused business units offering materials and solutions that are at the cutting edge of new technological developments and essential to everyday life.

Umicore generates the majority of its revenues and dedicates most of its R&D efforts to clean mobility materials and recycling. Umicore's overriding goal of sustainable value creation is based on an ambition to develop, produce and recycle materials in a way that fulfils its mission: materials for a better life.
Umicore's industrial and commercial operations as well as R&D activities are located across the world to best serve its global customer base. The Group generated revenues (excluding metal) of € 2.1 billion (turnover of €13.8 billion) in the first half of 2022 and currently employs 11,350 people.