

PRESS RELEASE #2

APRIL 2026



STELLAR
PROJECT

Advancing industrial manufacturing for next-generation lithium-metal batteries

A Horizon Europe-funded project developing advanced production technologies for lithium-metal anodes to support the future of high-energy battery manufacturing in Europe

The project brings together 15 partners from 7 countries working to establish the engineering foundations for industrial-scale lithium-metal anode production.

About

The transition to next-generation batteries requires major advances not only in materials, but also in manufacturing. Lithium-metal anodes are widely seen as a promising technology for high-energy batteries, with the potential to outperform today's graphite-based solutions. Yet their industrial production remains highly challenging due to lithium's reactivity and the difficulty of producing ultra-thin, consistent layers at scale.

STELLAR is addressing these challenges by developing a roll-to-roll physical vapour deposition process for the production of lithium-metal anodes. The project combines deposition technology, protective coating strategies, inline monitoring and process optimisation to support safe, high-quality and scalable production.

During its initial phase, the consortium has focused on defining production requirements, system specifications and safety protocols, while upgrading existing coating equipment for more efficient and continuous operation. These activities represent key steps toward the pilot-line validation of lithium-metal anode manufacturing in Europe.

Through this work, STELLAR contributes to strengthening European battery innovation and supports the development of a more resilient, sustainable and competitive battery value chain.

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STELLAR project has received funding from the European Union's Horizon Europe research and innovation programme and SERI under Grant Agreement No 101202298