



European
Commission

INNOVATION FUND

Driving clean innovative technologies towards the market

NorthSTOR+ – Industrializing Green Optimized Li-ion Battery Systems for ESS

The Innovation Fund is 100% funded by the EU Emissions Trading System



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Project summary

The NorthSTOR+ project aims to both validate the technology development of an innovative, stationary energy storage system (ESS) and to industrialise the production of the solution at a mass-scale. The final product, the Voltainer, features Lithium-ion ESS based on a battery cell which was originally developed for the automotive sector. This results in a larger and more energy dense product than products currently available on the market. The Voltainer will offer superior characteristics in terms of performance, safety, costs, flexibility, connectivity, traceability and life-cycle environmental impact, compared to state-of-the-art products. The project will result in 100% relative greenhouse gas (GHG) emission avoidance compared to the reference scenario.

COORDINATOR

Northvolt Systems Poland sp z o.o

BENEFICIARY

Northvolt Systems AB

LOCATIONS

Gdansk and Tczew, Poland & Stockholm, Sweden

SECTOR

Manufacturing of components for production of renewable energy or energy storage

GHG EMISSION AVOIDANCE

34.6 Mt CO₂ eq

AMOUNT OF THE INNOVATION FUND GRANT

EUR 75 451 457

RELEVANT COSTS

EUR 161 596 707

TOTAL PROJECT COSTS

EUR 6 455 835 000

ESTIMATED CAPEX

EUR 103 543 952

STARTING DATE

1 April 2022

PLANNED DATE OF ENTRY INTO OPERATION

1 July 2023

The world's greenest Energy Storage System for the utility-scale market segment

The NorthSTOR+ project aims to introduce a new technology, the Voltainer, that has the lowest life-cycle carbon footprint, from manufacturing to end-of-life, compared to other ESS solutions. The Voltainer will target the utility-scale market segment of the ESS and provide value to market participants across the electricity grid value chain. Each Voltainer unit will have an installed capacity of 1.2 megawatt hours (MWh) and will be particularly designed for applications in intra-day energy storage, such as electricity peak-shaving, load levelling and renewable integration applications.

The Voltainer will be based on a high-nickel, NMC-based ¹ lithium-ion battery chemistry, primarily developed for electric vehicle applications. This will enable superior performance compared to state-of-the-art high cobalt NMC-based ESS solutions. As a result, it allows for carbon emission reduction of 34.6 Mt of CO₂ equivalent during the first ten years of operation, comparable to the annual emissions related to the energy needs of nearly 2 million European households.

The cells powering the Voltainer will be produced at the Northvolt Ett gigafactory, located in northern Sweden. The gigafactory is a fully-integrated cell manufacturing plant powered by 100% renewable energy. As a part of the NorthSTOR+ project, a new factory near Gdańsk will also be commissioned and another one contracted in Tczew (both in Poland). When the full product and manufacturing R&D has been completed, and assembly factory commissioned, the project will deliver close to six gigawatt hours (GWh) energy storage capacity per annum from 2029.

Accelerating the development of an EU battery ecosystem

Establishing a European ecosystem for battery production is a key component of Northvolt's strategy and this is reflected in the NorthSTOR+ project. The sourcing of inputs for the NorthSTOR+ project will primarily rely on a European supply chain. Additionally, the Voltainer initiative is supporting Europe's ambition to create a world-leading battery industry, as highlighted by the European Battery Alliance.

The project will support circular economy objectives through integration with Northvolt's advanced recycling operations. The Voltainer will be manufactured from largely recyclable materials and, in the future, will incorporate recycled materials directly. It will also contribute to enabling the supply of additional renewable electricity in Poland for the energy consumption of the two manufacturing plants. Additionally, NorthSTOR+ is expected to positively affect employment in the area around the two facilities in Poland, and further support the development of technical skills.



¹ NMC or LFP cells refer to battery chemistry: NMC uses lithium, manganese, and cobalt oxide as the cathode material, while LFP uses a lithium iron phosphate chemistry.