



INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

Norberg Mine Storage: Pumped Storage Hydropower Plant in a decommissioned mine

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

| Project Factsheet

The project aims to develop an energy storage plant using the site and workings of the old Norberg iron ore mine in Sweden, installing pumped storage hydropower (PSH) technology in a new setting. PSH is a proven, long duration, and high-capacity method of energy storage. In its simplest form, it comprises a lower and upper water reservoir. When electricity is in excess, water is pumped to a higher level, and when it is in demand, the water is released down and used for power generation. Using existing upper and lower reservoirs connected through the mine workings, the plant will be rated for 15 megawatts (MW). Norberg mine storage is expected to completely avoid greenhouse gas emissions compared to the reference scenario.

The project will display a novel configuration for the different machines, which exceeds the current state-of-the-art technical capabilities. Contrary to traditional PSH facilities, Norberg mine storage's technology can operate in pumping and turbine modes, quickly switching mode and operate on

COORDINATOR

MINE STORAGE INTERNATIONAL AB

LOCATION

Sweden

CATEGORY

Energy Storage (ES)

SECTOR

Intra-day electricity storage

AMOUNT OF INNOVATION FUND GRANT

EUR 20,208,190

EXPECTED GHG EMISSIONS AVOIDANCE

212,439 tonnes CO₂ equivalent

STARTING DATE

01 April, 2025

ENTRY INTO OPERATION DATE

31 March, 2029

FINANCIAL CLOSE DATE

30 September, 2026

* Calculated vs. the [2021-2025 ETS benchmark](#) of 6.84 tCO₂e/tH₂, not taking into account additional carbon abatement due to substitution effects in the H₂ end use application, i.e. conservative estimate.

ancillary services markets. Using underground mines, the project will also implement modern PSH with a limited environmental impact, reduce construction costs, and reuse existing infrastructures such as grid connections and roads. The project can store enough renewable electricity to cover the consumption needs of more than 17 000 households for six hours and support the local grid with stability. Over three years of operation, the pilot will save more than 63 732 tonnes of CO2 equivalent emissions.

Norberg mine storage will be connected to the Nordic electricity grid and provide grid-balancing services to support the shift to renewable generation. This project aligns closely with the European Green Deal and renewable energy objectives by repurposing post-industrial infrastructure for clean energy storage, supporting sustainable resource use and following circular economy principles. Mine Storage

(MSI) strengthens the integration of renewable energy sources into the Nordic electricity grid, contributing to Europe's energy resilience and reducing reliance on external energy sources. The project aims to minimise environmental impact thanks to its circular approach and the sourcing of industrial equipment manufactured in Europe.

The project will contribute to a new value chain, creating opportunities for various sectors. MSI has estimated that 90 full-time construction employees and 10 direct jobs will be created during the project's operation. The mine storage-solution could be applied to 5 000 to 30 000 post-industrial European extraction sites. It would provide a circular economy approach to remediating brown-field sites while abating emissions with end-to-end clean energy storage.

| Participants

MINE STORAGE H1 SPV ONE AB

Sweden

MINE STORAGE INTERNATIONAL AB

Sweden