



# INNOVATION FUND

Driving clean innovative technologies towards the market

## NAWEP: Norse Airborne Wind Energy Project

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



### Project summary

The Norse Airborne Wind Energy Project (NAWEP) will build and operate one of the world's first Airborne Wind Energy (AWE) array, consisting of at least 12 AWE grid-connected devices, which combined will generate 1.2MW of renewable power. The project will demonstrate real-world reliability and maintainability of this technology, and will contribute to reducing greenhouse gas (GHG) emissions by feeding the grid with renewable electricity.

#### COORDINATOR

Kitemill AS

#### LOCATION

Holtålen, Norway

#### SECTOR

Wind energy

#### AMOUNT OF INNOVATION FUND GRANT

EUR 3 350 473

#### RELEVANT COSTS

EUR 7 445 495

#### STARTING DATE

01 January 2022

#### PLANNED DATE OF ENTRY INTO OPERATION

01 July 2024

Kitemill flight at Lista with media present

## **An innovative solution for wind power generation**

AWE is an innovative form of wind energy technology that uses airborne kite elements to capture kinetic energy from the wind. It operates 200 to 500 meter above ground, higher above ground than conventional wind turbines, where winds tend to be stronger and more stable. The technology allows for longer periods of stable electricity generation leading to higher capacity factors with an improvement of approximately 50% compared to existing wind power systems.

The project will demonstrate the commercial readiness of the technology, addressing the cost competitiveness with respect to other forms of renewable energy generation, the maturity of the supply chain, and the low environmental impact.

## **New wind technology to expand the renewable energy market**

Currently, the wind energy market is dominated by Horizontal Axis Wind Turbines (HAWT), which are relatively expensive to transport and install. In addition, their size makes it difficult to install HAWT in remote areas.

AWE technology can be transported in one piece in a standard container and can be rapidly deployed without the use of heavy construction equipment. This feature makes AWE relatively cheaper and more suitable for remote off-grid

communities which otherwise would not be attractive for traditional wind power project developers.

AWE wind turbines also use less than 90 % of the materials used in the construction of conventional HAWT wind turbines. This feature may reduce the carbon footprint linked to the construction of new wind turbine arrays, despite current differences in generation capacity between AWE and HAWT turbine formats.

## **Know-how and technology to scale-up an alternative renewable energy technology**

When successfully demonstrated, the project aims to further scale-up the AWE technology and increase its generation capacity to be cost competitive with HAWT in standalone or integrated installations.

Since the AWE technology operates well above the height of conventional wind turbines, these systems can be installed alongside existing wind farms. This can provide relevant development opportunity and increase the energy density of existing wind farms, therefore making them more efficient and effective per MW installed. Moreover, because AWE technology is cheaper and easier to move, there is the potential to create a rental/leasing fleet of AWE devices creating an entirely new market in the wind energy field.