European Commission

Port of Motril (Granada, Spain)

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INNOVATION FUND

Driving clean innovative technologies towards the market

GREENMOTRIL: Development and operation of a green energy community in the port of Motril

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

Project summary

The GREENMOTRIL project will transform the seaport of Motril into the first European port able to operate off-grid while maintaining its basics services, based on a self-managed energy community which uses renewable energy and storage technologies and can intelligently manage power demand using advanced technologies. The initiative will bring together citizens, social entrepreneurs, public authorities and other organisations to take part in the energy transition of the port infrastructure. All in all, 6 300 MWh of renewable energy will be used every year, therefore reducing significantly the greenhouse gas (GHG) emissions associated with the port activities thanks to the Onshore Power Supply (OPS) deployed in the framework of the project.

COORDINATOR
Montajes Eléctricos Cuerva SL

LOCATION
Motril, Spain

SECTOR
Other energy Storage

AMOUNT OF INNOVATION FUND GRANT
EUR 4 347 980

RELEVANT COSTS
EUR 7 246 634

STARTING DATE
01 January 2022

PLANNED DATE OF ENTRY INTO OPERATION
Q1 2027

Climate Action

GREENMOTRIL seeks the energy independence from the Port of Motril by deploying on-shore renewable technologies

Significant innovation in a challenging environment

The suite of technologies in the project comprises: a 4 MW photovoltaic plant; a 1.55 MWh storage system with the capacity to be grid-connected and to help grid- frequency supply; new OPS connection for berthed ships; a separate microgrid management and communication system; and, a robust cybersecurity framework. All technologies, devices, platforms and systems will be integrated through a Multi-Energy Management System employing innovative algorithms for both grid-connected and 'island' modes of operation. Combining all these technologies in the context of an established port infrastructure presents a strong technical challenge and their effective integration represents a significant innovation.

Benefits

GREENMOTRIL is a pioneering project in the transformation of such large-scale infrastructure as a seaport into a 100% renewable energy community; and if successful will pave the way for promoting the decarbonisation and sustainability of other European ports. The community approach will ensure the participation of end-users in the energy network management, providing flexibility services to the main system through demand response schemes.

The project will bring substantial benefits in terms of improved energy performance. It will minimise the dependence on contracted power in the event of high instantaneous consumption (for example, when simultaneous demand occurs from ship berthing, industry and production processes, etc.). GREENMOTRIL will also provide the port with the necessary technology to operate in island mode (isolated from the main grid) while maintaining its basic services, becoming the first European port with this capability. Finally, it will demonstrate the economic viability of business models associated with renewable microgrids in port facilities.

Scale up potential

In the Spanish Region of Andalusia alone, the project model could be replicated in a further 14 ports which have a similar scale of industrial and commercial activity to Motril. Further afield, across the EU, 340 ports of similar size and characteristics have also been identified for potential replication. The approach and solutions of the project in terms of digitalisation, communication system, cybersecurity framework, grid management, flexibility schemes and user interfaces can also be easily adaptable and replicable in other renewable energy communities across Europe.

Microgrid of the Port. Controlled by the DEOP developed by Siemens, integrating all the data from several sources and devices.