



# Powering a future of renewable energy across the globe

## A first-of-its kind energy storage project in the United Kingdom

### The Story

The United Kingdom (UK) is working to identify opportunities to upgrade its existing power system to better suit the needs of its citizens. With the UK targeting 100% greenhouse gas emission reductions by 2050, integrating energy storage technologies with the grid for more efficient and flexible energy dispatchability has become a major priority.

### Optimising storage-plus-wind

Wärtsilä continues to play an important role in improving the UK's grid by installing a 200 MW / 400 MWh energy storage system (ESS). The system will be owned by Zenobē, an international electric vehicle fleet and battery storage specialist, and will be one of the largest in the country to-date.

The project will also be one of the first in the world to deliver stability services using a transmission-connected battery, which will support the country's transition to a zero-carbon energy network by preparing the grid for an increased supply of renewables. The transmission-connected battery provides important stabilisation for the grid, which has traditionally been supplied by fossil fuel-powered generators.

"Wärtsilä worked closely with Zenobē to deliver this pioneering energy storage project that will support the UK grid as it targets 100% renewable energy generation," said Andy Tang, Vice President of Energy Storage & Optimisation at Wärtsilä. "Energy storage is playing a crucial role in enabling grids around the world to transition to renewable energy and meet our climate goals."

The UK leads the world in offshore wind energy. Located in north-eastern Scotland, the Wärtsilä system will integrate nearby offshore wind energy projects in the North Sea with the UK's energy grid, supporting the UK's 2050 net-zero target and the [Scottish Government's](#) ambition to deliver 20 GW of additional low-cost renewable energy capacity by 2030.

"The battery at Blackhillock brings together the very latest in grid scale battery technology that will be crucial to lower consumer bills and enable more renewable energy onto the grid. With Wärtsilä and other project partners, we look forward to delivering this significant grid infrastructure project that will be an important milestone in the UK's net zero transition,"

*Semih Oztreves, Director of Network Infrastructure at Zenobē*

The challenge	Wärtsilä's solution	Benefit
<ul style="list-style-type: none"> <li>Allow for integration of nearby offshore wind energy projects with the UK grid.</li> <li>Provide stability services as the UK phases out fossil fuel plants.</li> <li>Meet network demand and customer cost expectations.</li> </ul>	<ul style="list-style-type: none"> <li>Provide short-circuit level and true synthetic inertia to the National Grid Electricity System Operator.</li> <li>Deliver inverter technology that pushes the technical boundaries of the type of support that batteries can provide to the grid.</li> <li>Supply Wärtsilä's energy storage management software including the GEMS Fleet Direct and Power Plant Controller to optimise operations, while easing network constraints by importing electricity at times of peak renewable generation.</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate the UK's transition to net-zero by enabling more wind power onto the transmission network.</li> <li>Improve the long-term stability and reliability of the electricity grid.</li> <li>Improve the UK's energy independence and lower consumer energy bills.</li> </ul>

## Reliability coupled with innovation

The ESS is the first project to be delivered under National Grid's NOA [Stability Pathfinder Programme](#) to improve the long-term stability of the electricity system. Owned by Zenobē, the ESS will assist grid operators in the management of challenges related to balancing supply and demand, power stability and constraints.

Energy costs can rise dramatically without warning. The UK went through its own energy crisis beginning in late 2022, where energy costs nearly doubled and pushed inflation costs to above 10 percent. This ESS delivered under the Pathfinder Programme will ensure network demand and customer cost expectations are met.

The battery system will provide stability services to the National Grid Electricity System Operator, including short-circuit level and true synthetic inertia, which are essential for the grid to function efficiently as fossil fuel plants phase out. In the context of electricity grid engineering, inertia is a by-product of fossil fuel-powered generators and is important to ensure stable operation of the grid.

As the UK phases out fossil fuels, it requires other ways to create inertia to keep the grid operational, including using energy storage assets to create "synthetic inertia."

The project couples Wärtsilä's [GridSolv Quantum](#)—a fully integrated, modular, and compact ESS—with inverter technology, an innovative solution that pushes the technical boundaries of the types of support that batteries can provide to the grid. The system is robustly supported with Wärtsilä's sophisticated software that can monitor facilities in real-time.

## Marrying hardware and software

The [GEMS Digital Energy Platform](#) will manage the complete energy storage system. The software will leverage machine learning along with historic and real-time data analytics to optimise operations, while easing network constraints by importing electricity at times of peak renewable generation. Utilising two of the platform's products—GEMS Fleet Director and GEMS Power Plant Controller—GEMS will enable Zenobē to remotely monitor, operate, identify, and diagnose equipment with unrivalled safety, reliability, and flexibility.

### Site size:

200 MW / 400 MWh

### Site location:

Scotland, United Kingdom

### Applications:

Renewables+

### Scope of services:

Engineering Equipment  
Delivery (EEQ)

### Delivery:

2024

## RELATED RESOURCES

[Wärtsilä's energy storage tech](#)

[Wärtsilä to provide energy storage system to Zenobē, delivering first-of-kind project in the United Kingdom](#)

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