

# Partnership Turns Power into Profits —The Cremzow Project

## CASE STUDY



Energy storage plays a vital part of Germany's future, particularly in the northeast, where large amounts of wind are being introduced to the grid. In Cremzow, Germany, Enel Green Power and its partners have inaugurated a new 22 MW energy storage facility that is tasked with balancing the German grid in order to provide frequency regulation services to the country's "Primärregelung" (PRL) market. The Cremzow project is based on an agreement between Enel Green Power Germany, German wind developer and operator ENERTRAG AG and engineering, procurement and construction (EPC) contractor, Leclanché. Wärtsilä brings to the project an expertise in intelligently managing utility-scale energy storage systems.

Batteries have been an important addition to the PRL market and are already providing around 200MW of power—amounting to 31 percent of the market. By providing grid balancing services and helping to back up energy supply from renewable energy sources, the latest energy storage system demonstrates that batteries are "profitable without subsidies."

The concept of energy storage is not new, but the need for reliable, cost effective solutions has never been more critical. As the energy landscape transitions to more distributed and intermittent resources, providers need the ability to store energy from such resources. Energy storage is a flexible solution that can be mobilised and, in some cases, even relocated if it is needed elsewhere on the system.

**"This marks our third project with Leclanché. We are proud to build on our past energy storage collaboration to expand our partnership into the German market. Ancillary services are a proven application provided by GEMS, generating revenue for the customer on day one. Using data-driven acumen and decision-making in real time, GEMS deploys active and reactive power across the network in fractions of a second, creating a flexible system that ensures grid reliability and safety."**

*Risto Paldanius, Director, Business Development and Proposals, Energy Storage and Optimisation*

**KEY DATA**

**CUSTOMER:** Leclanché

**SITE SIZE:** 22 MW / 35 MWh

**SITE LOCATION:**  
Cremzow, Germany

**APPLICATION:** Frequency response

**SCOPE OF SERVICES:**  
Software delivery  
Troubleshooting of assets

**DELIVERY:** 2018

When coupled with renewable energy plants, the advantages include greater asset flexibility and improvements in the operating capabilities of the grid to match supply and demand, thereby reducing the use of back-up generation and therefore the cost of the overall system.

The Cremzow project enables the storage of wind power when available and injects stored renewable energy into the grid during peak demand hours to realise energy shifting—a function that will add another revenue stream by improving grid operations.

The Cremzow project demonstrates how storage is increasingly becoming an integral part of renewable energy systems as it enables reliability, flexibility, and stability in and across energy networks and assets. Leveraging on Enel Green Power’s expertise in the storage segment and the collaboration with the other partners, this project helps secure the stability of the German transmission network in the heartland of the European FCR market.

**THE SOLUTION IS IN THE SOFTWARE**

The Cremzow project utilises Wärtsilä’s industry-leading GEMS software to meet operational requirements of the power plant and to provide frequency regulation services to the German PRL market. GEMS efficiently manages the state of charge of the system by actively participating in the German wholesale electricity market.

GEMS ensures system integration and optimisation of energy storage, renewable energy, and power generation assets through changes in market conditions and structures—effectively “future-proofing” energy storage investments for both power developers and utilities.

Cremzow is the latest of the projects to utilise the multiple application capabilities of GEMS with primary control reserve and reactive power applications.

When the grid frequency decreases due to high power demand, the battery is able to begin delivering its stored energy within 300 ms, while charging with surplus energy during periods of low demand.

**HIGHER EFFICIENCY MEANS HIGHER EARNINGS**

Onshore wind power is a central pillar of Germany’s transition to low-carbon electricity generation. Most wind turbines so far have been built in northern Germany, where favourable wind conditions also helped to spur the industry’s early development. Due to the high concentration of wind power in northern states, Germany’s Federal Network Agency (BNetzA) rated the country’s coastal regions and hinterland as a “grid expansion area,” where new wind power installations are capped at about 60 percent of previous levels to account for lagging grid expansion. Growing wind turbine unit sizes (MW) and more efficient turbines has enabled the unlocking of regions with weaker average wind conditions further inland, leading to a catch-up in areas far away from the coast. Greater power yields and more operating hours per turbine have also compensated declining financial support rates and made harnessing previously unattractive locations possible.

The driving force behind utility-scale investment in storage is the advantages it can bring to both the power grid and the renewable assets themselves. The location of wind assets concentrated in the north of the country increases power grid congestions and the need for energy storage.

THE CHALLENGE	WÄRTSILÄ’S SOLUTION	BENEFITS
Provide frequency regulation and grid balancing/energy shifting services to the German grid	Sophisticated GEMS energy management platform that integrates and optimises multiple generation assets	Participation in Germany’s PRL market while providing grid-transmission stability via the optimisation of intermittent wind

