



Saft Li-ion technology plays a key role in E.ON's innovative smart grid for Pellworm Island

An Intensium® Max 20 containerized lithium-ion (Li-ion) Energy Storage System (ESS) helps an island community to maximize its self-consumption of renewable energy.



Pellworm Island, off the North Sea coast of Germany, represents a vision of the renewable energy mix of the future. Its local decentralized systems generate more than 22 GWh of electricity a year, with 70% from wind and the rest from solar photovoltaic (PV) and CHP (Combined Heat and Power). Yet Pellworm Island still relies on the two 20 kV subsea cables that connect it to the mainland grid to balance local surpluses and to import energy at peak periods when demand exceeds supply.

Aiming for energy autonomy

SmartRegion Pellworm project is, one of the first projects to be backed by the German Federal Ministry of the Environment, Nature Conservation and Reactor Safety as part of its energy storage support initiative. This three-year pilot project will help the island increase its energy autonomy through:

- increased integration of renewable resources into an already congested distribution grid
- a higher level of self-consumption
- flexible load management
- improved control technology

SmartRegion Pellworm project partners

The SmartRegion Pellworm project is being executed by a broad consortium from industry and science, with partners including: E.ON (Schleswig-Holstein Netz AG and E.ON Hanse AG), Fachhochschule Westküste, Fraunhofer-Anwendungszentrum Systemtechnik, Gustav Klein GmbH, RWTH Aachen, Saft.

Case study



SAFT

Li-ion battery provides minutes to hours energy storage

E.ON has devised a hybrid energy scheme for Pellworm that combines:

- a decentralized storage in the form of domestic night storage heaters and heat pumps that provides negative flexibility in the range of hours
- a centralized Vanadium-Redox-Flow battery providing 200 kW/ 1.6 MWh of "hours to days" storage
- a Saft Intensium® Max 20 system providing 1 MW of positive and negative "minutes to hours" flexibility

The key features of Saft's Intensium® Max solution include:

- 560 kWh of energy storage and 1 MW power
- delivered in a standardized 20-foot container for ease of transportation and installation
- containerized approach integrates the communications interface, battery management and cooling and fire prevention systems
- Saft's well proven Li-ion technology ensures long calendar and cycle life, with an expected operating life of at least 15 years

Making smart grids smarter

"E.ON regards energy storage as a key innovation that will help improve the grid performance and especially the integration of renewable energy, and Li-ion batteries are one of the most interesting and important technologies in this sector. Pellworm Island is therefore a crucial lighthouse project that will enable us to evaluate how Li-ion technology can operate in a real-world situation to help make smart grids even smarter."

Dr. Klaus Peter Röttgen
Head of E.ON Innovation Center
Energy Storage



Creating an energy storage blueprint for the future

The Saft ESS installation enables E.ON to demonstrate the technical, financial and community advantages of energy storage within a smart grid as well as gaining experience with innovative battery technology. Key benefits will include:

- An extensive demonstration of storage solutions in different operational modes
- Detailed analysis and practical implementation of future business models based on energy storage systems
- Relieving the load on the island's network structure and upstream electricity grids
- Increased energy autonomy
- Establishing strong community engagement through demand management
- Development of a storage blueprint in a future decentralized energy system



Saft

12, rue Sadi Carnot
93170 Bagnole - France
Tel. : +33 1 49 93 19 18
Fax : +33 1 49 93 19 64
www.saftbatteries.com

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