

LEAFLET

Battery energy storage system, Samso island, Denmark

Solutions for integrating renewables



Battery energy storage solution with ABB's bidirectional inverter helps reduce seasonal demand peaks on power network of Samso island.

Today when climate change is a key concern, a small island on the east coast of Denmark, Samso, is demonstrating the green energy transition. Samso is powered by renewable energy 100%. All the electricity requirement of this island is met by over 20 offshore and onshore wind turbines. The result: The island is 100% CO₂ neutral and its 4000 residents boast a carbon footprint of negative 12 tonnes per person per year.

Customer challenge

Samso has set an ambitious target to be fossil fuel free by 2030. Under the European Commission's framework program for Research and Innovation, Horizon 2020, it has initiated the conversion to electric transportation, starting with the marinas.

Hundreds of tourist boats arrive at the Ballen marina on Samso Island during the peak of summer. During this period, the energy demand increases as these boats need power. To meet this additional demand, a solar photovoltaic (PV) system has been installed at Ballen marina. The output capacity of this system is 60 kW_{peak}. Aside from meeting the peak demand, this system had an ambitious target to become energy independent at the marina. However, due to variable climatic conditions, it is challenging for the PV system to match the energy demands in a network.

ABB solution

To manage the variability, a battery energy storage system has been co-located with a PV system to enable utilization of solar power. The modular energy storage solution comprises of ABB's intelligent energy storage inverter, Li-ion batteries and Energy Management software by leading Danish battery management solutions provider Lithium Balance.

ABB's bidirectional inverter charges and discharges the batteries with precise control, based on the power demand in the network. It stores the surplus energy from the solar panels in the lithium ion batteries and uses it intelligently at an appropriate time, when demand in network is high. This enables the PV system at marina to support the energy demand of up to 10,000 boats per year, without stressing the existing electric network.



01

01 Building at Ballen marina where the energy storage solution is installed

02 Battery energy storage system at Ballen marina, with ABB's Energy storage inverter and Xolta batteries



02

The system controller for this solution is set up to ensure maximum solar power self-consumption for the site. As estimated from design, the battery energy storage system at Samso can ensure the consumption of up to 90% of solar power generated. When it comes to sustainability, Samso island is setting the best possible example for the world to follow and ABB continues to enable stronger, smarter and greener grids.

Technical data

Type of product	Energy storage inverter
Number of products	1
Output capacity	50 kW
Voltage	415 V
Connection	4 - wire
Frequency	50 Hz
Year of installation	2019

s.a. ABB n.v.
Power Quality Products
Allée Centrale 10 Z.I. Jumet
B-6040 Charleroi (Jumet)
Belgium

abb.com/powerquality

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB. Copyright © 2019 ABB. All rights reserved