



LEAD BATTERIES: ENERGY STORAGE CASE STUDY



Rolls Battery Engineering / Surrette Battery Company

Remote Community Now Has 24-Hour Power

Fair Isle, Scotland, UK

Fair Isle is an isolated Scottish Island half way between the Orkney and Shetland Isles and is one of the UK's most isolated communities. Until recently, electricity was provided by a diesel generator with some wind power. Night-time blackout was from 11.30pm until 7.30am.

Now, with a solar photovoltaic (PV) system, new wind turbines and a battery installation, the community has been provided with continuous power.

"We are very pleased to have been part of this unique and monumental microgrid installation, and we work closely with global partners to offer a full range of high-quality products for small to large-scale renewable energy applications. The lead batteries chosen for this system will provide years of uninterrupted power and dependable energy storage for the residents of Fair Isle."

Jeff Myles, Marketing Manager, Rolls Battery Engineering

Technical Specification

The batteries were provided by Rolls Battery Engineering and the entire installation comprises seven strings of 48 Rolls 2YS 27 P batteries.

These are flooded deep cycle batteries in single 2 V cells with a capacity of 2,970 Ah at the 100 h rate and offer extended lives in renewable energy systems.

The whole system has 52 kW of PV panels connected to three SMA Sunny 15 kW inverters, three 60 kW Harbon wind turbines and there are two 80 kW diesel generators now used only for backup.

These batteries each feed into an inverter cluster comprising three Sunny Island inverters and a total of 21 inverters provide a power output of 126 kW with 588 kWh of stored energy available.

The whole system is monitored and controlled by an SMA Data Manager which can be remotely viewed as required.



Installation

The solar PV system was installed by Wind and Sun along with the battery, inverters and the control system to integrate the network. Harbon installed the wind turbines and GMI energy installed the back-up generators which replaced older equipment.

Scottish and South Electricity oversaw and carried out electrical works across the island with a new 3.3. kV distribution networks, transformers and controls.

The system also has intelligent controls so that excess energy can be used for water heating and electric storage heaters.

About the Company

Rolls Battery Engineering is a long-established Canadian manufacturer of industrial lead batteries and is the brand name of Surrette Battery Company. They supply flooded and valve-regulated lead batteries for many applications and specialize in renewable energy storage.

Technical Summary

Battery specification	7 strings – 48 Rolls 2YS 27 P Flooded deep cycle in single 2 V cells
Capacity	2,970 Ah 100 h rate
System	52 kW PV Panels
Inverters	3-15 kW SMA Sunny
Wind Turbines	260 kW Harbon
Diesel Generators	2x80 kW
Overall Power Output	126 kW
Available Stored Energy	588 kWh

“We’re pleased and proud to have built on our previous experience and completed our most challenging project yet, both technically and in terms of logistics, helping this island community with one of the most sustainable electricity systems in the country.”

Steve Wade, Managing Director, Wind & Sun