

## Case study

### Onboard Ship Energy Storage System Norway

#### Project Summary

**Project:** Seasight Ferry  
**Location:** Norway  
**Application:** Onboard Ship Energy Storage System

#### Nidec's Role

Nidec Industrial Solutions supplied a Battery Energy Storage System integrated on an award-winning 400-passenger ferry that enables it to operate on 100% electric power, when needed.



#### Scope of Supply:

- Battery modules in a rack configuration
- Battery racks in aluminum
- Data-logging equipment
- Master battery management system
- Closed air cooling system
- Ship and battery system interface

#### The challenge:

To design and supply a battery energy storage system for a luxury, 42-foot catamaran

When planning the design of a new 400-seat luxury excursion ferry, the owner sought a hybrid propulsion system that would allow the vessel to operate using 100 percent electric power at key points in its route. Constructed of lightweight carbon fiber composite, the ferry – a 42-foot-long catamaran – carries passengers on sightseeing trips through a fjord off the coast of Norway.

To meet new harbor operating restrictions, the owner sought an onboard battery energy storage system (BESS) as part of a hybrid diesel-electric energy solution. The challenge was to create a compact solution that would enable the vessel to switch to battery power when it entered the harbor, as well as when it traveled through scenic areas, allowing sightseers to enjoy almost complete silence as the vessel traveled at approximately 10 knots (18 km/h).

The Seasight Ferry was elected Ship of The Year in 2016 during the SMM maritime trade fair in Hamburg

**The solution:****Onboard installation of compact energy storage system**

Working with the designer, naval architects and system integrators, Nidec Industrial Solutions designed a 500 kWh solution to match the vessel's expected load profiles and physical layout. By using lightweight aluminum frames for the storage systems, Nidec supported the architect's goals for the ferry's overall low weight. Because storage space was limited, the BESS was designed to fit inside the port and starboard hulls of the vessel.

To prevent humid, salty air coming in contact with the batteries' modules, the BESS is housed in an unventilated, air-tight room. Nidec's design of a closed-loop dual heating and cooling system uses an air-to-water heat exchanger to maintain the battery's internal temperature within the prescribed range of 18°C to 28°C.

**Battery Energy Storage System**

- Total energy: 500 kWh
- Maximum C rate: 3
- DC network voltage range: 600-825 V
- Earth connection diagram: IT (no pole grounded)