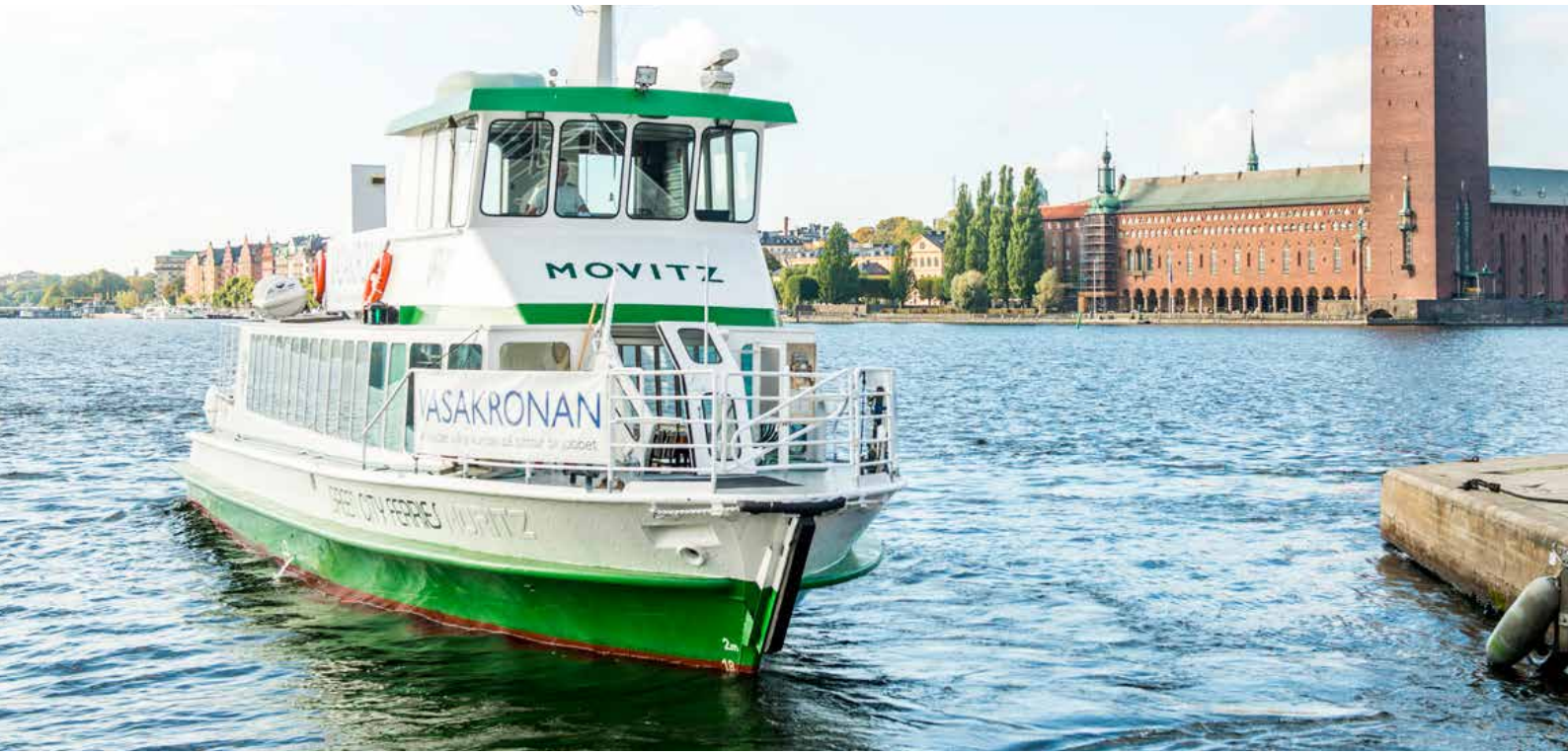
CUSTOMER CASE
HYBRID



CUSTOMER: Echandia Marine
INDUSTRY: Hybrid vehicle
COUNTRY: Sweden
ABOUT: Nilar has powered the world's first super-charged electric passenger ferry - Movitz. Its 250 kW diesel engine was replaced with a 180 kW electric and thanks to the supercharge capability of the Nilar energy storage solution, the ferry can run for 60 minutes on a single charge.

Powering the world's first super-charged electric passenger ferry

Ferrying commuters to work safely and sustainably

In 2015, the Green City Ferry Company was established with the aim of improving the air and water quality in cities by providing reliable commuter services with zero-emission boats. Rather than building new boats, the policy was to refurbish existing vessels, in line with the company's sustainable culture and ethos. The first boat to be retrofitted was the 100-person Movitz passenger ferry. Its 250 kW diesel engine was replaced with two 125 kW electric engines which is powered by a 180 kWh Nilar battery energy storage solution that supports full and instant power. The Movitz ferry now transports commuters across the Stockholm waterways silently and sustainably.

CUSTOMER CASE
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> To further improve the efficiency of the ferry, the Green City Ferry Company is upgrading Movitz yet again by doubling the power capacity of their charger. With 600 kW of power, the ferry will be able to be charged twice as fast

The Challenge

When the Green City Ferry Company identified its first commuter ferry for retrofitting, several unique challenges had to be overcome. Movitz, a 23-metre long vessel, had a 250kW diesel engine. To deliver the equivalent power, two 125 kW electric engines was fitted. This required a reliable and robust energy storage solution that could withstand the varied stress caused by the sea, such as, vibrations and temperatures ranging from -20 to +30 degrees. It also had to be able to power the vessel for 6 hours a day, which meant that fast charging had to be implemented whilst passengers were boarding.

With limited space in the boat hull, big demands were also put on the capacity per m3 of the energy storage unit. Safety was also imperative. With up to 100 passengers onboard at the same time, the batteries had to be explosion-proof.

The Solution

To meet the energy storage challenges posed by this vessel retrofit, the Green City Ferries Company, approached Nilar. The patented Nilar Hydride® batteries used in Nilar's energy storage systems is ideal for such applications as it's extremely stable and robust and, unlike lithium, don't pose a risk for explosion.

A Nilar 180 kWh energy storage solution consisting of six separate racks, was fitted inside the hull of the Movitz ferry. Nilar's intelligent battery management system ensures that sufficient power is fed to the engines during operation, regardless of the weather conditions. And through the inverters, up to 300 kW of power can be charged safely and effectively into the energy storage system, whilst passengers embark and disembark. It will run for an hour after ten minutes of supercharging, on a route between Solna Strand and Gamla Stan, the heart of Stockholm's Old Town.

The Result

Today, the Movitz ferry transports commuters to work and home again across the Stockholm waterways safely and sustainably. The previous 250 kW diesel engine – which had an annual footprint of 130 tons of CO2 , 1.5 tons of NOx, and 80 kg of diesel particles – now has no-emission electrical engines. And, thanks to the supercharge capability of the Nilar batteries, the ferry can run for 60 minutes after just 10 min of supercharging.

Next steps

To further improve the efficiency of the ferry, the Green City Ferry Company is upgrading Movitz yet again by doubling the power capacity of their charger. With 600 kW of power, the ferry will be able to be charged twice as fast. It can then be used more frequently by optimizing the time for embarking and disembarking.

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About Nilar
Nilar was founded in 2001 as a research project by leading battery industry experts from Europe and the US. The company has been producing safe and environmentally-conscious Nilar Hydride® batteries for energy storage at commercial properties, private households, industrial plants and for use with the smart grid, since 2015. Nilar's Hydride® energy storage solutions are robust with non-flammable electrolyte and durable with a low lifetime cost. The modular design supports scalability to handle the energy requirements of everything from small residential systems to large-scale electrical installations. With R&D departments in the US and Sweden, and a manufacturing plant in Sweden, Nilar is revolutionizing energy and power supply technology, and is taking automated battery production to the next level. **Read more at: www.nilar.com**