

No lines, no plugs: wireless charging based on inductive power transfer and MoorMaster[™] automated mooring moors and charges the Folgefonng hybrid ferry.

Sep 21, 2017 07:58 GMT

World's first combined induction transfer and automated mooring system successfully tested with hybrid ferry

Cavotec, together with group of industrial partners, has made history with the world's first successful testing of a combined wireless induction charging and automated mooring system with a hybrid passenger ferry.

The new wireless charging system, developed by <u>Wärtsilä</u> in partnership with Cavotec, is based on inductive power transfer. We provide the automated

base unit for the charging system and <u>MoorMaster[™] automated mooring</u>. By combining the strengths and expertise of Wärtsilä, Cavotec, ferry owner Norled, power company Haugaland Kraft, marine engineering services provider Apply and ship builder Fjellstrand, this project represents a breakthrough in the evolution of wireless fast charging for plug-in electrical vessels.

Twenty per cent more charging

"In recent years, wireless charging has been introduced for cars, buses and trains. We have now also made this possible for marine vessels. The main customer benefits include up to 20 per cent better utilization of available charging time, a high degree of automation, increased operational safety, and increased system reliability," says chief architect of the wireless induction charging project, Ingve Sørfonn, and Senior Technical Officer E&A, Wärtsilä Marine Solutions.

"Our focus has been electrically powered ferries, where new contract demands have strict targets for energy efficiency, greenhouse gas emissions, and operational reliability. This is a new trend in this market segment, driven by regulatory demands, political vision, financial incentives, and a more sustainable way of running the business," Sørfonn adds.

A wireless future

Inductive or wireless charging uses an electromagnetic field to transfer energy between two coils. A coil is used to create an electromagnetic field, and a second induction coil converts this back into electrical energy to charge on-board batteries.

The system is designed to transmit power loads in the MW range. The system can maintain efficient power transfer at distances of more than 50 centimetres between the two charging plates installed at the quayside and integrated into ship-side, safely and reliably. No other wireless charging system in the transport sector is as powerful, or capable of maintaining efficient power transfer at such distances.

MoorMaster[™] is a vacuum-based automated mooring technology that eliminates the need for conventional mooring lines. Remote controlled

vacuum pads moor and release vessels in seconds. In this application, MoorMaster[™] allows power transfer to begin before vessels have moored and shortly after they have left the quayside.

The new system has been successfully tested several times in August and September 2017 with Norled's *Folgefonn* double-ended, 85-metre, Ro/Ro hybrid passenger ferry that services the Jektevik – Hodnanes – Nord Huglo route, on the west coast of Norway. *Folgefonn* carries 76 cars and 300 passengers.

The project is partly funded by Innovation Norway, a Norwegian government agency that supports innovation and enterprise.

Cavotec is a leading engineering company with 50 years of heritage in innovation, designing and delivering advanced connection and electrification solutions that drive the decarbonisation of ports and industrial applications. With five decades of experience, our systems ensure safe, efficient, and sustainable operations for a diverse range of customers and applications worldwide.

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