THE ÆRØ E-FERRY PROJECT

First example is a highly energy efficient medium sized and a long 22 nautic mile range e-ferry for passengers, cars, trucks and cargo in island communities, coastal zones and inland waterways. It is supported by the European H2020 initiative, demonstrating design, building and operation of a fully electric powered ‘green’ ferry. Electricity from wind power of the Danish island Ærø will allow "Ellen" to run without any emissions. The e-ferry is expected to be in operation in 2018/2019.

Image by the e-Ferry Project

Image by Michael Rask

THE WORLD´S LARGEST BATTERY-DRIVEN FERRIES HH-FERRIES/SCANDLINES

The Tycho Brahe and Auroraferries will operatebetween Helsingborg in Sweden and Helsingör in Denmarkcovering a 4 kilometre distance and carrying more than 7.3 million passengers and 1.8 million vehicles annually. The combined 8,320 kWh battery power is equivalent to 10,700 car batteries.

With a 15 minutes schedule, charging must be fast and automated with shore-side charging stations in both ports using an industrial robot and 3D laser scanning and wireless communication between ship and shore to optimize connection time and maximize the charging period.

Image by HH-ferries/Scandlines

The project is co-financed by the European Union Connecting Europe Facility.

Tycho Brahe is expected to be in full electric operation in summer 2018.

FAST ELECTRIC COMMUTER E-FERRY

The BB Green electric commuter ferry by Green City Ferries is the world's first fully electric and air lifted vessel. The concept reduces friction by 40 per cent, reduces waves and increases speed up to 30 knots. It is targeted for sheltered waterways and relatively short routes (5 – 14 NM).

BB Green is used as a zero emissions commuter ferry for up to 99 passengers on the inland waterways around Stockholm capital in Sweden.

The project is supported by the European Union Seventh Framework Programme.

Image from http://www.volvopenta.com/marinecommercial/en-en/news/2017/june/bb-green-electric-commuter-ferry-awarded-electric-and-hybrid-pro.html

ELECTRIC FERRIES IN NORWAY AND FINLAND

"Ampere", operated by the Norwegian ship owner Norled is the world's first fully electrical car and passenger ferry. It started operating in May 2015, and has traveled a distance equivalent to more than 1.5 times around the equator. It travels six kilometers across the fjord 34 times a day, each trip taking around 20 minutes. Shifting from diesel propulsion to battery has reduced fuel costs by up to 60 percent. After "Ampere" Siemens has delivered several electric ferries including to Fjord1, who is the largest ferry operator in Norway. "Ampere" was the result of a competition in 2010 by the Ministry of Transport and Communications and the Public Roads Administration, where succesful development of an electrical ferry would receive a 10 year concession.

Image by Siemens www.siemens.com/press

In June 2017, "Elektra" began its regular operation between Nauvo and Parainen in the Turku archipelago in Finland. At nearly 98 meters long and 16 meters wide, Elektra can transport up to 90 cars per trip when traveling the route every 15 minutes. The batteries are charged in five minutes. The two lithium-ion batteries each have a capacity of 530 kWh.

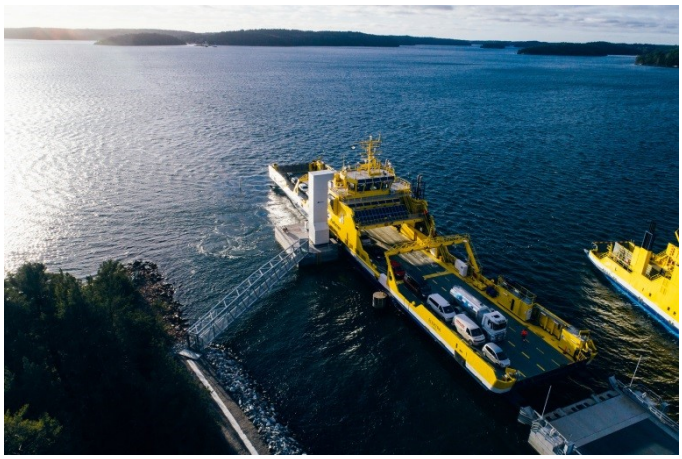

Image by Siemens www.siemens.com/press

ELECTRIC CONTAINER BARGE TO CONNECT ROTTERDAM (B) AND TILBURG (NL)

Two battery-electric container ships to be owned by Port-Liner and hired by logistics company GVT are expected to connect Rotterdam, the Netherlands and Tilburg, Belgium from autumn 2018. Sized 110m x 11.4m it can carry up to 270 containers in inland waterways. The battery packs are expected to operate up to 34 hours and stored in a container can either be swapped or charged at a terminal. Port-Liner intends to build a total of 15 electric-powered cargo ships of different sizes, to join ship fleets in the Netherlands and Belgium.

Image from https://electrek.co/2018/01/12/large-

The first six electric container ships are estimated to remove 23,000 trucks from the roads annually in the Netherlands.

The project is supported by the European Union.

WORLD'S FIRST FULLY ELECTRIC AND AUTONOMOUS CONTAINER SHIP (NORWAY)

Image from https://www.km.kongsberg.com/ks/web/nokbg0240.nsf/AllWeb/4B8113B707A50A4FC125811D00407045?OpenDocument

Yara Birkeland is the world's first fully electric and autonomous container ship with zero emissions. Propelled by electric motors driving two azimuth pods and two tunnel thrusters with a battery capacity of 7.0 – 9.0 MWh.

The ship will have a cargo capacity of 120 TEU (Twenty-foot Equivalent Units), operating between Herøya and Brevik (~7 nautical miles) and between Herøya and Larvik (~30 nm) at a service speed of 6 knots.

In the first phase a detachable manoeuvring and navigation bridge will be implemented. When the ship is ready for autonomous operation this module will be lifted off. Delivery into full operation is expected in 2019 and fully autonomous operation in 2020.

Image from https://www.km.kongsberg.com/ks/web/nokbg0240.nsf/AllWeb/4B8113B707A50A4FC125811D00407045?OpenDocument