



Kommersiell batteriproduksjon i Norge

Odd Moen 01.10.2019

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Ingenuity for life



Edda Freya – the world's most environmentally friendly offshore construction vessel

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World's first electrical car ferry

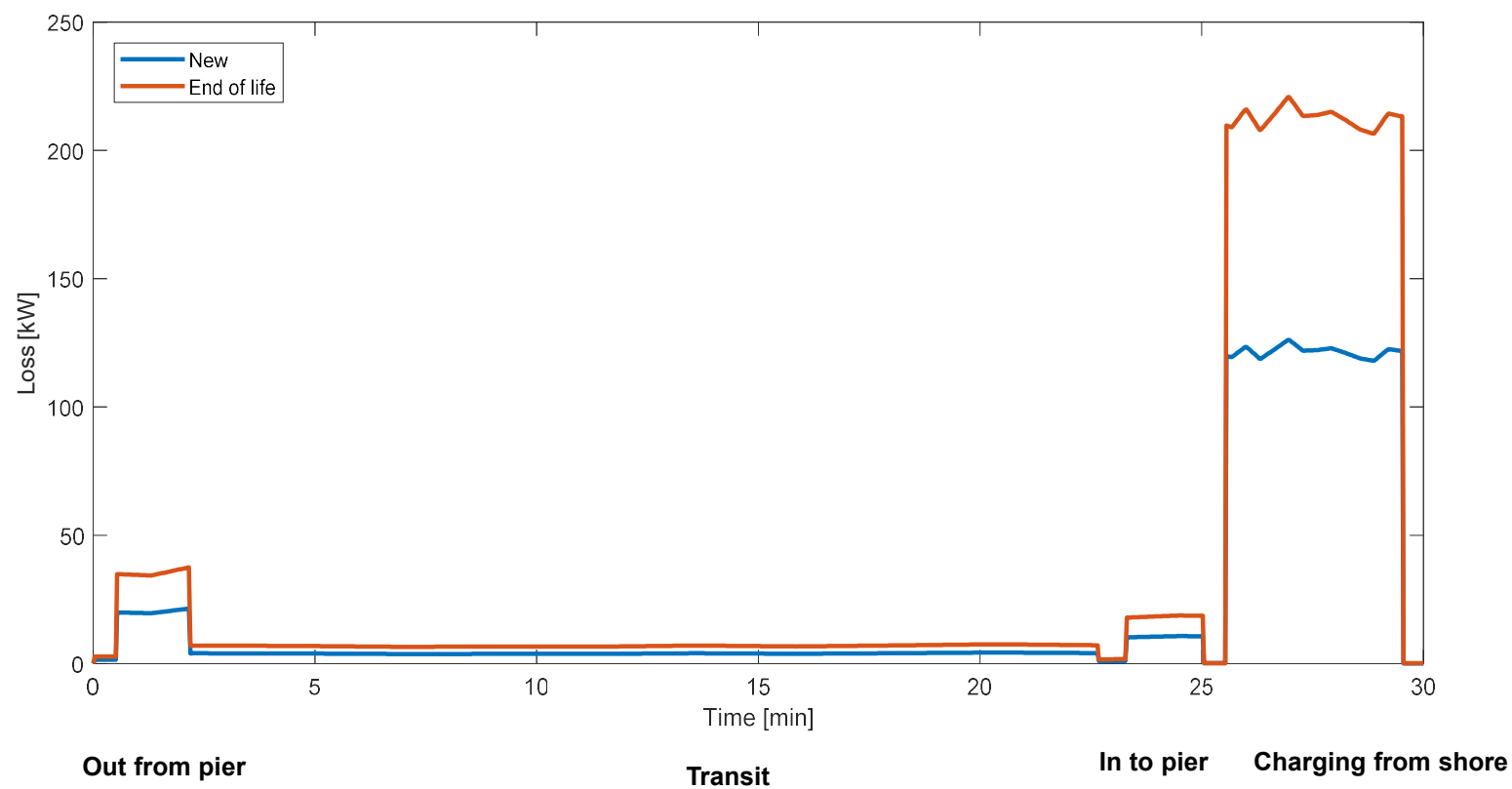
7 out of 10 ferries in Norway can be electrical

Reduce fuel consumption with 100 000 tons

Reduce emissions of CO₂ with 300 000 tons

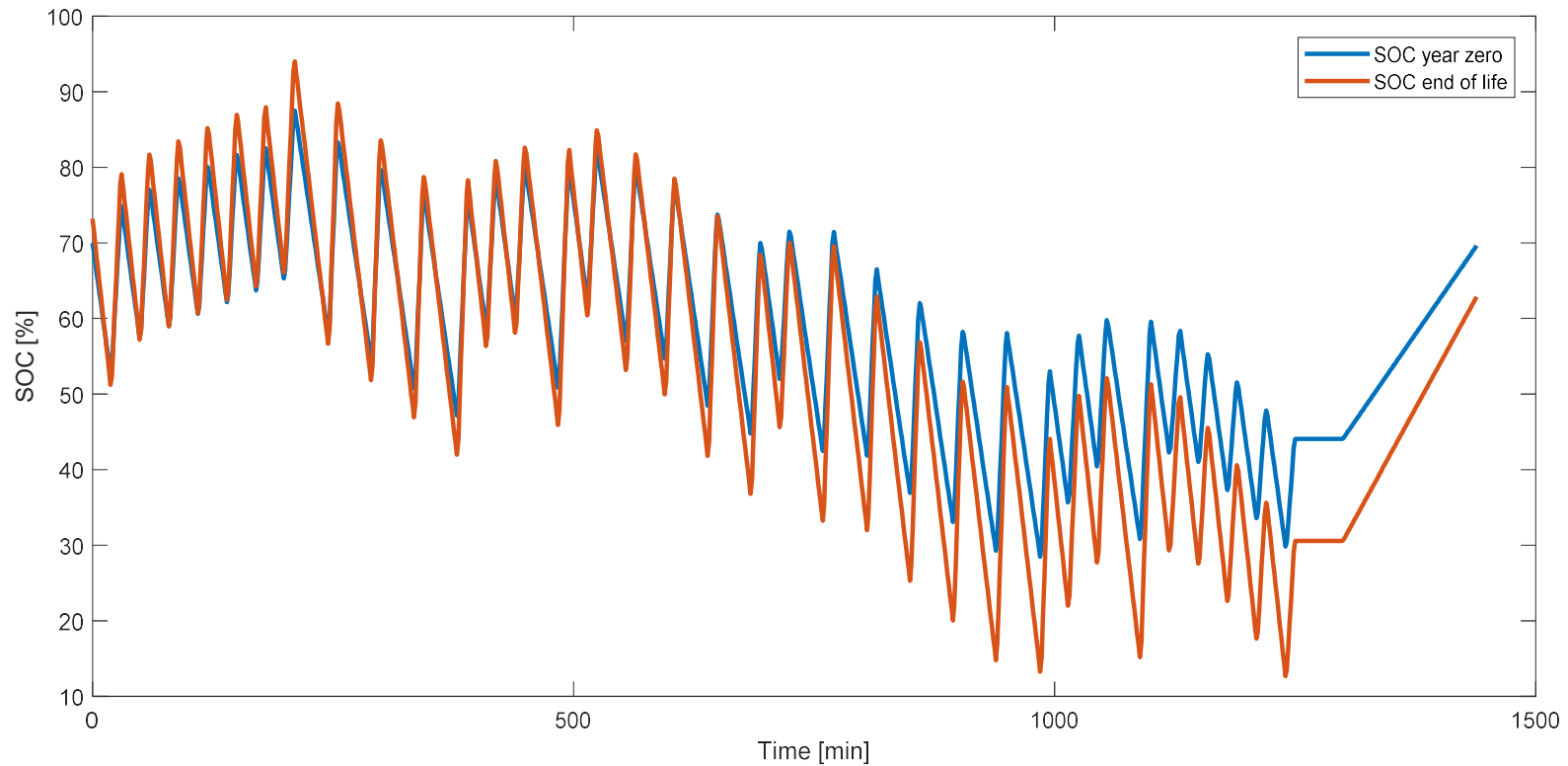


BlueVault batteries - electric losses during a ferry crossing



BlueVault batteries

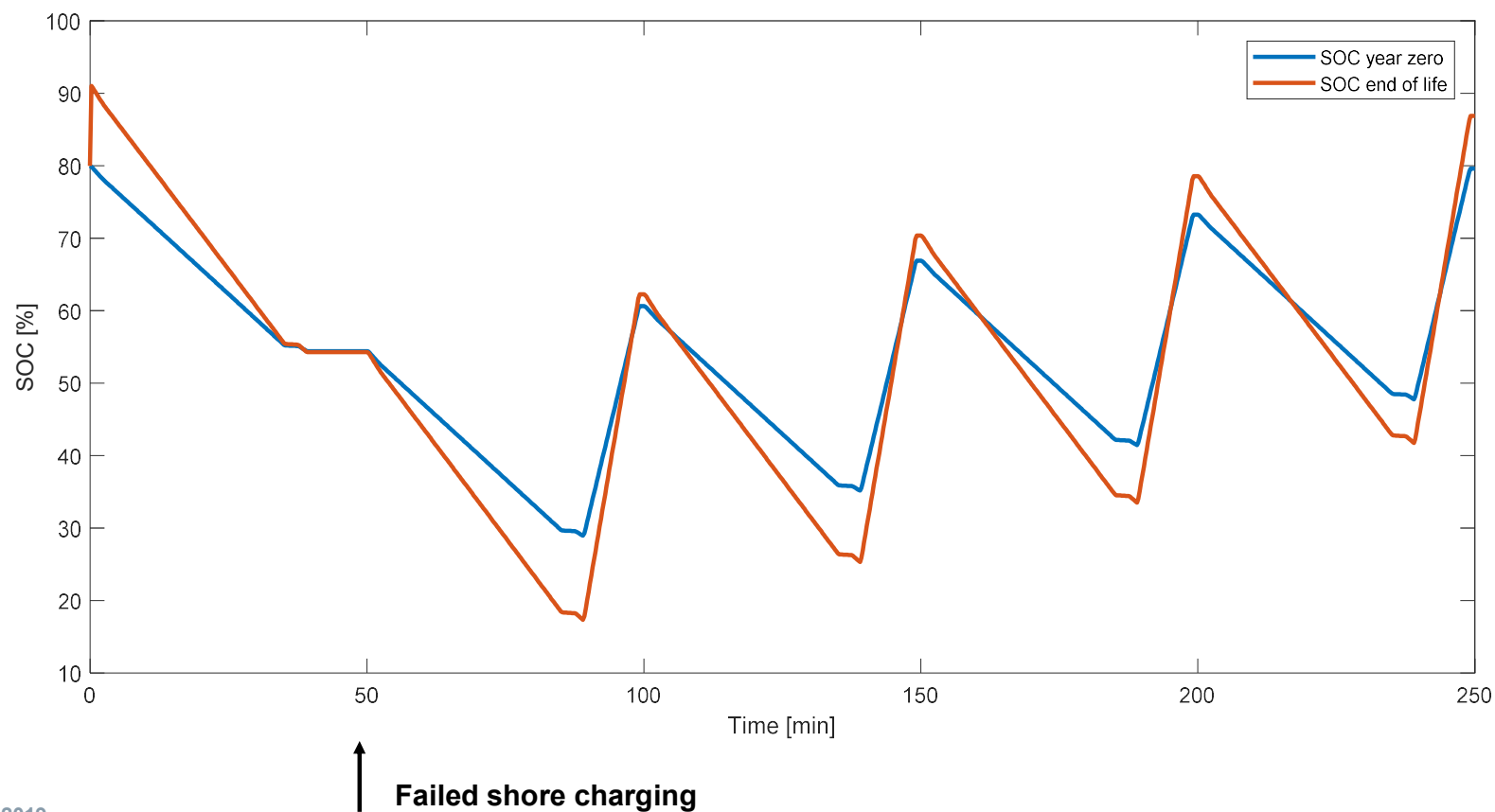
- **State of Charge** on batteries for a ferry operating between three piers with two charging capabilities



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Charging through the night

BlueVault batteries

- **State of Charge** on the batteries for one ferry route with 5 fjord crossings and with one failed charging



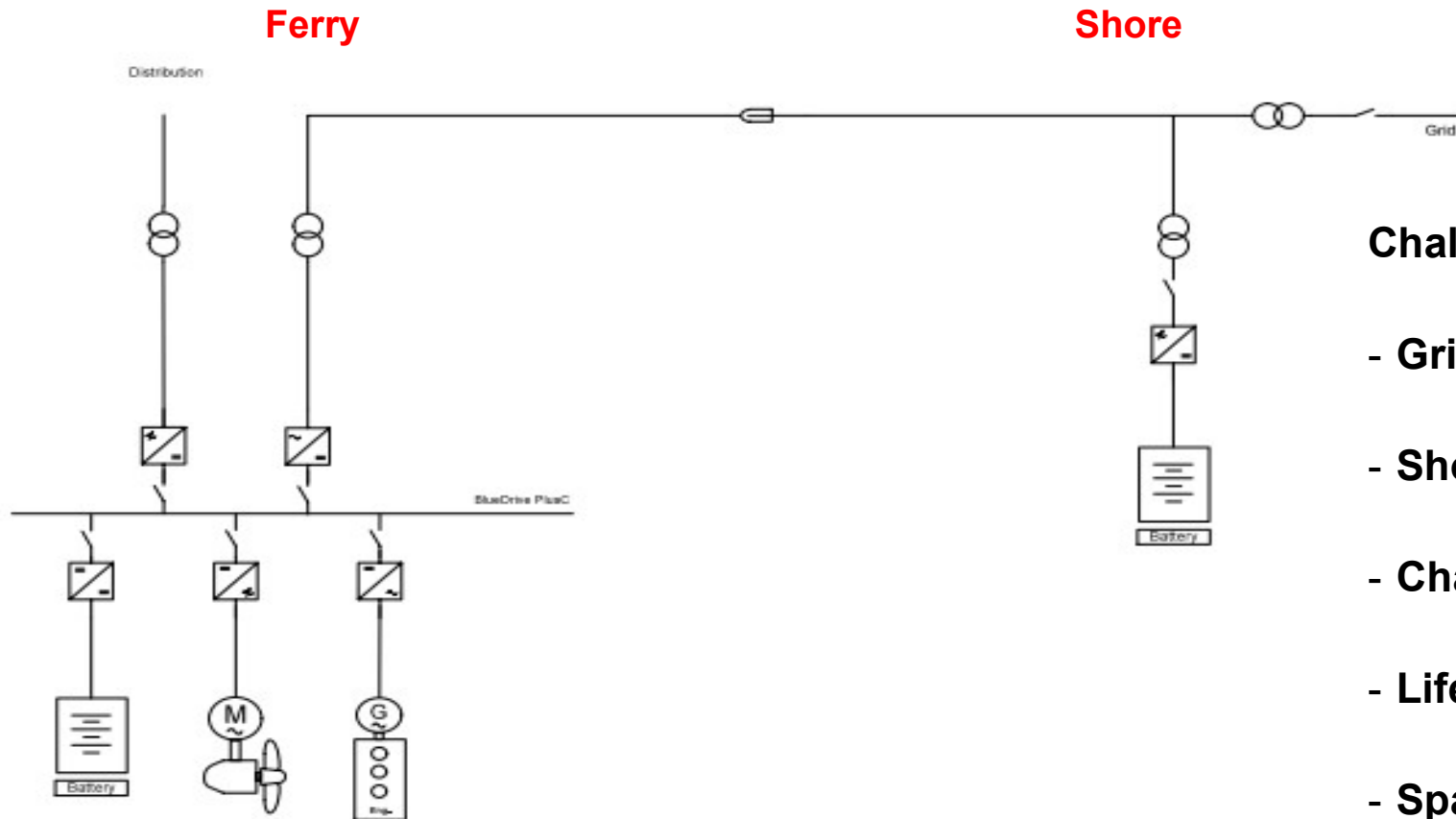
Charging station on the ferry pier - how to manage fast charging from a weak grid

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A holistic solution from the Bridge on the ferry towards the Grid

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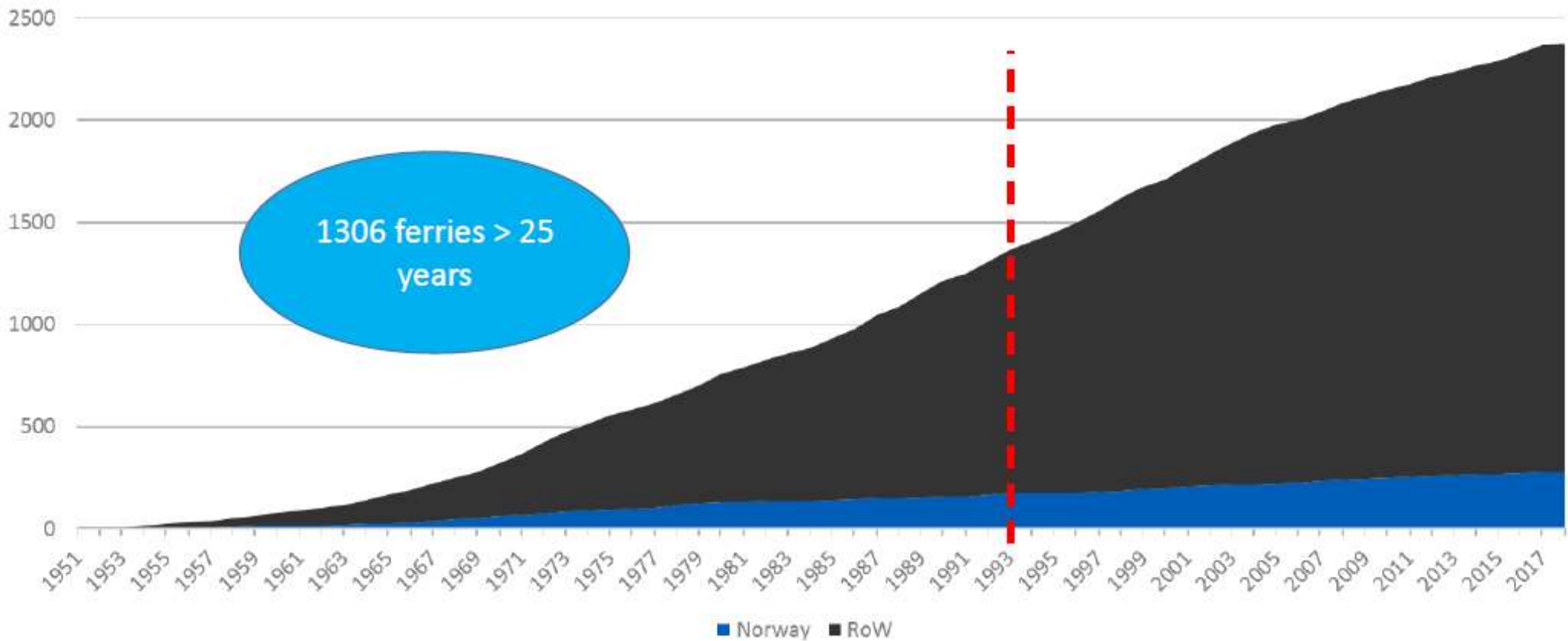


Challenges to be solved:

- Grid stability
- Short charging time
- Charging power
- Lifetime batteries
- Space for equipment on shore

The globale ferry market

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Ship of the Year 2019

- Color Hybrid the world largest hybrid vessel

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‘West Mira’ to become world’s first hybrid offshore rig

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Pioneer in green solutions for shipbuilding

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Fishing boat
"Karoline"



"Elfrida" for fish farming

Zero emission ferry
"MF Ampere"



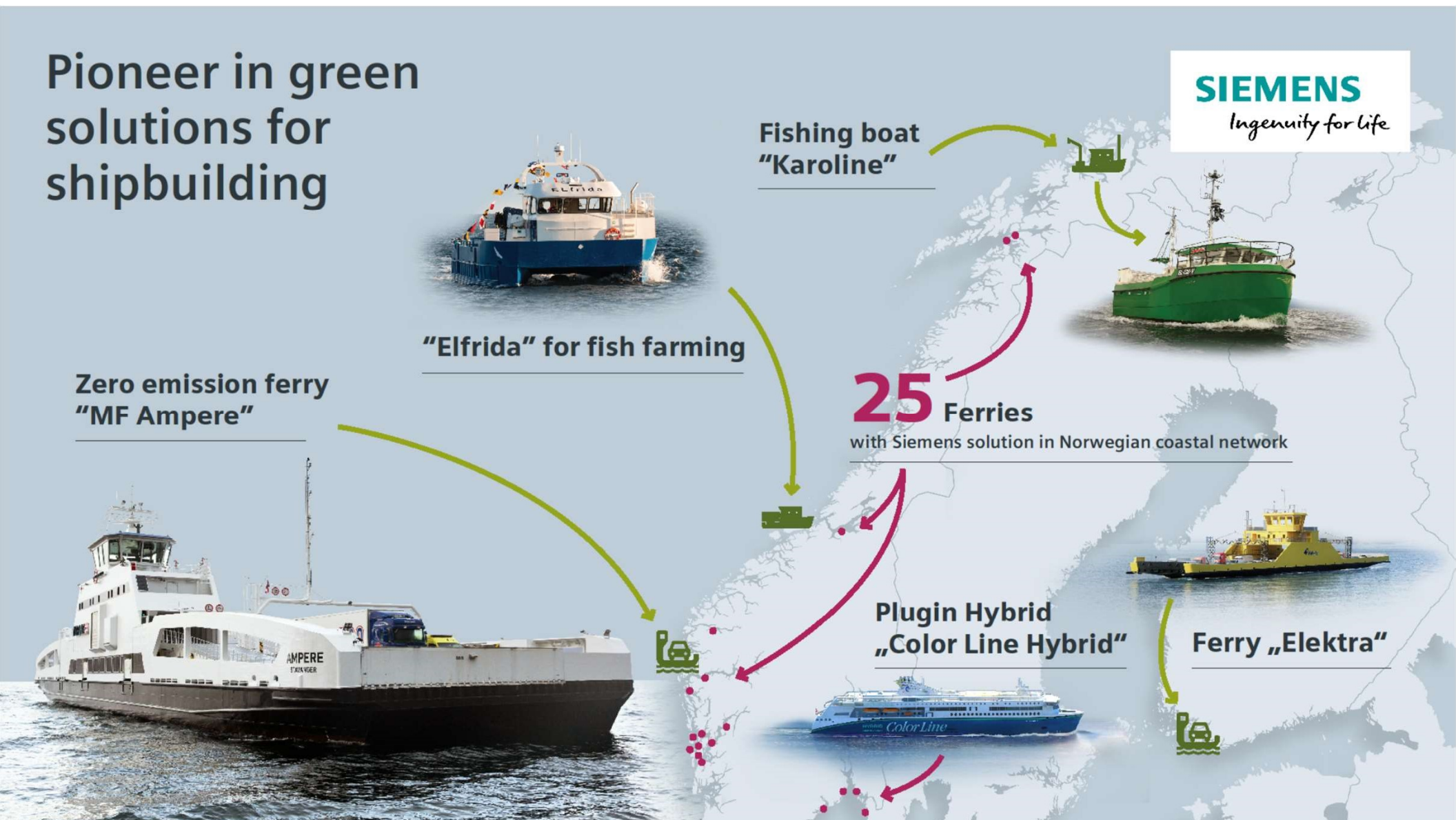
25 Ferries

with Siemens solution in Norwegian coastal network

Plugin Hybrid
"Color Line Hybrid"

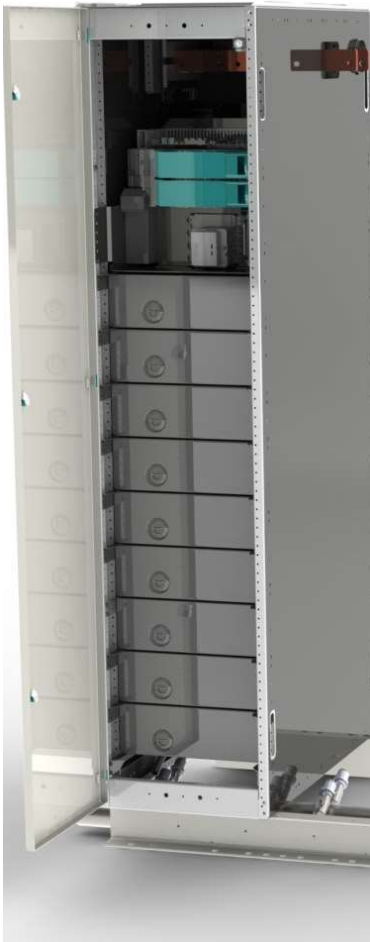


Ferry "Elektra"



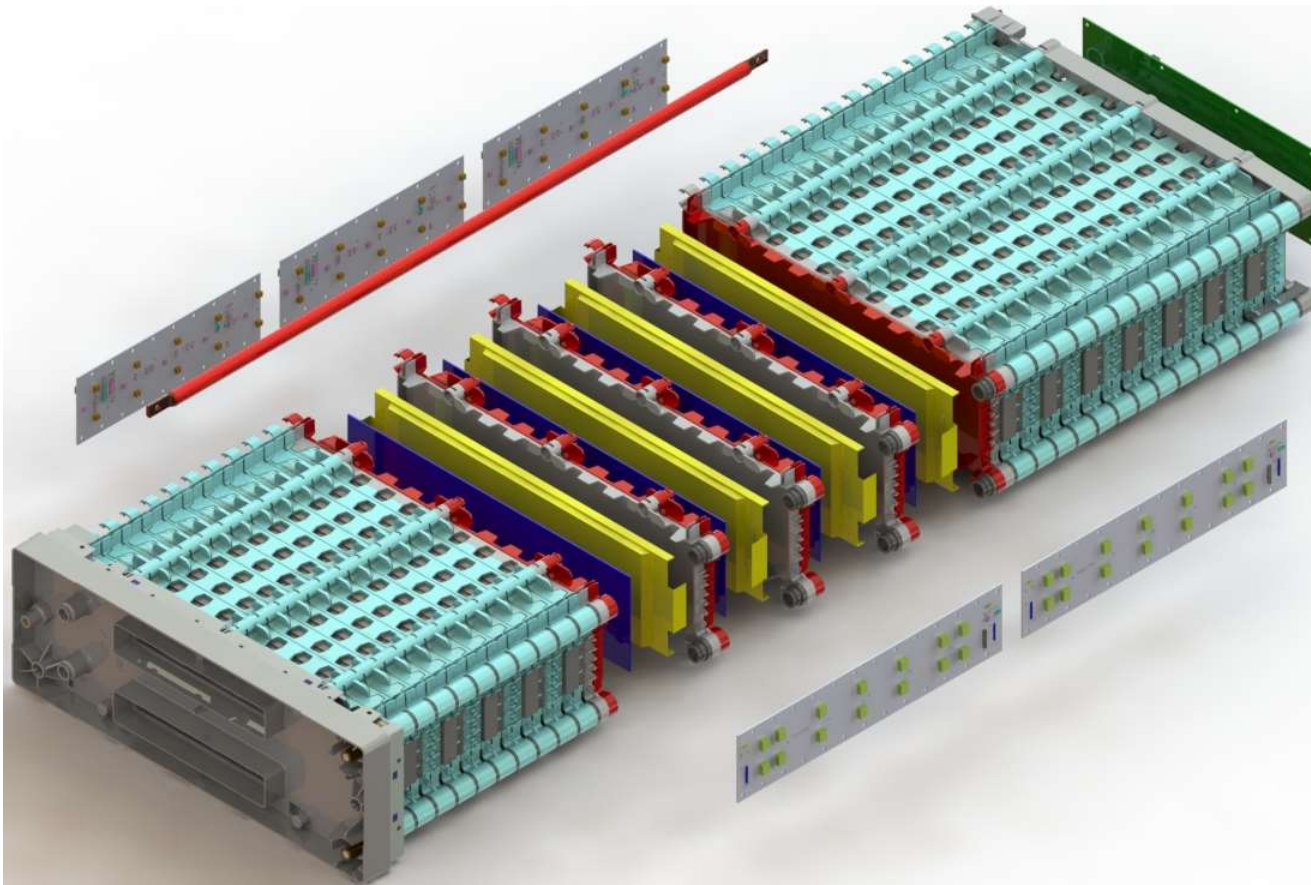
BlueVault – battery solution

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BlueVault – battery module

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Fully automated and robotized battery production Trondheim

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The future is electric!

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