

# Expensive is The New Cheap: Why Buying Cheap May Lead to High Costs

**FerryCHARGER**  
**ShoreCONNECT**  
**CableREEL**

*as of October 2021*

How to reduce high OPEX costs for harbor crane components.

How high quality components increases availability of your cranes

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Expensive is the new cheap: why buying cheap may lead to high costs





# Cable Reels for Harbor Applications





# CableREELS

## Power CableREELS (PCR)

Power supply	low voltage / medium voltage
Combination	additional optical fibres for data transfer optional
Cable lengths	up to 750 m
Cable cross section	25 mm <sup>2</sup> up to 95 mm <sup>2</sup>
Reel diameters	up to 8 m+
Travel speed	up to 60 m/min
Mounting heights within the crane system	up to 25 m
Drive technology	DTM (direct torque motor) FCM (frequency controlled motor)



# CableREELS



# Power Cable Reel

Cranes, port Aktau



PCR	Aktau
OEM	Liebherr Cranes
Terminal	Aktau Sea Port (Kazakhstan)
Operator	JSC "NC" AISCP
Scope	11 Power Cable Reels 6 Portal cranes 5 RTG cranes
Erected	
Power	
Reference	
Notes	



# Festoon System

Ship-to-Shore Crane , Hamburg, Germany



PCR	The Netherlands
OEM	Kocks Ardelt Kranbau
Terminal	CTB Containerterminal Burchardkai
Operator	HHLA
Scope	3
Erected	2018
Power	Low-Voltage 1000 V, 400 A
Reference	
Notes	Innovative beltless

- Easy commissioning, perfect cable handling
- Fiberoptic option for crane automation and information exchange
- Predictable service and limited number of spare parts
- Huge reference list around the world





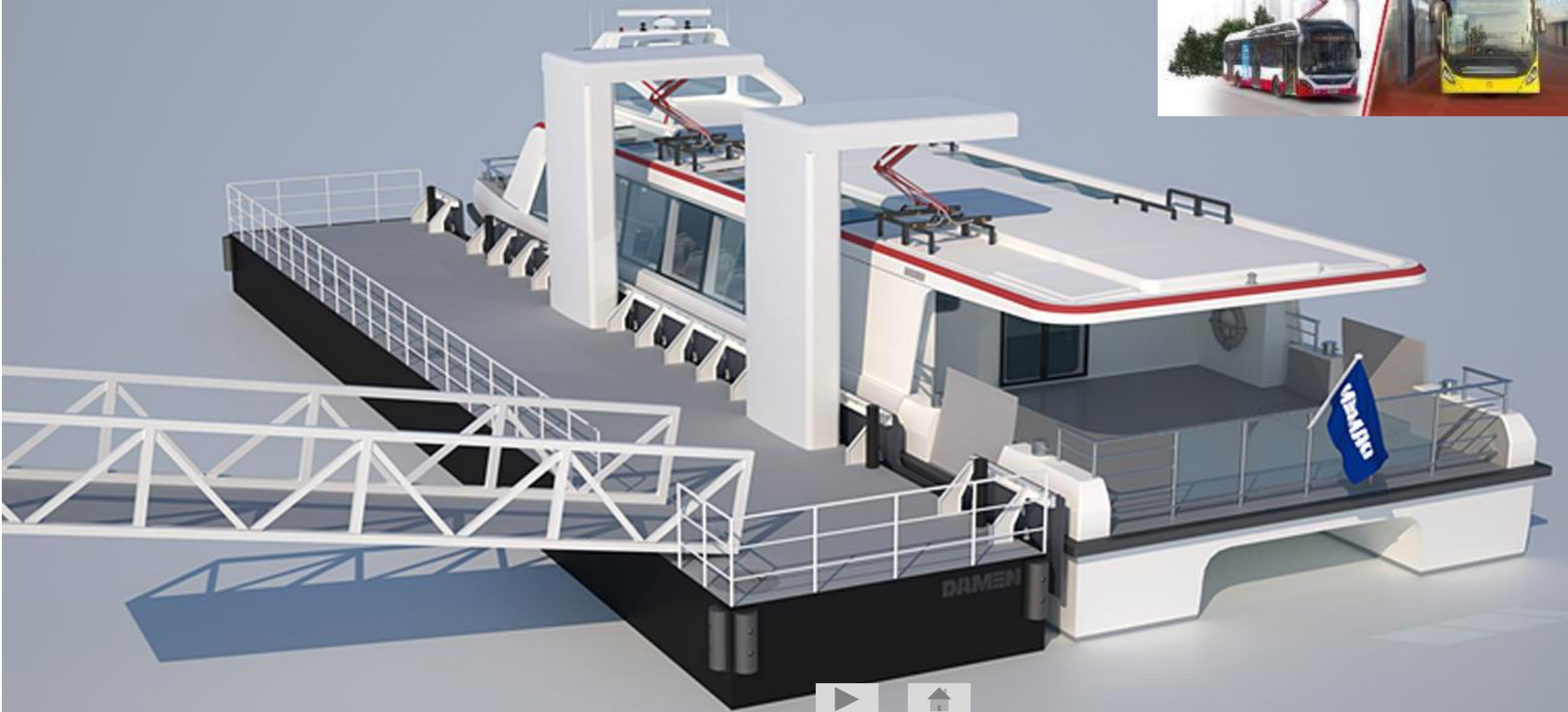
# FerryCHARGER

## panto-type



# FerryCHARGER (Panto Type)

*Concept for inverted Pantos*



# FerryCHARGER

Five Ferries, Oslo, Norway (2/2)



Panto-type	Norway
Vessel	Newbuild, 350 Pax
Connection	Oslo City hall to Oslofjord Islands
Operator	Boreal Sjø on behalf of Ruter
Scope	1 Landside 5 Shipline
Erected	2021
Power	1,5 MW 1000V (DC) / 1500 A
Contacting	Fully automated Connection time: 15 sec
Notes	Ponton-based solution for tidal compensation



# FerryCHARGER

Raveel Ontmoet Ensor, Oostende, Belgium (1/2)



Panto-type	Belgium
Vessel	New Build Ferry 22 Electric 100 Pax, First Fully electric Ferry in Belgium
Connection	Downtown Oostende
Operator	MOW Flanders
Scope	2 Landside 1 Shipline
Erected	2021
Power	1,5 MW 1000V (DC) / 1500 A
Contacting	Fully automated Connection time: 15 sec
Notes	Landside on floating pontoon for tidal compensation

# FerryCHARGER

Raveel Ontmoet Ensor, Oostende, Belgium (2/2)



Panto-type	Belgium
Vessel	New Build Ferry 22 Electric 100 Pax, First Fully electric Ferry in Belgium
Connection	Downtown Oostende
Operator	MOW Flanders
Scope	2 Landside 1 Shipline
Erected	2021
Power	1,5 MW 1000V (DC) / 1500 A
Contacting	Fully automated Connection time: 15 sec
Notes	Landside on floating pontoon for tidal compensation

# FerryCHARGER

## side-panto-type





# FerryCHARGER

MF Ampere, Lavik-Oppedal, Norway (1/2)



side-panto	Norway
<b>Vessel</b>	Newbuild, World's first all-electric RoPax-Kat, 1598 tons, 80 m, 120 Cars, 360 Pax
<b>Connection</b>	Lavik-Oppedal
<b>Operator</b>	Norled AS
<b>Scope</b>	2 Landsides 1 Shipline
<b>Erected</b>	2015
<b>Power</b>	2,4 MW / 690 V / AC / 1600 A
<b>Contacting</b>	Fully automated Connection time: 7 sec
<b>Notes</b>	9000 Charging cycles / a Reliability rate 96%



# FerryCHARGER

MF Ampere, Lavik-Oppedal, Norway (2/2)



side-panto	Norway
<b>Vessel</b>	Newbuild, World's first all-electric RoPax-Kat, 1598 tons, 80 m, 120 Cars, 360 Pax
<b>Connection</b>	Lavik – Oppedal
<b>Operator</b>	Norled AS
<b>Scope</b>	2 Landsides 1 Shipline
<b>Erected</b>	2015
<b>Power</b>	2,4 MW / 690 V / AC / 1600 A
<b>Contacting</b>	Fully automated Connection time: 7 sec
<b>Notes</b>	Automatic covers on land- and shipside



# FerryCHARGER

MF Nobiskrug, Audorf, Hochdonn, Nord-Ostsee-Kanal (NOK), Germany (1/2)

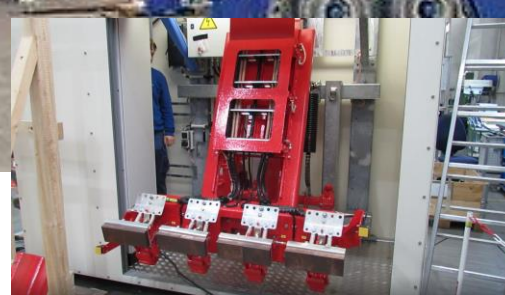
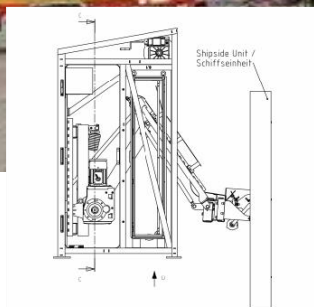


side-panto	Germany
<b>Vessel</b>	Newbuild Hybrid, 45-ton, 8 cars
<b>Connection</b>	Schacht – Audorf Rendsburg – Eckernförde Burg – Neuendorf Nord-Ostsee-Kanal
<b>Operator</b>	Wasserstraßen- und Schiffahrtsamt Kiel
<b>Scope</b>	3 Landsides 3 Shipline
<b>Erected</b>	2021
<b>Power</b>	3 x 400 V / AC / 125 A
<b>Contacting</b>	Fully automated Connection time: 7 sec
<b>Notes</b>	Capacity: 8 cars Hybrid Drive



# FerryCHARGER

MF Nobiskrug, Audorf, Hochdonn, Nord-Ostsee-Kanal (NOK), Germany (2/2)



side-panto	Germany
<b>Vessel</b>	Newbuild Hybrid, 45-ton, 8 cars.
<b>Connection</b>	Schacht – Audorf Rendsburg – Eckernförde Burg – Neuendorf Nord-Ostsee-Kanal
<b>Operator</b>	Wasserstraßen- und Schiffahrtsamt Kiel
<b>Scope</b>	3 Landsides 3 Shipline
<b>Erected</b>	2021
<b>Power</b>	3 x 400 V / AC / 125 A
<b>Tolerance</b>	+/-2° roll, +/-1° pitch/yaw 800 mm contact distance
<b>Notes</b>	Capacity: 8 cars 30 m long Hybrid Drive

# FerryCHARGER

## tower-type



# FerryCHARGER

MF Lagatan & MF Munken, Flakk-Roervik, Norway (1/2)



tower-type	Norway
Vessel	Newbuild, hybrid, 107 m, 130 Cars, 399 Pax
Connection	Flakk-Roervik
Operator	FosenNamsos Sjø
Scope	4 Landsides 2 Shipsides
Erected	2018
Power	High-Voltage 11 kV, 600 A
Contacting	Fully automated Connection time: 15 sec
Notes	Two towers for parallel terminals Iceclass E0 5.5 m tidal range comp.



# FerryCHARGER

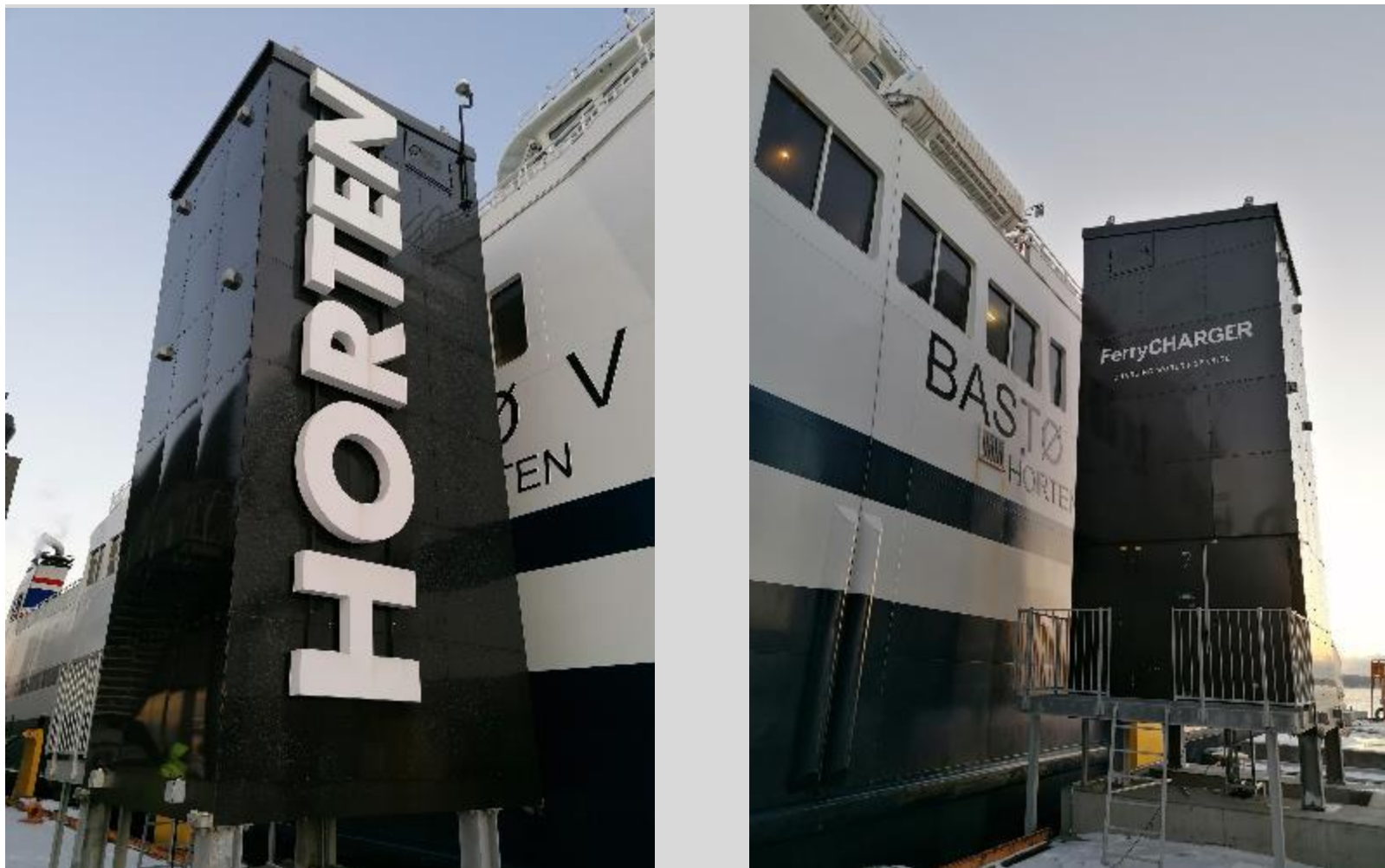
MF Lagatun & MF Munken, Flakk-Roervik, Norway (2/2)



tower-type	Norway
<b>Vessel</b>	Newbuild, hybrid, 107 m, 130 Cars, 399 Pax
<b>Connection</b>	Flakk-Roervik
<b>Operator</b>	FosenNamsos Sjø
<b>Scope</b>	4 Landsides 2 Shipsides
<b>Erected</b>	2019
<b>Power</b>	4,5 MW, High-Voltage 11 kV, 600 A
<b>Contacting</b>	Fully automated Connection time: 15 sec
<b>Notes</b>	Two towers / terminals Iceclass E0 25% CO2 Savings 5.5 m tidal range comp.

# FerryCHARGER

MF Bastø IV & MF Bastø VI, Moss-Horten, Norway (1/2)



tower-type	Norway
<b>Vessel</b>	Newbuild, battery-electric, 106 m, 110 PBE, 349 Pax
<b>Connection</b>	Oslofjord, Moss-Horten
<b>Operator</b>	Basto-Fosen
<b>Scope</b>	2 Landsides 4 Shipsides (2 vessels)
<b>Erected</b>	2021
<b>Power</b>	9 MW, Medium-Voltage 11 kV, 600 A
<b>Contacting</b>	Fully automated Connection time: 15 sec
<b>Notes</b>	75% Savings of emissions 5.5 m tidal range comp. 3,8 mio Pax, 1,8 mio Cars per year



# FerryCHARGER

MF Bastø Electric, Moss-Horten, Norway (2/2)



tower-type	Norway
<b>Vessel</b>	Newbuild, battery-electric, 106 m, 110 PBE, 349 Pax, per March 2021 largest Electric Ferry world-wide
<b>Connection</b>	Oslofjord, Moss-Horten
<b>Operator</b>	Basto-Fosen
<b>Scope</b>	2 Shipsides (3 vessels)
<b>Erected</b>	2021
<b>Power</b>	9 MW, Medium-Voltage 11 kV, 600 A
<b>Contacting</b>	Fully automated Connection time: 15 sec
<b>Notes</b>	75% Savings of emissions 5.5 m tidal range comp. 3,8 mio Pax, 1,8 mio Cars per year





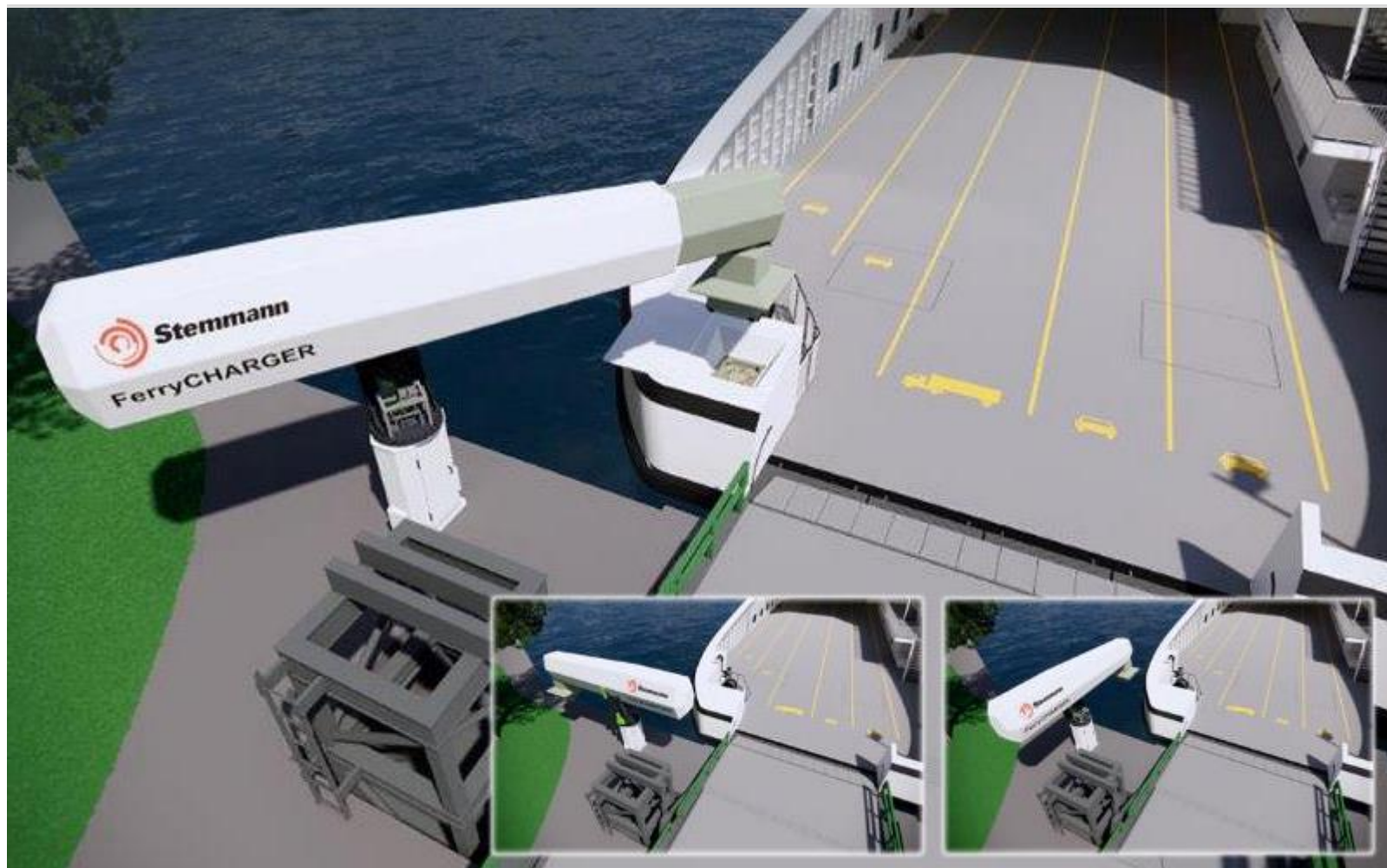
# FerryCHARGER

## bow-type



# FerryCHARGER

Amherst Islander II, Millhaven-Stella, Canada



bow-type	Canada
Vessel	Amherst Islander II
Connection	Millhaven-Stella
Operator	MTO Ministry of Transport Ontario
Scope	2 Land sides, 2 Shipsides
Erected	2021
Power	3 MW, Low-Voltage 1000 VDC, 3000 A
Contacting	Fully automated Connection time: 10
Notes	<ul style="list-style-type: none"><li>- Minimum footprint</li><li>- Interchangeable between vessels with different beam</li></ul>



# FerryCHARGER

Wolfe Islander II, Kingston-Marysville, Canada



bow-type	Canada
Vessel	Wolfe Islander II
Connection	Kinston – Marysville (Wolfe Island)
Operator	MTO Ministry of Transport Ontario
Scope	2 Land sides, 2 Shipsides
Erected	2021
Power	6 MW, Low-Voltage 1000 VDC, 6000 A
Contacting	Fully automated Connection time: 10
Notes	<ul style="list-style-type: none"><li>- Minimum footprint</li><li>- Interchangeable between vessels with different beam</li></ul>





# ShoreCONNECT

European Parliament  
2019-2024



TEXTS ADOPTED

P9\_TA(2021)0131

**More efficient and cleaner maritime transport**

European Parliament resolution of 27 April 2021 on technical and operational measures for more efficient and cleaner maritime transport (2019/2193(INI))

11. Calls on the Commission to support, through legislation, the objective of zero pollution (GHG emissions and air pollutants) at berth, and to promote the development and deployment of clean multimodal solutions in ports supported through a corridor approach, calls on the Commission, in particular, to take swift action to regulate EU port access for the most polluting ships based on the Port State Control Directive<sup>1</sup> framework, and to incentivise and support the use of on-shore power supply using clean electricity or any other energy-saving technologies that have a considerable effect on diminishing GHG emissions and air pollutants; regrets that the revision of Directive 2014/94/EU has been postponed; urges the Commission to propose a revision of Directive 2014/94/EU as soon as possible in order to include incentives for both



# ShoreCONNECT

Fjordbase, Norway



<b>527256</b>	<b>Norway</b>
<b>Application</b>	Triple-Spiralic reel
<b>Terminal</b>	Fjordbase
<b>Operator</b>	Fjordbase AS
<b>Scope</b>	1 unit
<b>Erected</b>	2017
<b>Power</b>	Low-Voltage 400 V
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-3, ISO, IEEE



# ShoreCONNECT

West Coast Norway



<b>527256</b>	<b>Norway</b>
<b>Application</b>	Double-Spirallic reel
<b>Terminal</b>	Hammerfest, Kristiansund, Tanagner, Stavanger
<b>Operator</b>	NorSea Group
<b>Scope</b>	16 units
<b>Erected</b>	2018
<b>Power</b>	Low-Voltage 400 V
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-3, ISO, IEEE



# ShoreCONNECT

Cuxhaven, Germany



<b>515400</b>	<b>Germany</b>
<b>Application</b>	Boom for Offshore-Wind Erection vessels
<b>Terminal</b>	Cuxhaven, Roetra-Vente
<b>Operator</b>	Niedersachsen Ports
<b>Scope</b>	1 stationary system with 6 m tolerance in x-direction
<b>Erected</b>	2018
<b>Power</b>	High-Voltage 3 x 400 V, 350 A
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE

# ShoreCONNECT

Tenerife, La Gomera, Spain



524700	Spain
<b>Application</b>	Cable Dispenser for Ro-Pax-Ferries
<b>Terminal</b>	La Gomera & La Palma Ferry Terminal
<b>Operator</b>	Tenerife Port Authority (Armas Line)
<b>Scope</b>	1 stationary system
<b>Erected</b>	2019
<b>Power</b>	Low-Voltage 400 V, 1750 A
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-3, ISO, IEEE



# ShoreCONNECT

Kiel, Germany



524700

Spain

**Application**

HV-Cable Dispenser for  
Ro-Pax-Ferries

**Terminal**

Schwedenkai

**Operator**

Port of Kiel

**Scope**

1 stationary system

**Erected**

2020

**Power**

High-Voltage 11 kV,  
50/60 Hz, up to 6 MW

**Contacting**

Manual Connection

**Notes**

IEC 80005-3, ISO, IEEE  
1 operator for handling  
No physical power to handle  
Operation in confined space



# ShoreCONNECT

Container-solution



<b>433474</b>	<b>Germany</b>
<b>Application</b>	Containerized Cable-Reel
<b>Terminal</b>	World-wide
<b>Operator</b>	Diverse ( i.e. Maersk, MSC, CMA-CGM, Hamburg Süd, Hapag Lloyd, Hanjin)
<b>Scope</b>	More than 100 Shipsides
<b>Erected</b>	Since 2012
<b>Power</b>	High-Voltage 6.6 kV, 700 A
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE



# ShoreCONNECT

Kiel, Germany (1/3)



<b>545891</b>	<b>Germany</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Kiel Cruise Terminal
<b>Operator</b>	Port of Kiel
<b>Scope</b>	1 Mobile System 6 Junction Boxes
<b>Erected</b>	2021
<b>Power</b>	High-Voltage 6.6/11 kV, 16MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE, 35m cable reel, daisy-chain solution

# ShoreCONNECT

Kiel, Germany (2/3)



<b>545891</b>	<b>Germany</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Kiel Cruise Terminal
<b>Operator</b>	Port of Kiel
<b>Scope</b>	1 Mobile System 6 Junction Boxes
<b>Erected</b>	2021
<b>Power</b>	High-Voltage 6.6/11 kV, 16MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE, 35m cable reel, daisy-chain solution





# ShoreCONNECT

Kiel, Germany (3/3)



<b>545891</b>	<b>Germany</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Kiel Cruise Terminal
<b>Operator</b>	Port of Kiel
<b>Scope</b>	1 Mobile System 6 Junction Boxes
<b>Erected</b>	2021
<b>Power</b>	High-Voltage 6.6/11 kV, 16MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE, 35m cable reel, daisy-chain solution

# ShoreCONNECT

Port of Gdynia, Poland (1/3)



<b>547349</b>	<b>Poland</b>
<b>Application</b>	SC-vehicle for RoPax
<b>Terminal</b>	Gdynia Ferry Terminal
<b>Operator</b>	Port of Gdynia
<b>Scope</b>	1 Mobile System 2 Single-end Junction boxes 1 Double-ended Junction box
<b>Erected</b>	2021
<b>Power</b>	50/60 Hz 3,75 MVA @ 11 kV 11 kV with 200 Amp
<b>Vehicle</b>	Battery-driven, zero-emission, 10.000x 3.000x3.700 (LxWxH) Speed: 4 km/h, 1 km/h reeling
<b>Notes</b>	IEC 80005-1, ISO, IEEE 50m cable reel Single-person operation



# ShoreCONNECT

Port of Gdynia, Poland (2/3)





# ShoreCONNECT

Hamburg-Altona, Germany (2/2)



<b>371777</b>	<b>Germany</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Hamburg-Altona Cruise
<b>Operator</b>	Hamburg Port Authority HPA
<b>Scope</b>	1 Mobile System
<b>Erected</b>	2014
<b>Power</b>	High-Voltage 6.6/11 kV, 12 MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE Fully covered cable canal Remote control



# ShoreCONNECT

Tianjin, China (1/2)



<b>509738</b>	<b>China</b>
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<b>Application</b>	SC-vehicle for cruise liners
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<b>Terminal</b>	Shanghai Baoshan Cruise Terminal
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<b>Operator</b>	Port of Shanghai
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<b>Scope</b>	1 Mobile System
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<b>Erected</b>	2016
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<b>Power</b>	High-Voltage 6.6/11 kV, 20MVA
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<b>Contacting</b>	Manual Connection
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<b>Notes</b>	IEC 80005-1, ISO, IEEE, 35m cable reel, daisy-chain solution
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# ShoreCONNECT

Tianjin, China (2/2)



<b>521449</b>	<b>China</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Tianjin Cruise Terminal
<b>Operator</b>	Port of Tianjin
<b>Scope</b>	1 Mobile System
<b>Erected</b>	2019
<b>Power</b>	High-Voltage 6.6/11 kV, 20MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE, 35m cable reel, daisy-chain solution



# ShoreCONNECT

Rostock-Warnemünde, Germany (1/4)



**547286**

**Germany**

**Application**

SC-vehicle for cruise liners

**Terminal**

Rostock-Warnemünde

**Operator**

Port of Rostock

**Scope**

2 Systems, 16 MVA each  
4 Junction Boxes, 20 MVA

**Erected**

2020

**Power**

High-Voltage  
6.6 / 11 kV / 16 MVA

**Contacting**

Manual Connection

**Notes**

IEC 80005-1, ISO, IEEE  
35m cable reel, daisy-chain  
junction solution

# ShoreCONNECT

Rostock-Warnemünde, Germany (3/4)



<b>547286</b>	<b>Germany</b>
<b>Application</b>	SC-vehicle for cruise liners
<b>Terminal</b>	Rostock-Warnemünde
<b>Operator</b>	Port of Rostock
<b>Scope</b>	2 Systems, 16 MVA each 4 Junction Boxes, 20 MVA
<b>Erected</b>	2020
<b>Power</b>	High-Voltage 6.6 / 11 kV / 16 MVA
<b>Contacting</b>	Manual Connection
<b>Notes</b>	IEC 80005-1, ISO, IEEE 35m cable reel, daisy-chain junction solution



# Port Optimizer





# Port Optimizer™

Cloud-based software for throughput and performance enhancement, Port of LA



**Port**

Port of Los Angeles, CA

**Scope**

- Vessel Tracking
- Vessel Operational Status
- Container Tracking
- Container Allocation
- Empty Container Management
- Operational Status
- Analytics
- KPI tracking

**Notes**

improving visibility, efficiency, and throughput on terminal operations by real time tracking information on container



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