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A Wabtec Company

THE NEW BRANDING of...

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A Wabtec subsidiary

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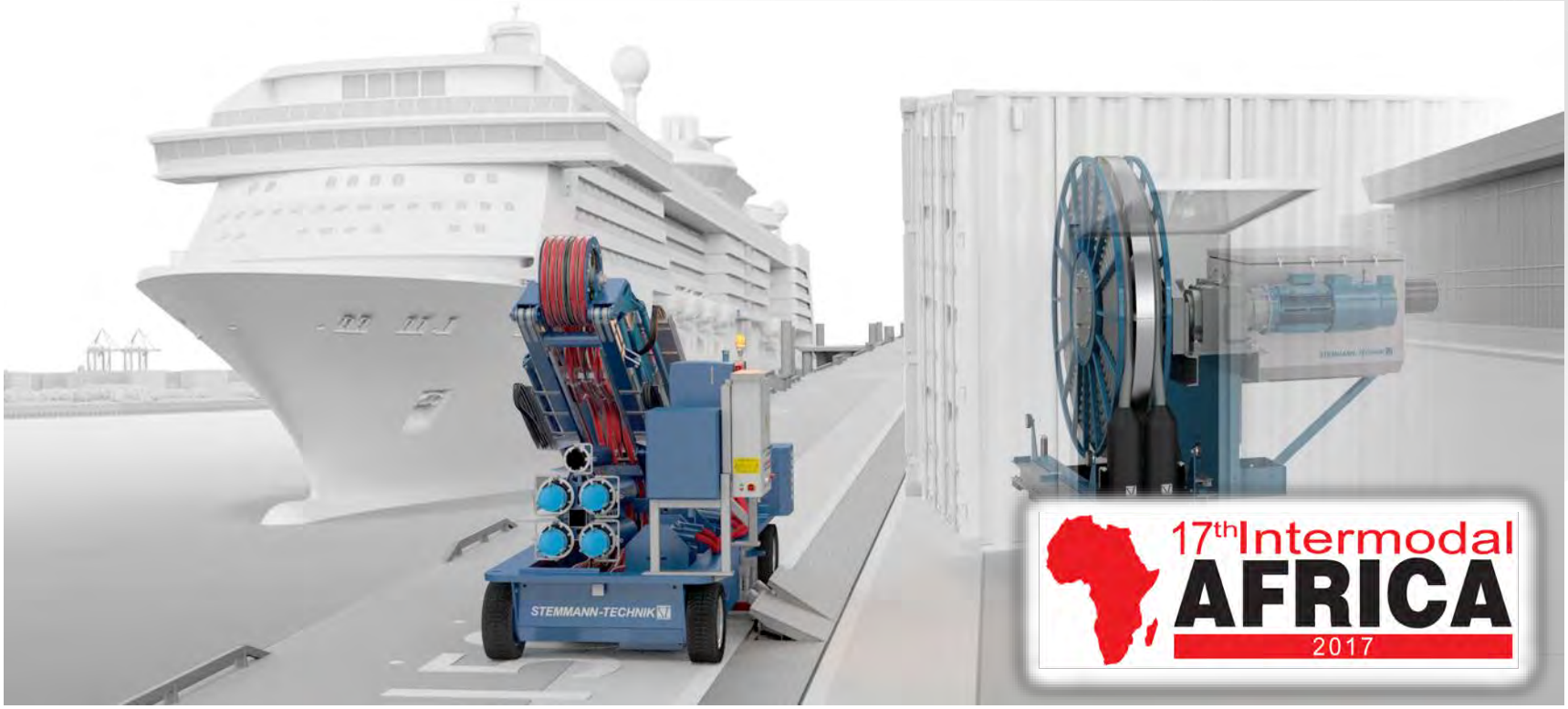
/// Alternative Maritime Power Systems

Daiel Hoffmans, International Sales Manager



/// Onshore Power Supply & Charging Systems

Reduction of Emissions in Ports

This presentation provides practical information about:

“Alternative Power Supply Systems”

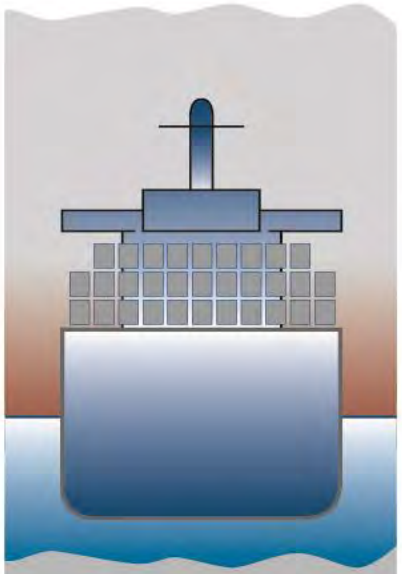
for seagoing vessels as a measure to improve air quality in ports, port cities.

By reducing emissions of air pollution, noise and to a lesser extent carbon dioxide,
by replacing onboard-generated power from diesel engines with electricity generated onshore power systems.

/// Onshore Power Supply & Charging Systems

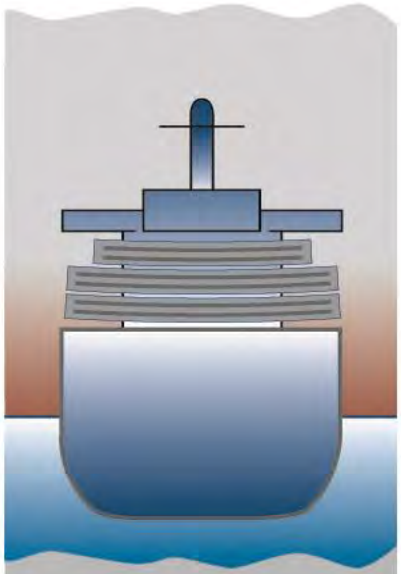
Various Solutions for ...

Container Vessels



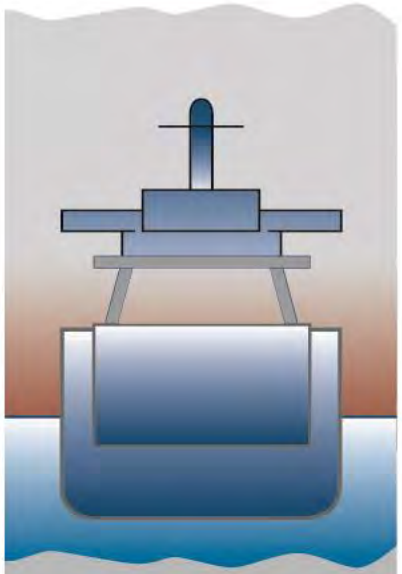
Onshore Power Supply via Cable Reel Container System

Cruise Liner



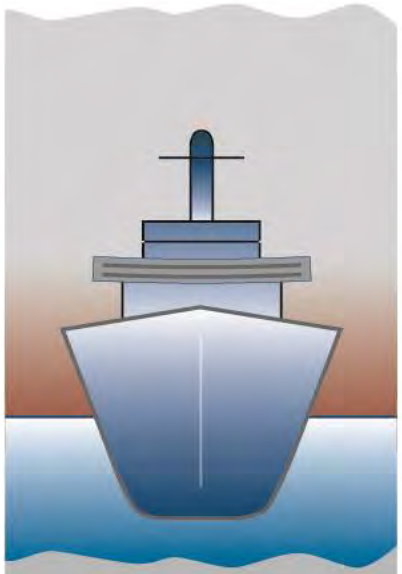
Onshore Power Supply via Cable Reel / Mobile Carrier System

Electrical Ferries



Quick Charging Connection via Pantograph System

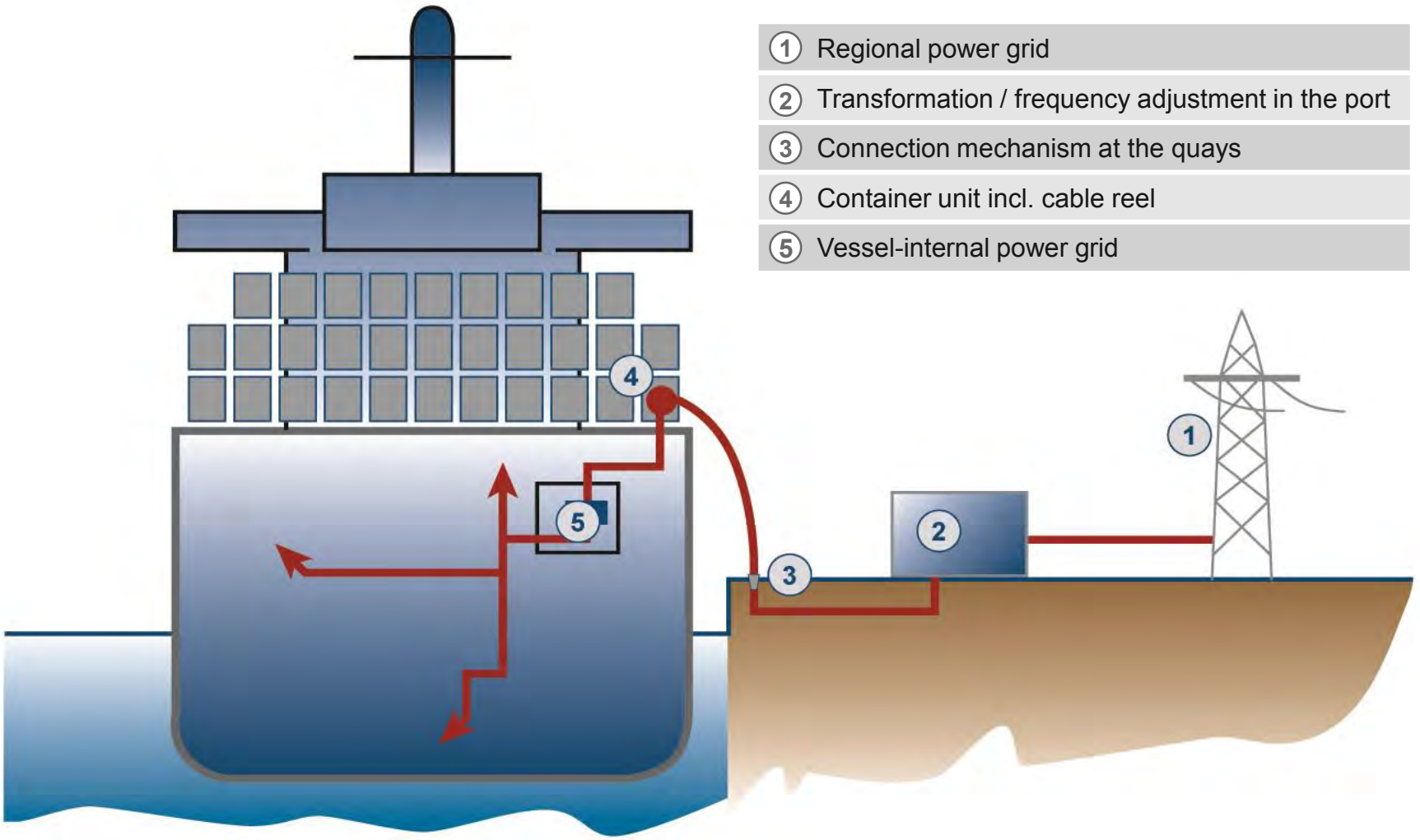
Yachts



Special Applications via Cable Reel System

/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel Container Systems



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/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel Container Systems

Onboard System

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/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel Container Systems

The feed of the onshore power supply for container vessels is realised for example by the installation of a 40 ft. HC-container in the bottom storage row.

The system consists of a spiral cable reel with slip ring assembly and fibre optic rotary connector incl. the drives for the reel and the extension system of the roller conveyer.

/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel Container Systems

/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel / Mobile Socket System

Onshore System

Combination of HC-container installation on board and mobile socket installation onshore.

Flexible mounting heights depending on the local conditions.

Flexible traveling lenghts depending on the local conditions.

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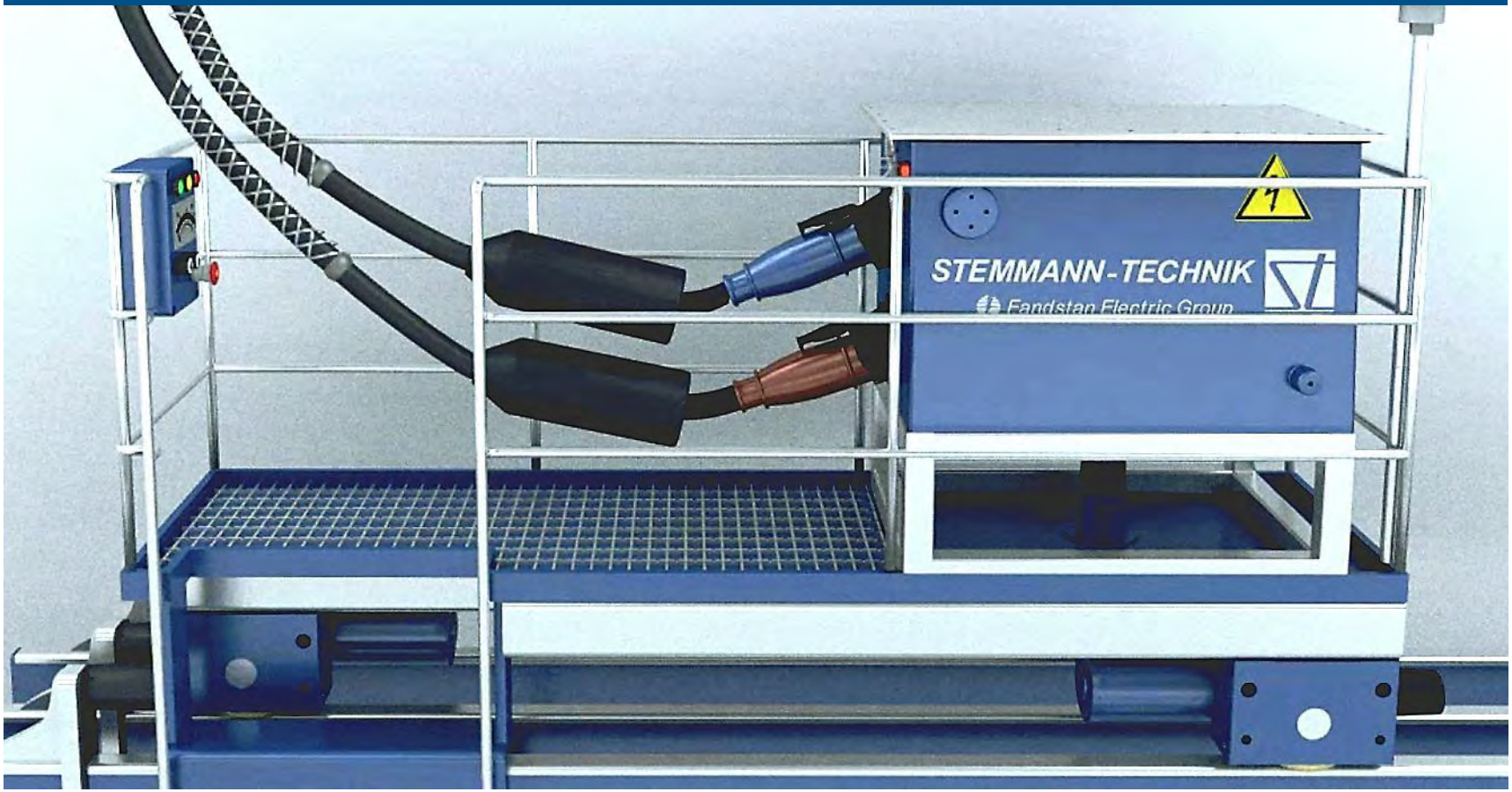
/// Onshore Power Supply for Container Vessels

Onshore Power Supply via Mobile Socket System

Onshore System



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/// Onshore Power Supply for Container Vessels

Container System Advantages

- HC-container installation in the bottom storage row requires no special housing installation on board.
- Installation/cable pay-off on port- or starboard side possible.
- Constant tension on cable by torque motor.
- Excess tension-coupling for protection from damage to the machanical parts.
- The operation is effected by means of a radio remote control.
- Decades of experience in the construction and manufacturing of cable reels.

/// Onshore Power Supply for Cruise Liners

Container System via Mobile Carrier Systems

Onshore System

/// Onshore Power Supply for Cruise Liners

Vehical in Action

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/// Onshore Power Supply for Cruise Liners

History of the SAMP Hamburg Altona Project

Terminal Situation

Ship´s hatch / Control Cabinet

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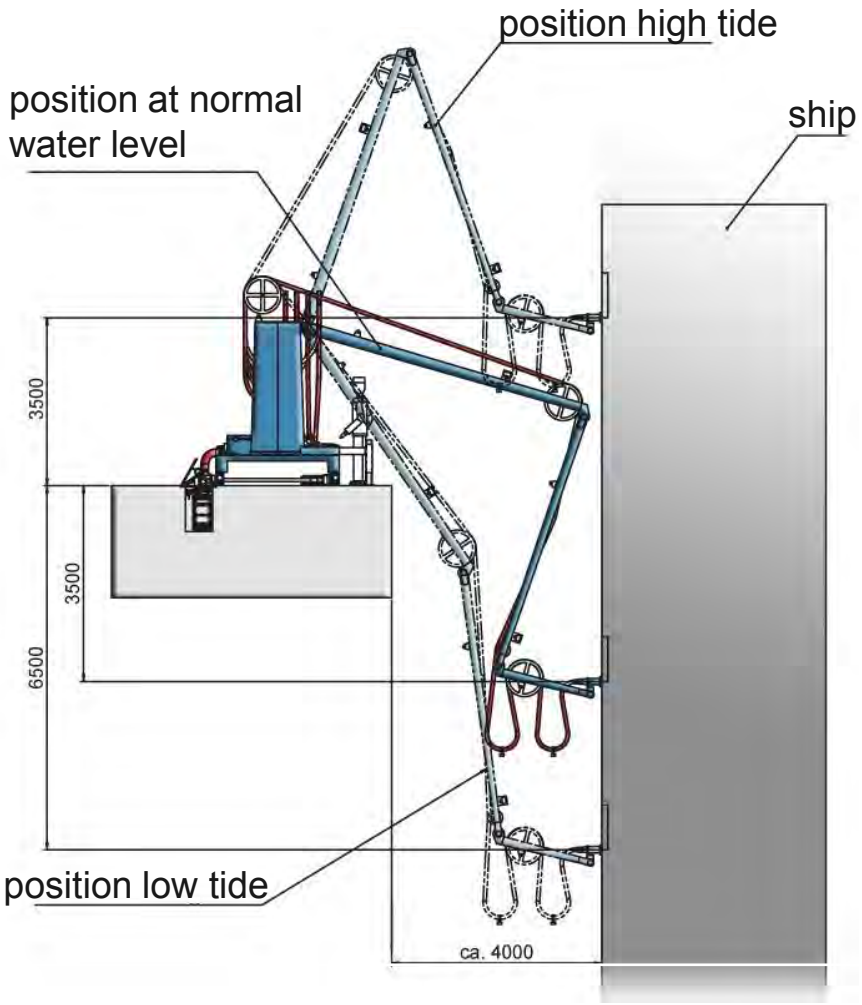
/// Onshore Power Supply for Cruise Liners

The Requirements



High tide, height difference hatch/quay: **3.5 m**
Low tide, height difference hatch/quay: **6.5 m**
Travel distance parallel to quay wall: **300 m**
Distance between ship and quay wall: **4 m**
Distance between SAMP-System and quay wall: **approx. 2.5 m**
Distance between hatch and socket: **approx. 3.5 m**
Hatch dimensions (h x w): **1.2 x 0.8 m**
Transmittable voltage: **12 MVA**

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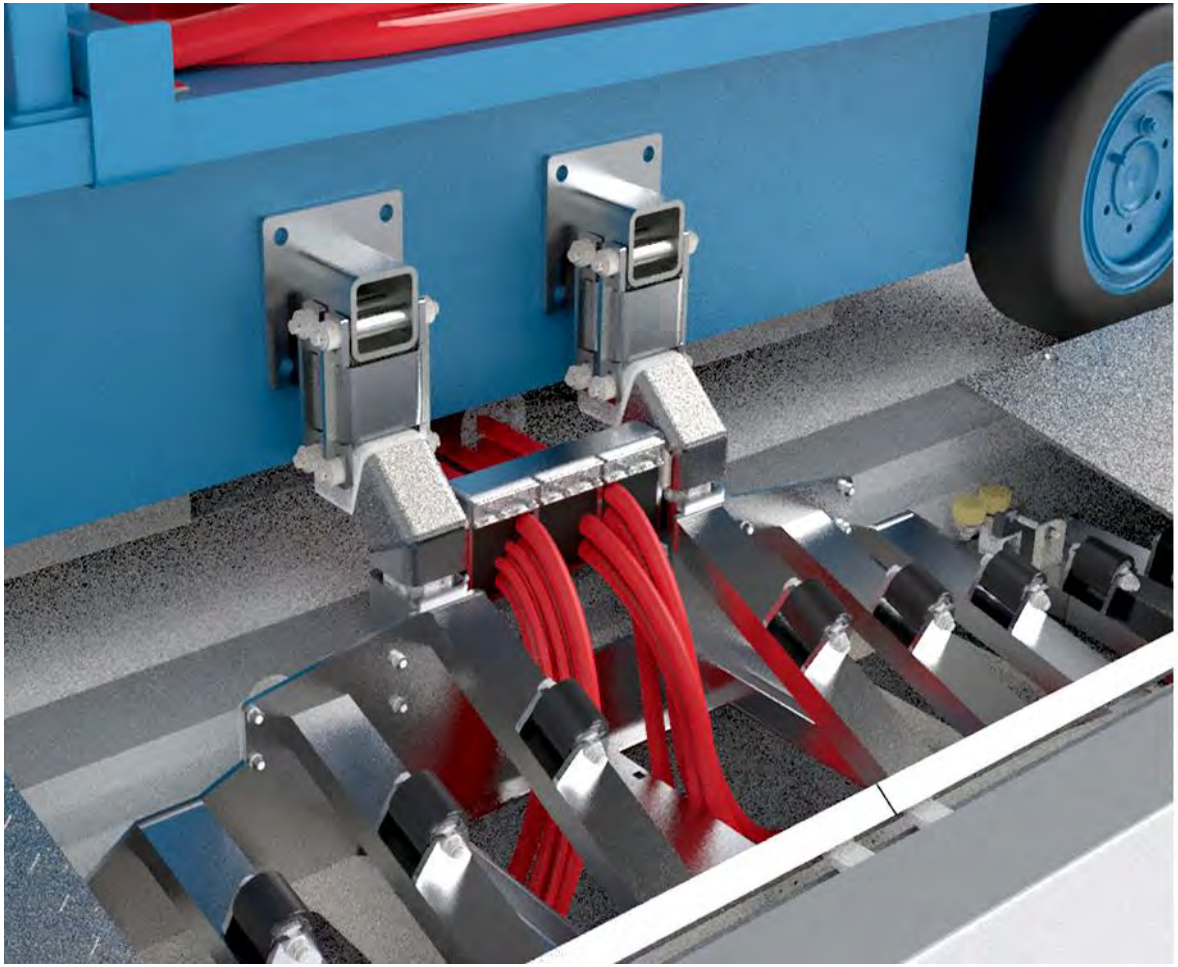
/// Onshore Power Supply for Cruise Liners

Port Side / Cable Duct / Energy Chain

/// Onshore Power Supply for Cruise Liners

Transfer Vehicle / Cover Lifting Device with Cable Guideway



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/// Onshore Power Supply for Cruise Liners

Telescopic Plug Holder System

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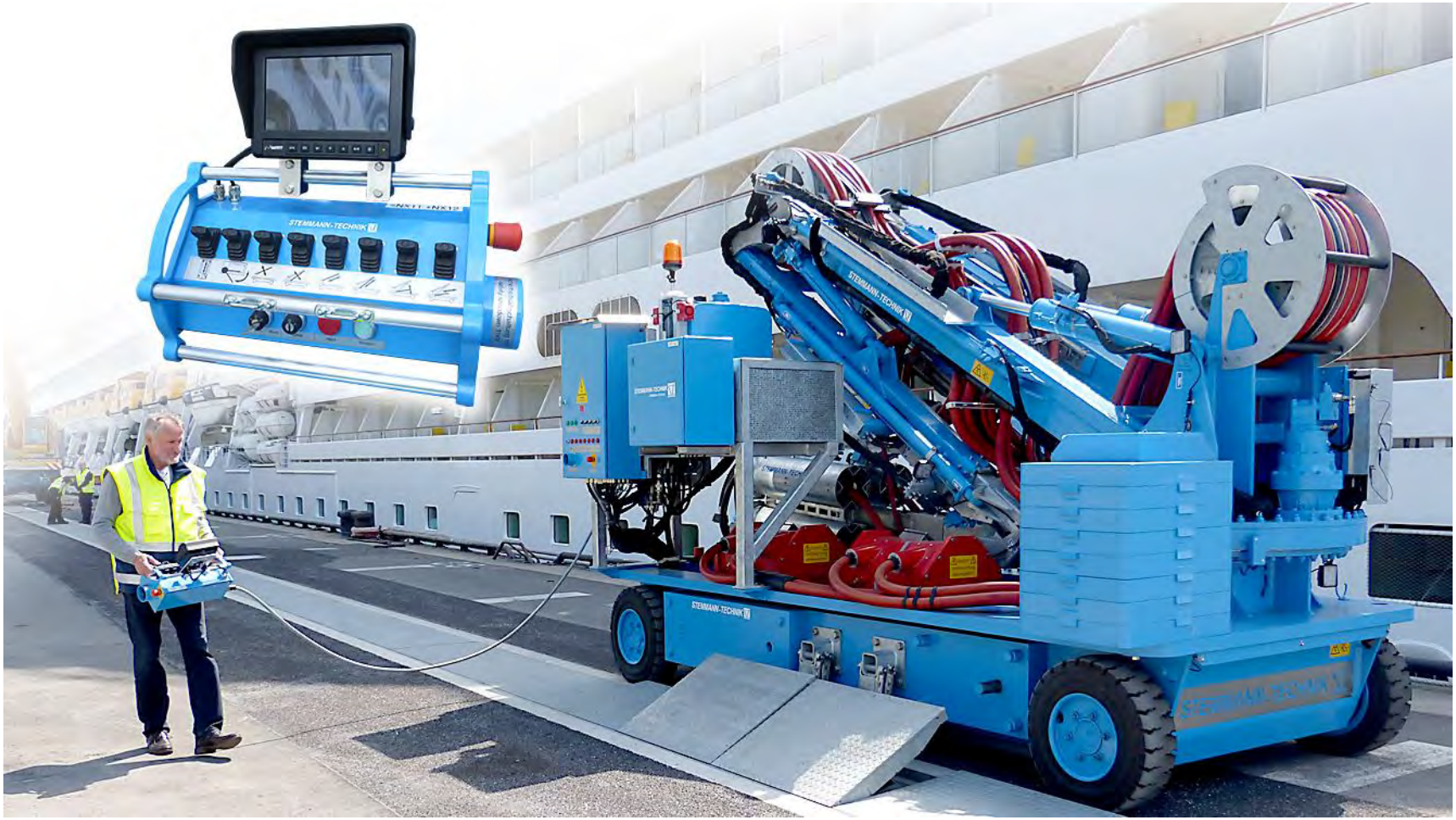
/// Onshore Power Supply for Cruise Liners

Control Panel



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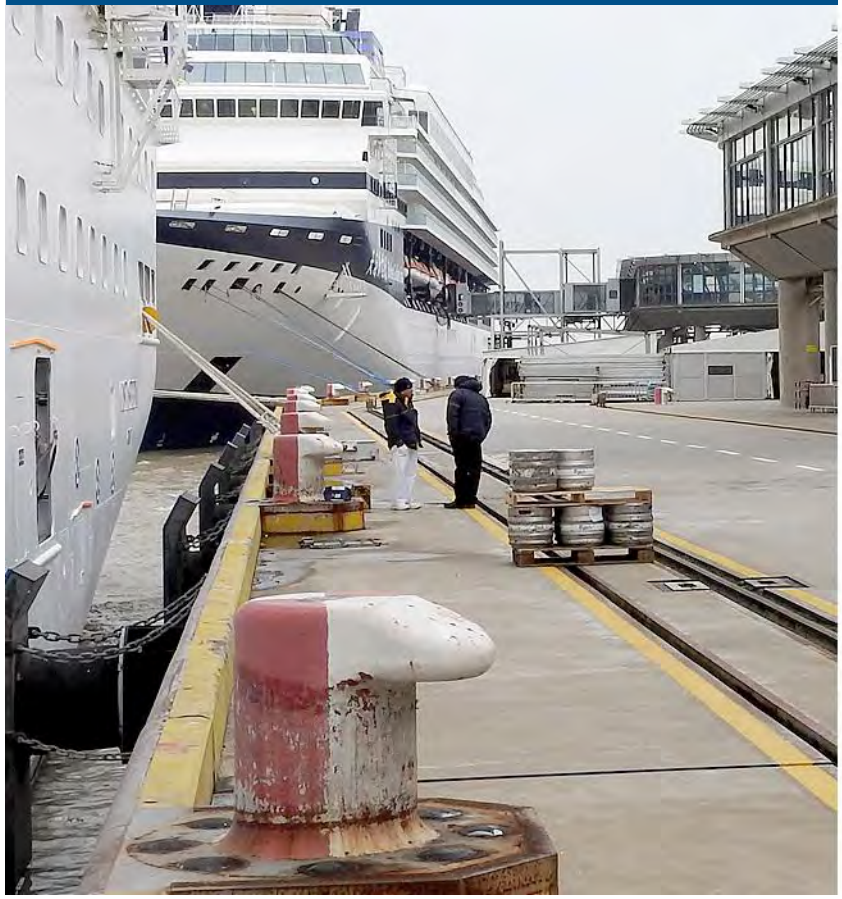
/// Onshore Power Supply for Cruise Liners

Story of the SAMP Shanghai Project

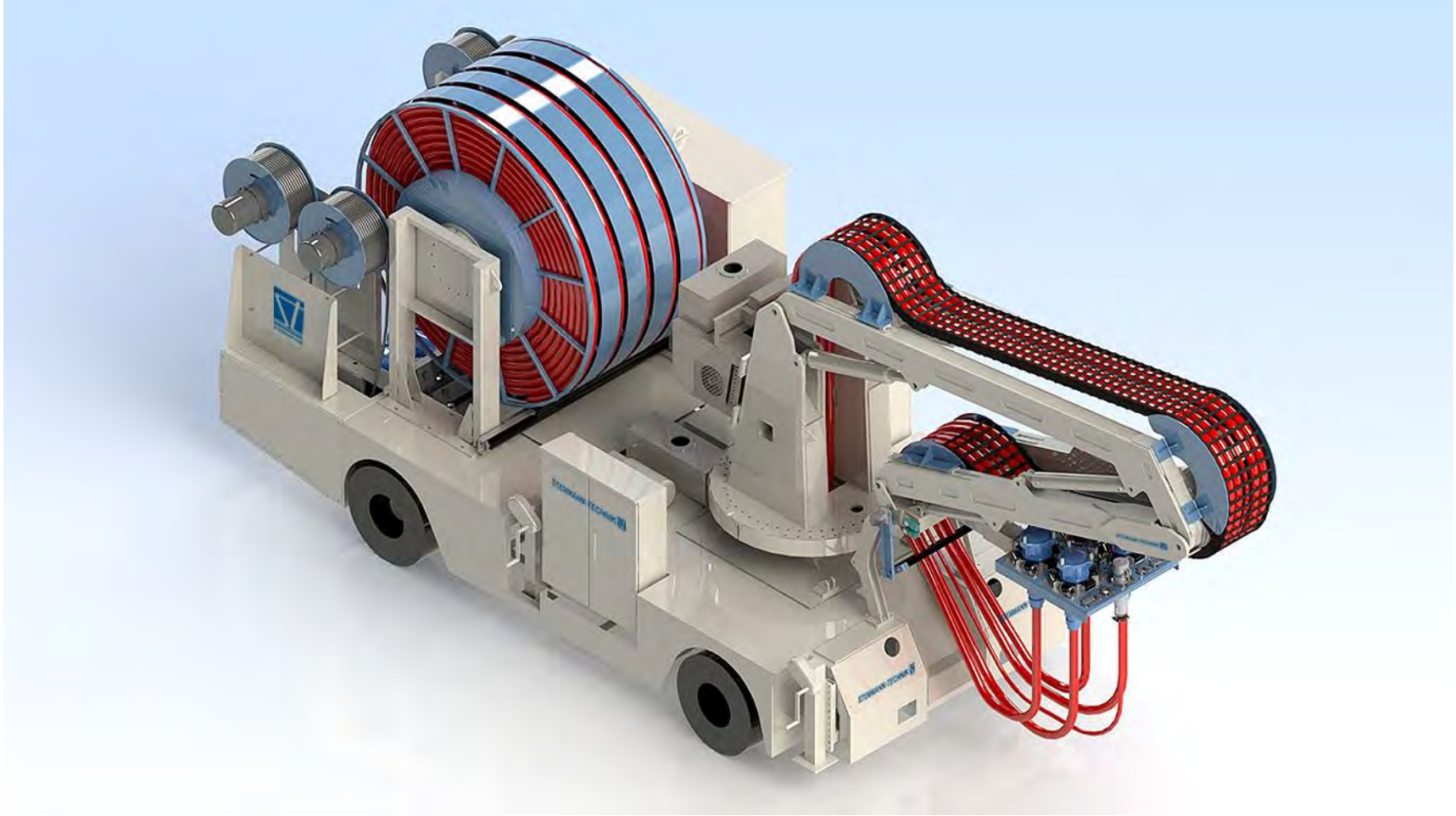
Terminal Situation



Ship´s hatch / Control Cabinet

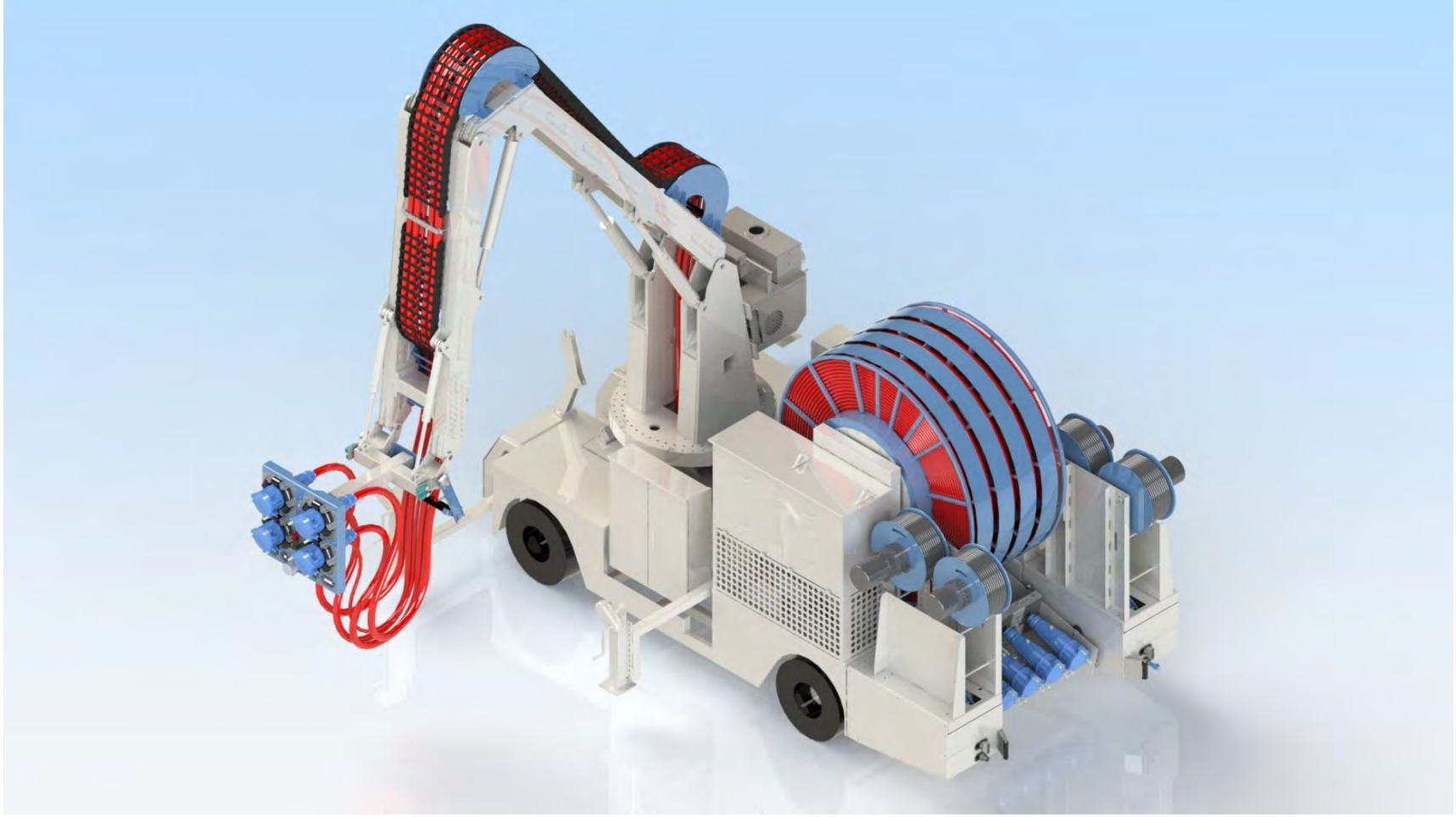
/// Onshore Power Supply for Cruise Liners

Story of the SAMP Shanghai Project



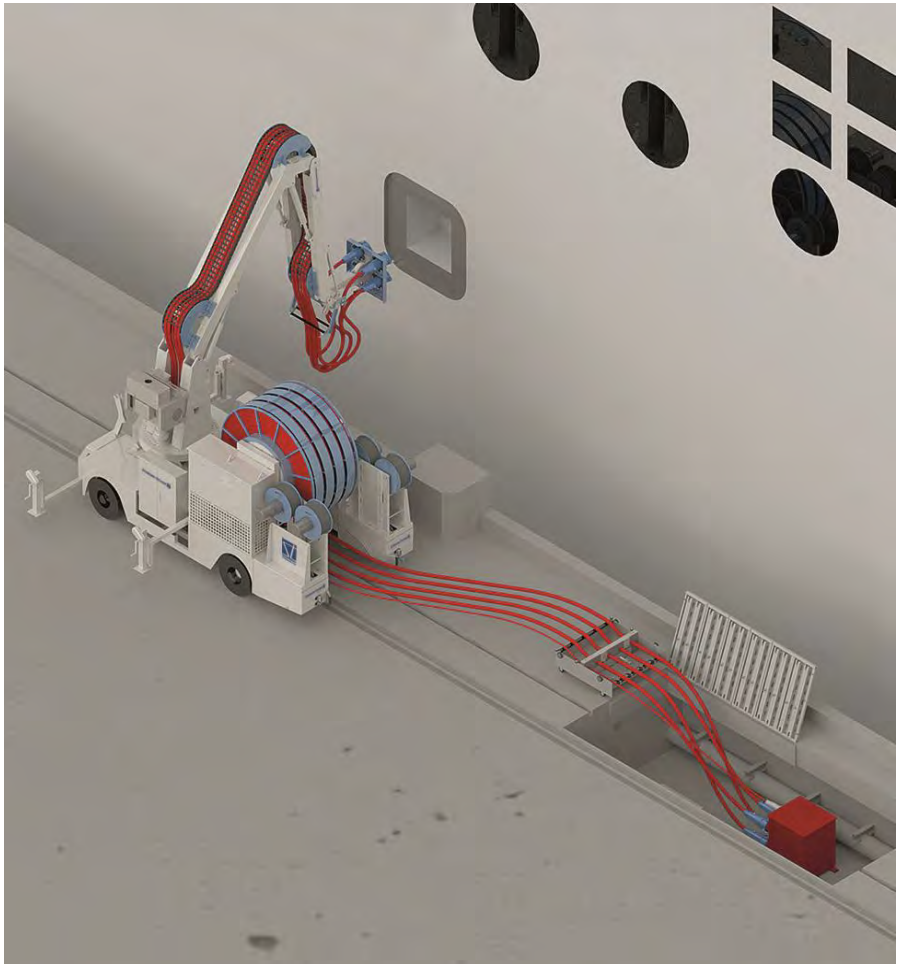
/// Onshore Power Supply for Cruise Liners

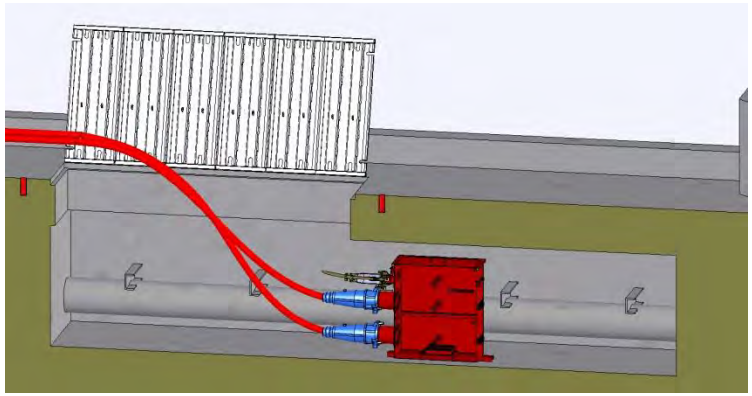
Story of the SAMP Shanghai Project



/// Onshore Power Supply for Cruise Liners

Story of the SAMP Shanghai Project





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/// Onshore Power Supply for Ferries

Quick Charging Connection via Pantograph Systems

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/// Onshore Power Supply for Ferries

Quick Charging Connection via Pantograph Systems

System especially for ferries that cover short distances	
120 cars / 360 passengers	Replacement of 2,000-hp diesel engine
Fully recharge in 10 minutes	Saving 264,000 gallons of fuel/year
Passenger service since 2015	Saving nearly 3,000 tons of CO_2/year
400 kW to cruise at 10 knots	Powered by 800 kW battery

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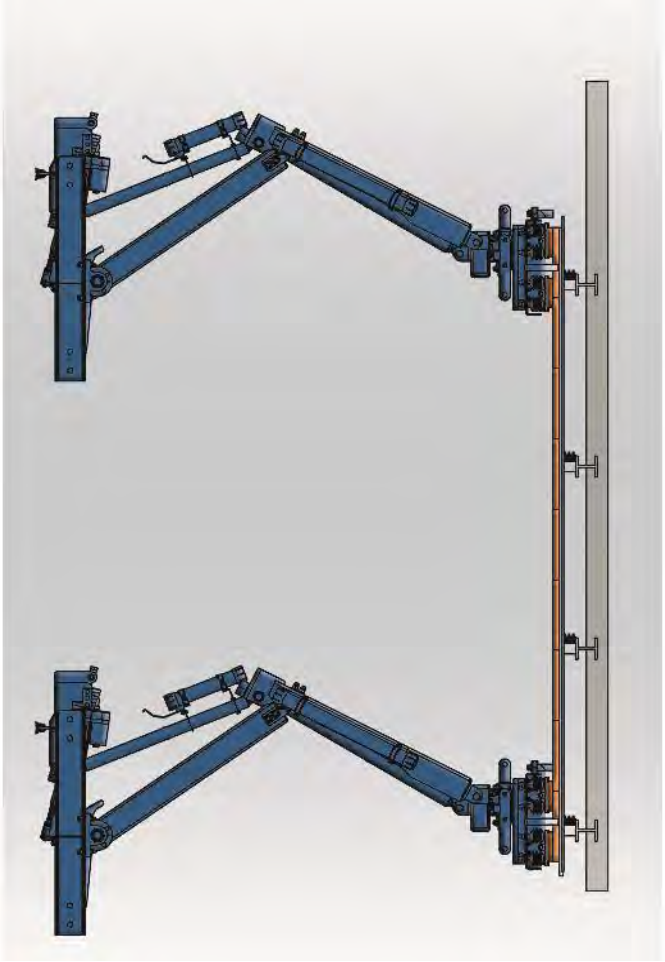
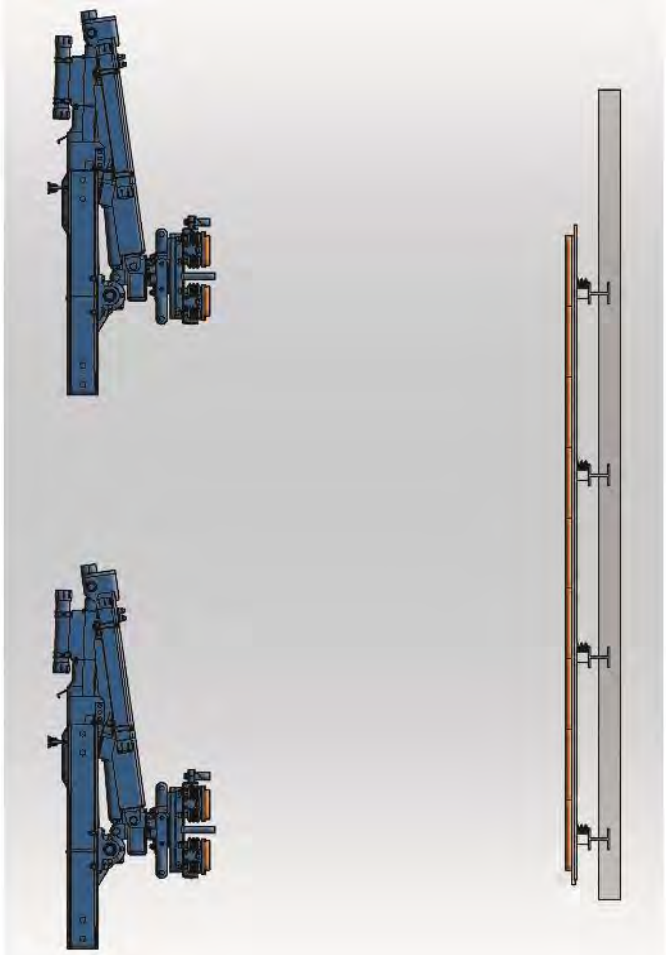
/// Onshore Power Supply for Ferries

Pantograph Systems (planning phase)

low tide

high tide





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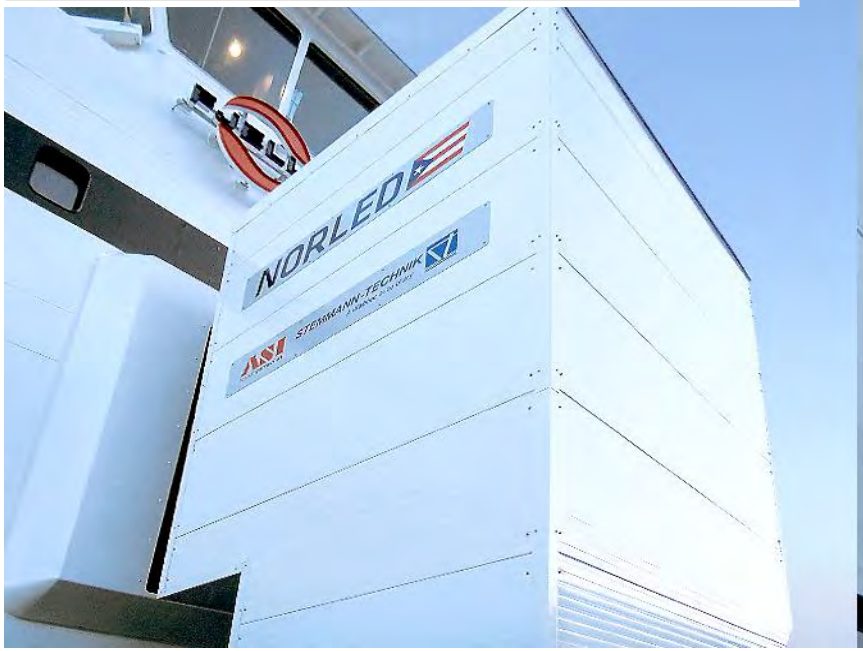
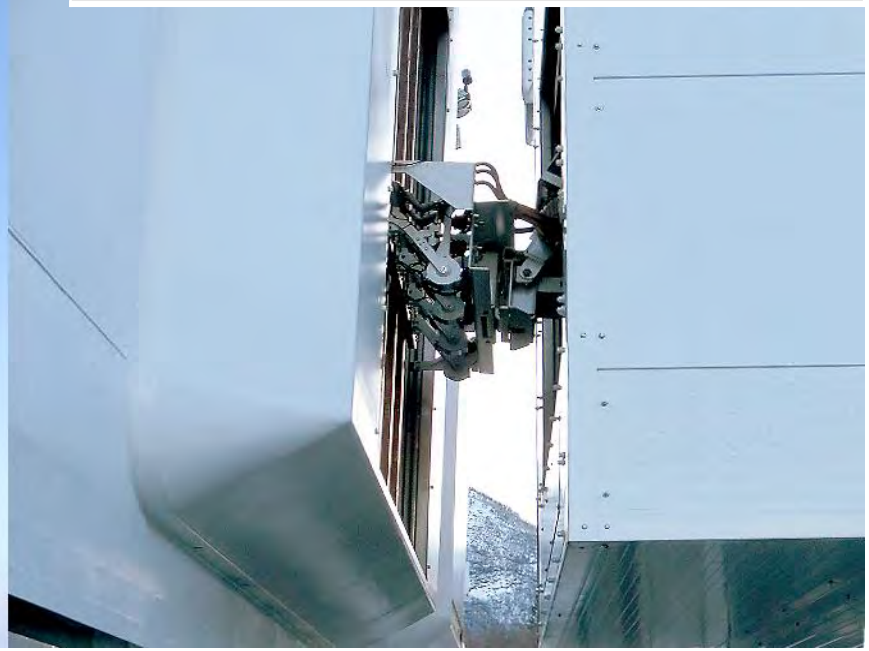
/// Onshore Power Supply for Ferries

Quick Charging Connection via Pantograph Systems

System especially for ferries that cover short distances

- Fully automated
- Connecting/disconnecting time only 7 seconds
- Compensates the ferry movement while docking
- System secured into attractive housing





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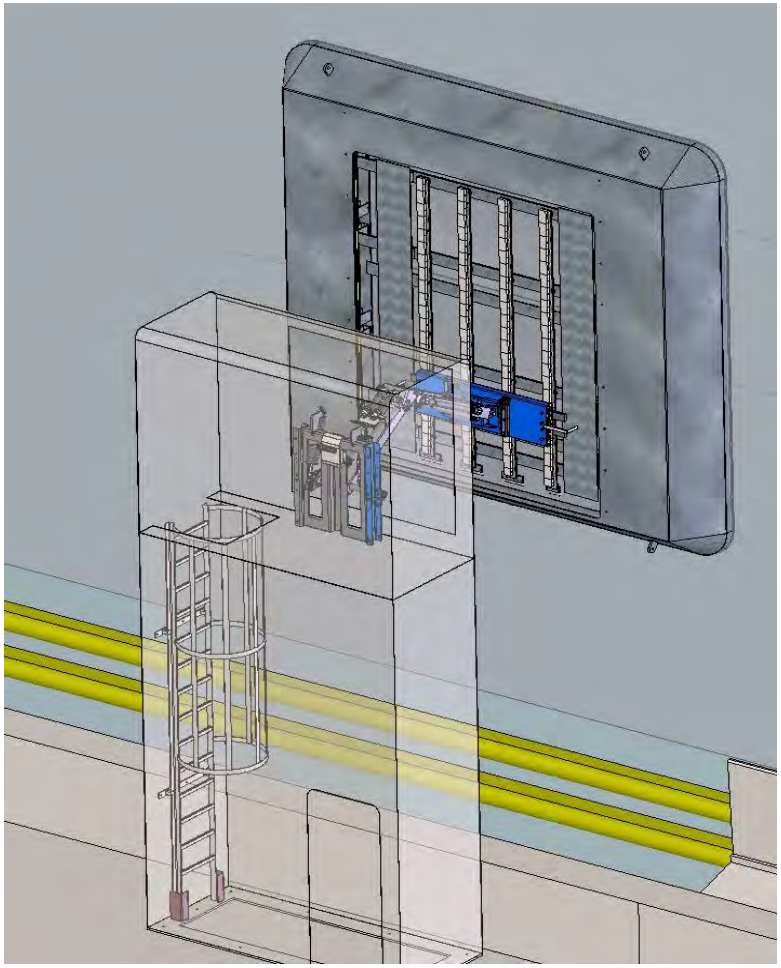
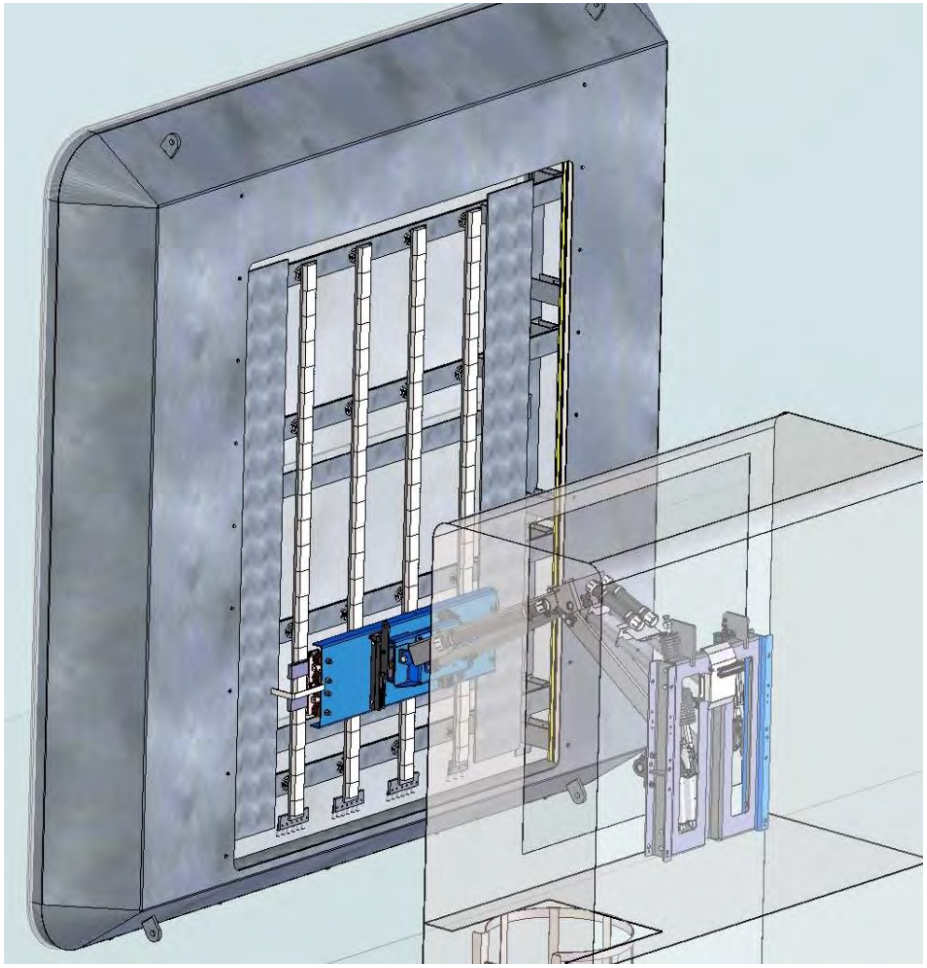
/// Onshore Power Supply for Ferries

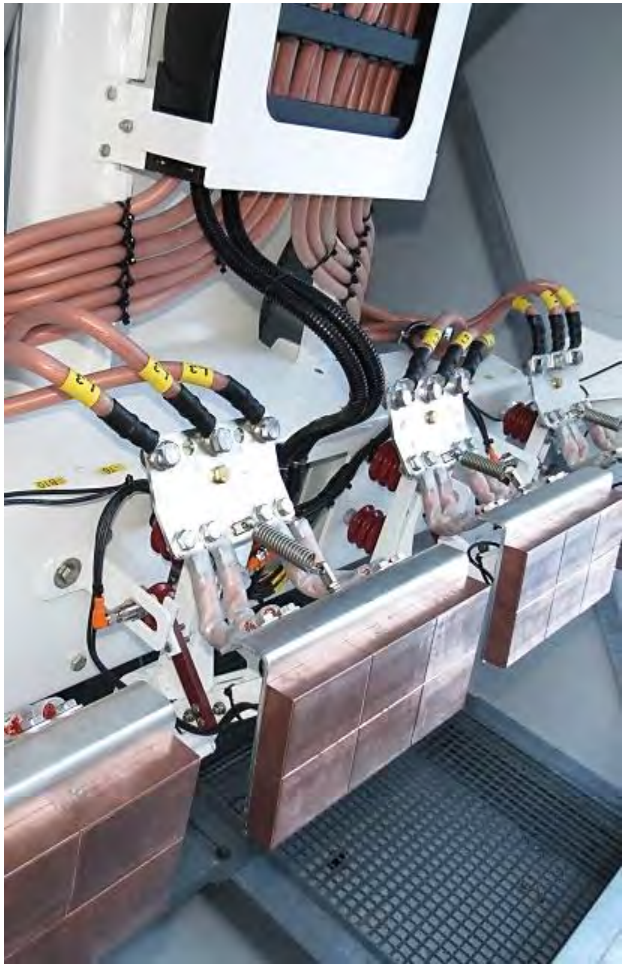
Pantograph Systems (planning phase)

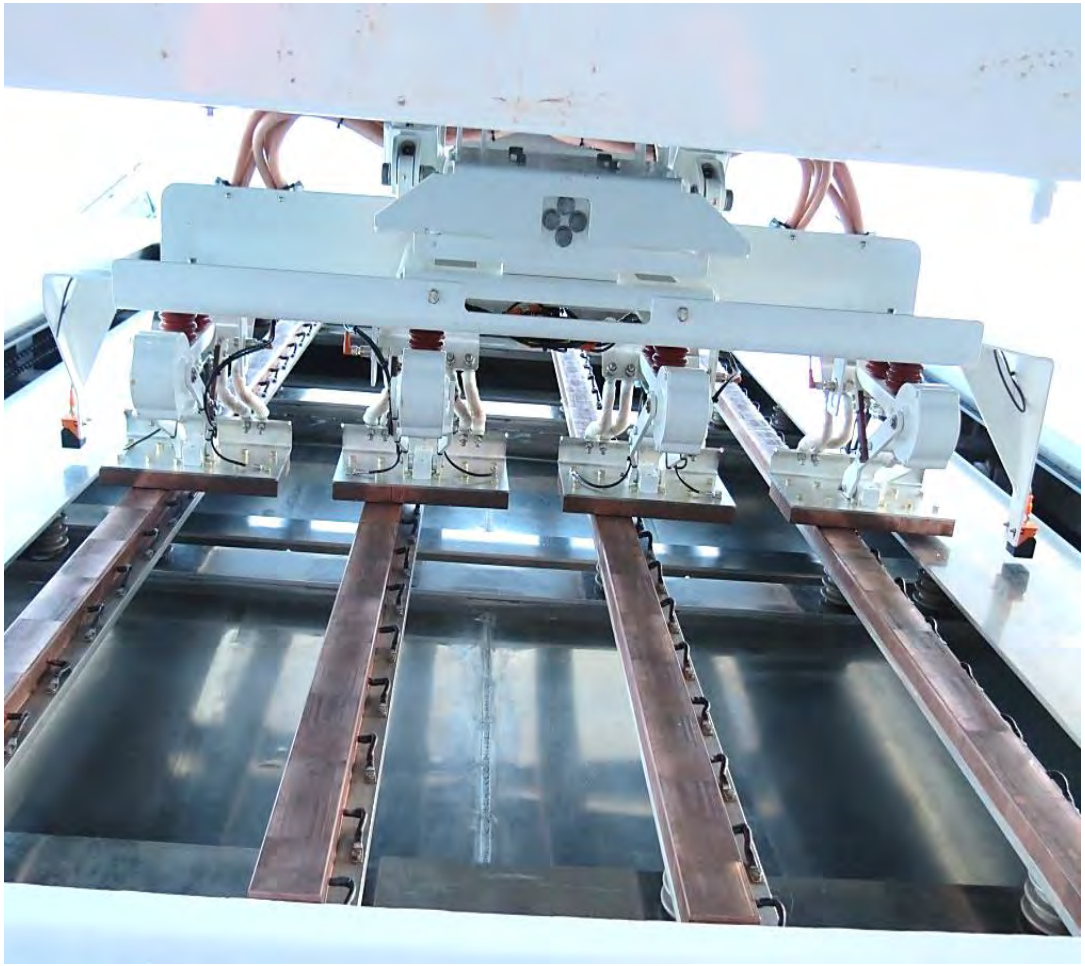




/// Onshore Power Supply for Ferries

Pantograph Systems (Real Situation)





/// Onshore Power Supply for RoRo Vessel or Offshore Vessel

Shore Systems

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/// Thank You for Your Attention

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