Alternative Maritime Power Systems
Daiel Hoffmans, International Sales Manager
Onshore Power Supply & Charging Systems
Reduction of Emissions in Ports

The emissions caused in the port area are a growing problem due to the increasing capacities of the ports.

The onshore power supply units will replace the diesel-powered vessel generators to a large extent.

The implementation of emission limit values and environmental specifications in general expedite this development.
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

1. Regional power grid
2. Transformation / frequency adjustment in the port
3. Connection mechanism at the quays
4. Container unit incl. cable reel
5. Vessel-internal power grid
Onshore Power Supply for Container Vessels

Onshore Power Supply via Cable Reel Container Systems

Onboard System
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 lengths depending on the local conditions.
Onshore Power Supply for Container Vessels

Onshore Power Supply via Mobile Socket Systems

Onshore System
## Onshore Power Supply for Container Vessels

### Container System Advantages

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>HC-container installation in the bottom storage row</td>
<td>requires no special housing installation on board.</td>
</tr>
<tr>
<td>Installation/cable pay-off</td>
<td>on port- or starboard side possible.</td>
</tr>
<tr>
<td>Constant tension on cable by torque motor</td>
<td></td>
</tr>
<tr>
<td>Excess tension-coupling for protection</td>
<td>from damage to the mechanical parts.</td>
</tr>
<tr>
<td>The operation is effected by means of a radio remote control</td>
<td></td>
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<tr>
<td>Decades of experience in the construction and manufacturing of cable reels</td>
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Onshore Power Supply for Cruise Liner
Onshore Power Supply via Mobile Carrier Systems
Onshore Power Supply for Cruise Liner

Vehicle in Action
Onshore Power Supply for Cruise Liner

History of the "SAMP Hamburg Altona Project"
Onshore Power Supply for Cruise Liner

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
Onshore Power Supply for Cruise Liner
Port Side / Cable Duct / Energy Chain
Onshore Power Supply for Cruise Liner
Transfer Vehicle / Cover Lifting Device with Cable Guideway
Onshore Power Supply for Cruise Liner
Telescopic Plug Holder System
Onshore Power Supply for Cruise Liner

Control Panel
Onshore Power Supply for Cruise Liner
Story of the "SAMPS Shanghai Project"

Terminal Situation

Ship’s hatch / Control Cabinet
Onshore Power Supply for Cruise Liner
Story of the "SAMPS Shanghai Project"
Onshore Power Supply for Cruise Liner

Story of the "SAMPS Shanghai Project"
Onshore Power Supply for Cruise Liner
Story of the "SAMPS Shanghai Project"
Electrical Charging System for Ferries
Quick Charging Connection via Pantograph Systems
Electrical Charging System for Ferries
Quick Charging Connection via Pantograph Systems

System especially for ferries that cover short distances

<table>
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<tr>
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<tr>
<td>120 cars / 360 passengers</td>
<td>Replacement of 2,000-hp diesel engine</td>
</tr>
<tr>
<td>Fully recharge in 10 minutes</td>
<td>Saving 264,000 gallons of fuel/year</td>
</tr>
<tr>
<td>Passenger service since 2015</td>
<td>Saving nearly 3,000 tons of CO₂/year</td>
</tr>
<tr>
<td>400 kW to cruise at 10 knots</td>
<td>Powered by 800 kW battery</td>
</tr>
</tbody>
</table>
Electrical Charging System for Ferries
Pantograph System (planning phase)

low tide

high tide
Electrical Charging System 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

STEMMANN-TECHNIK
Electrical Ferry
Pantograph System (planning phase)
Electrical Ferry
Pantograph System (real situation)
Onshore Power Supply for RoRo Vessel or Offshore Vessel
Thank You for Your Attention

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