

State of Port Electrification in 2021 & Future Outlook

Challenges in designing cost efficient solutions for port electrification

holistic approach

Christophe Gaigneux
Sales & Product Manager
November 23th, 2021



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Facts :

90 % of world trade transit by sea

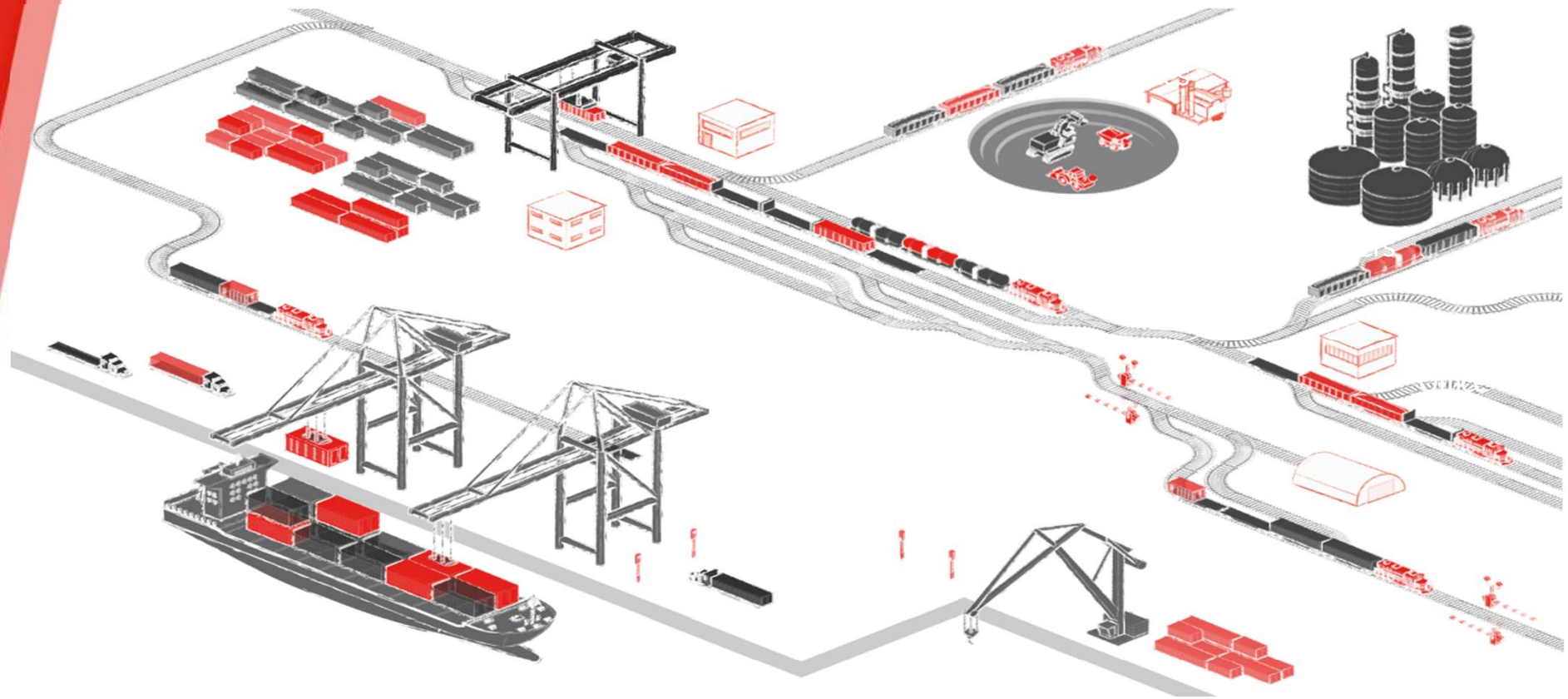
60 % of the world population lives nearby the sea

Electrification & Shore Power cuts off :

Vibration, Noise and Air Emissions

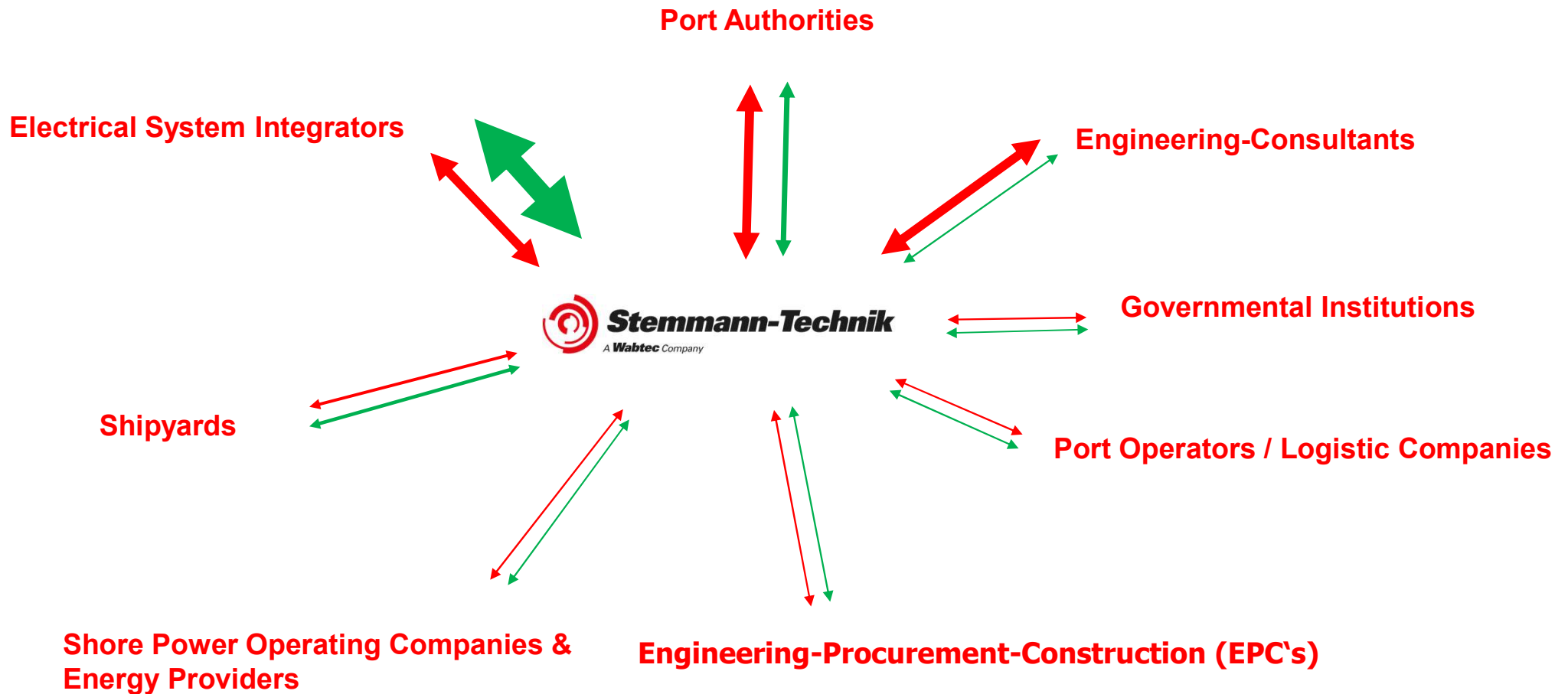
How Wabtec enable you to reduce Air Emissions : Nox, Sox, PM & CO₂ ?

Holistic approach

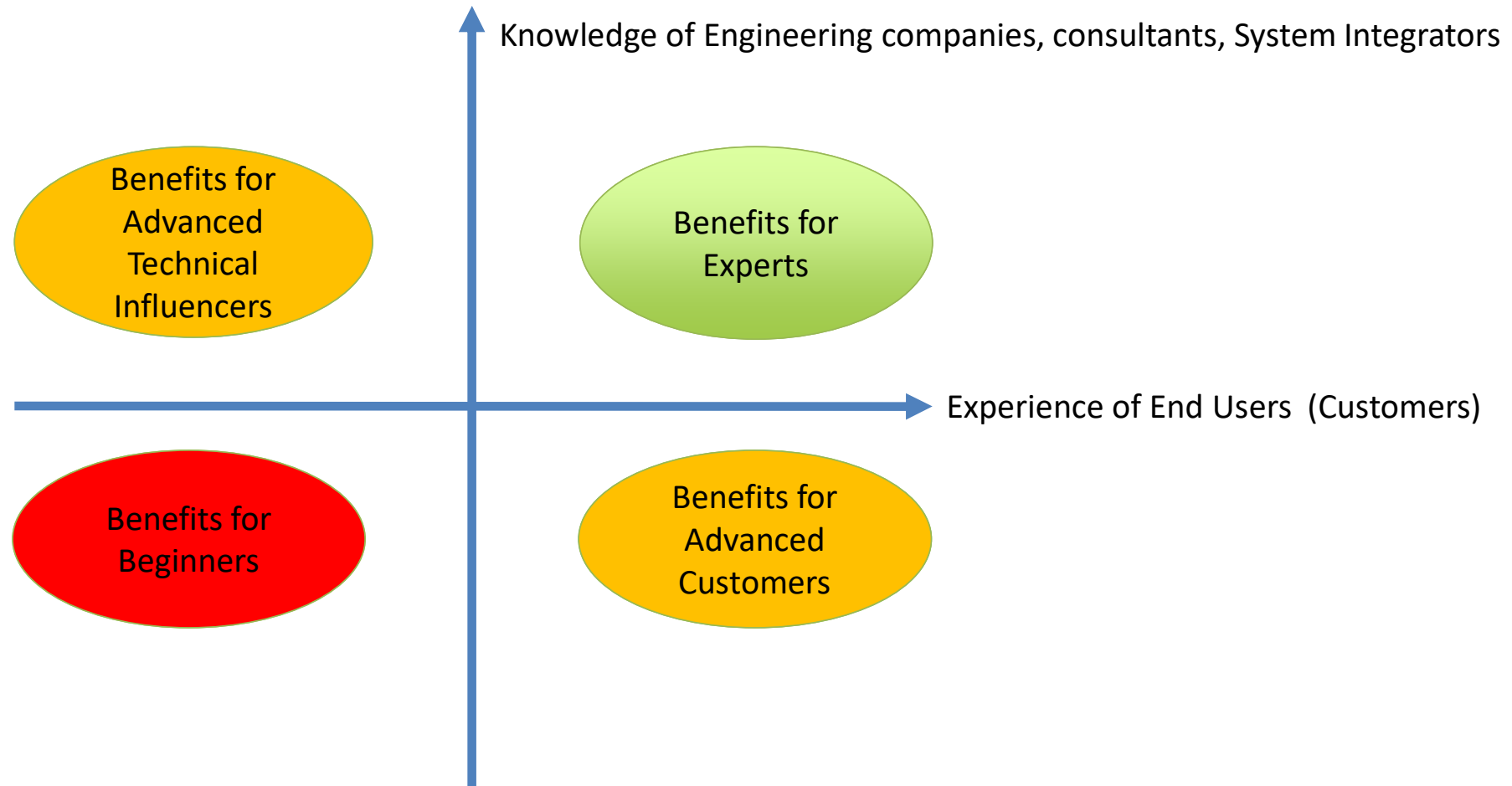


/// CLUSTERED GROUPS OF INFLUENCERS : **PRE-TENDER-PHASE** / **TENDER PHASE**

influence in % to get the job



/// Experience vs Knowledge : Customers Profile Matrix





Battery Electric
Locomotive

FLX DRIVE



Cloud & Digital
Solutions

Port Community System
Intermodal Terminal Operating System
Yard Planner
Port Optimizer™

Port & Terminal

RTG, STS

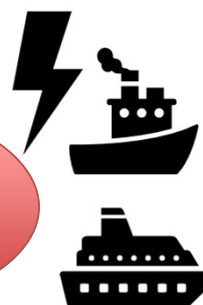


Electrical
Interfaces &
Charging devices
for mobile Assets



Commercial vehicles, e-buses, AGV

Shore Power
Solutions



FerryCharger : Electric & Hybrid Vessels
ShoreConnect (IEC 80005) : Ferries, Cruises, Containers vessels

Port Optimizer Value Story



Visibility

Eliminate cargo speculation with ~14 days of advance visibility.



Predictability

Dynamic ETAs, machine learning and other analytics drive predictive performance. Throughput Facilitates immediate throughput improvements to cargo flow.



Productivity

8-12% projected total productivity increase as the solution scales across the entire port.



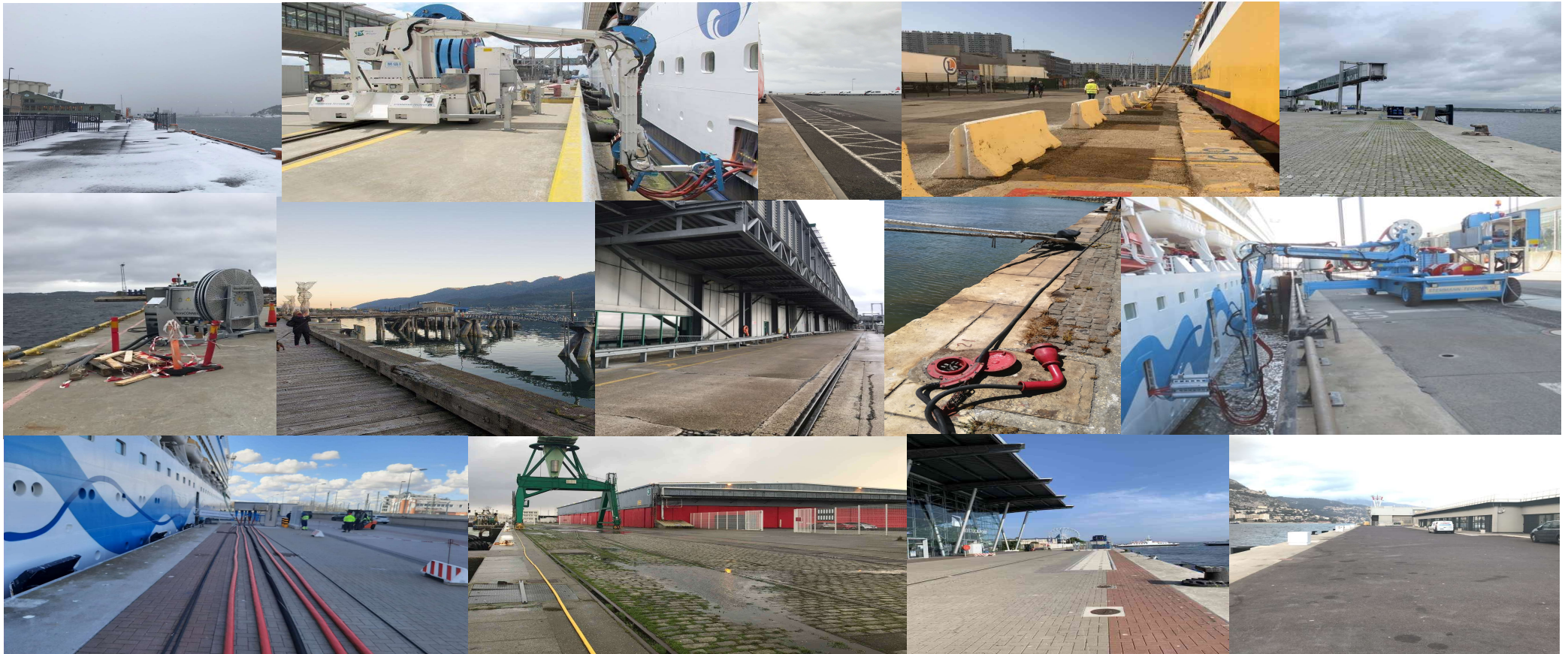
Environmental

Facilitates truck flow through terminals, enabling the potential reduction of carbon emissions.



/// All Men are Created Equal – All Ports are Created Different : No Average, no Norm

“One solution does not fit for all“ in port & Maritime ecosystem



/// ShoreCONNECT : Stationary Cable Dispenser (HV & LV)

..cable dispenser, low and high voltage for various vessel (ferries, workboats, OSV's, tugboats)



© Rodritol



© Seehafen Kiel

/// ShoreCONNECT – Mobile Socket System

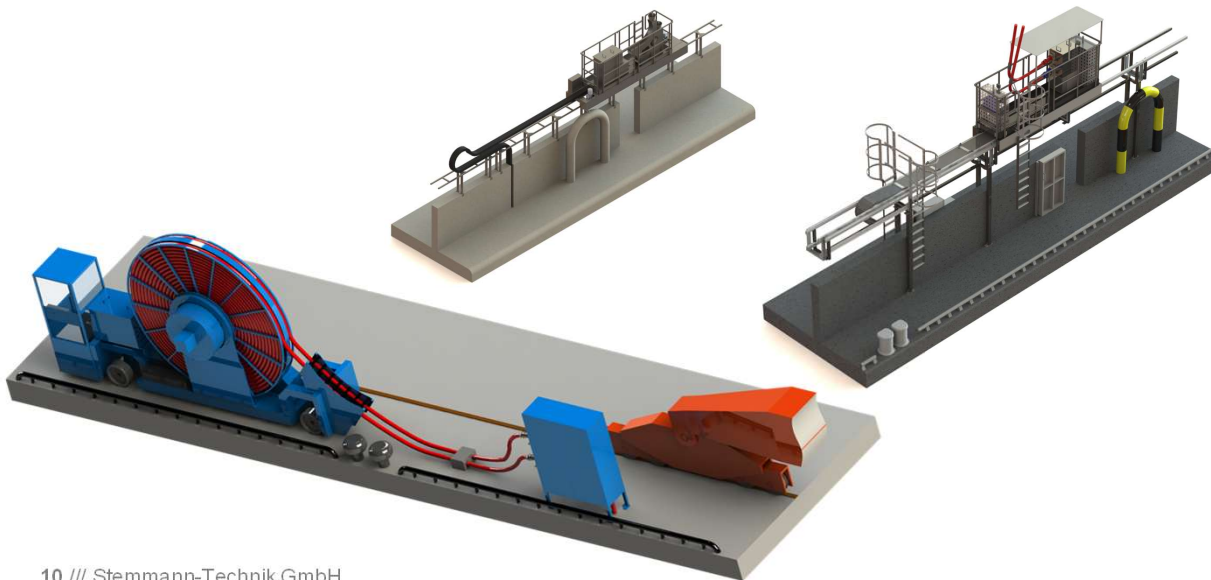
...for container vessels

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

Flexible mounting heights depending on the local conditions.

Flexible traveling lengths depending on the local conditions.

<https://www.youtube.com/watch?v=w945Hh8xj-Y>



/// ShoreCONNECT for RoPax ferry – Mobile HV Ferry Unit



Cruise CMS Guideline / support for decision


Ecosystem thinking

Christophe Gaigneux

Sales & Product Manager

October, 2021



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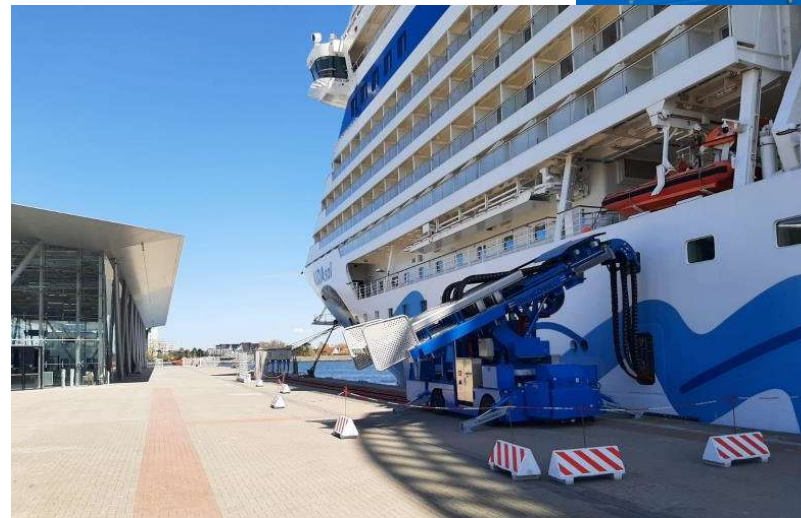
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/// ShoreCONNECT for Cruise



/// Onshore Power Supply for Cruise :

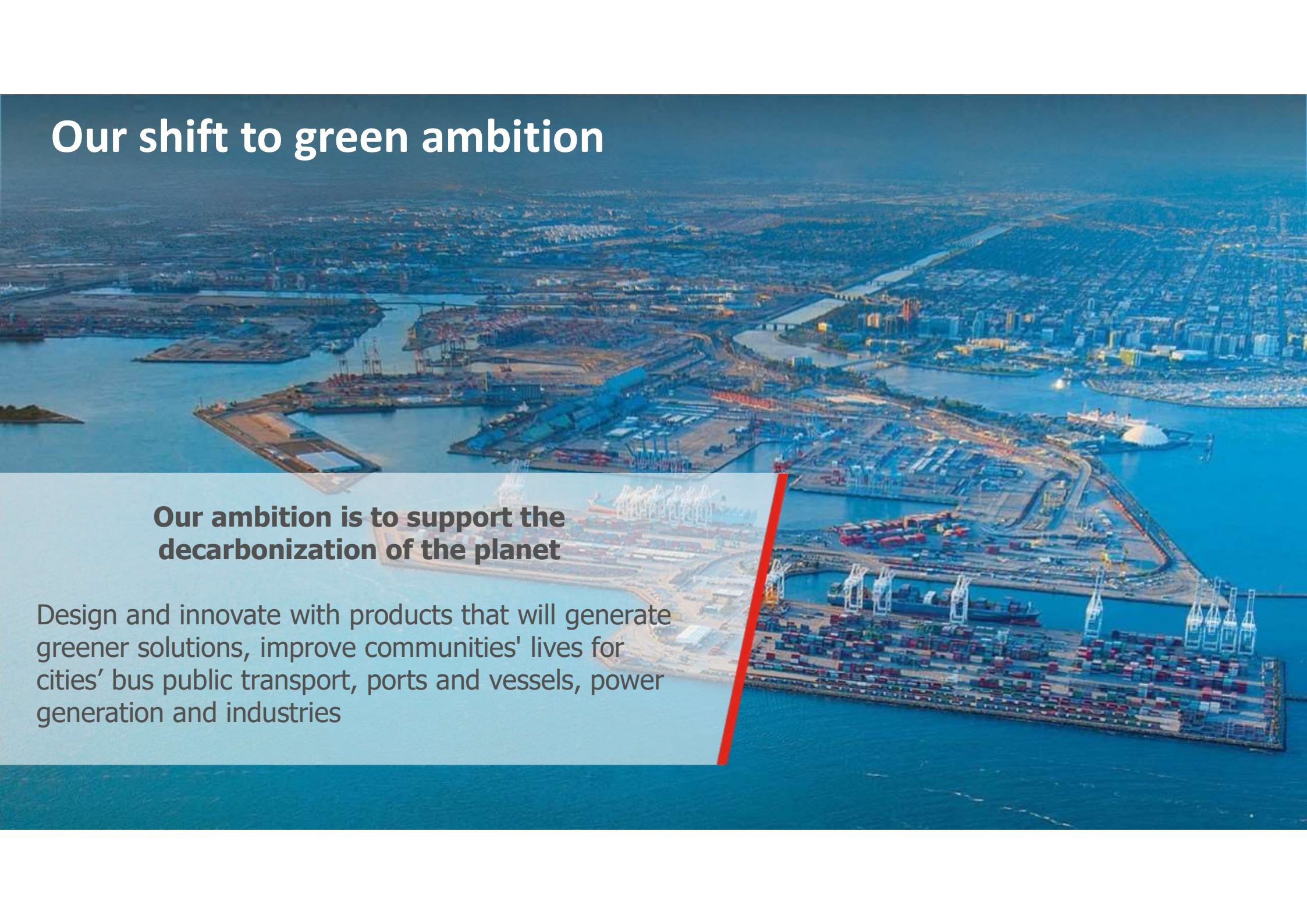
...it can be handled by any person



Our shift to green ambition

Our ambition is to support the decarbonization of the planet

Design and innovate with products that will generate greener solutions, improve communities' lives for cities' bus public transport, ports and vessels, power generation and industries



/// Take Away : Wabtec solutions for you

- **Safer :** **Safety matters**
- **Smarter :** **Easy Operation matters**
- **Greener :** **Decarbonisation matters**





Christophe Gaigneux

+33 6 59 03 77 28



christophe.gaigneux@wabtec.com


Sales & Product Manager

Founder & Member of EOPSA



Stemmann-Technik, a Wabtec Subsidiary
Niedersachsenstraße 2 | 48465 Schüttorf | Germany
| www.stemmann.com



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