

HUBER+SUHNER

Energy transition:
**The future
of transport
is electric.
Land. Sea. Air.**



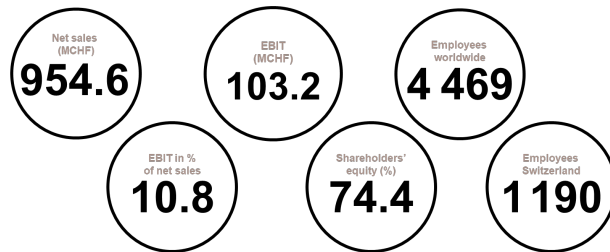
Megawatt Charging: Perspektive eines Technologie- Weltmarktführers



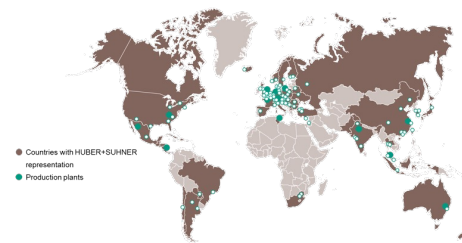
HUBER+SUHNER

Overview

Key Corporate Figures 2022



Global Presence



Manufacturing footprint

- Switzerland (HQ)
- United Kingdom
- Germany
- France
- Poland
- USA
- Mexico
- Puerto Rico
- India
- Tunisia
- China
- Malaysia
- Australia

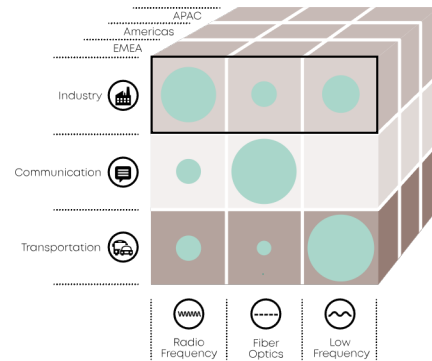
Connectivity solutions - 3x3 Strategy:

Three core technologies

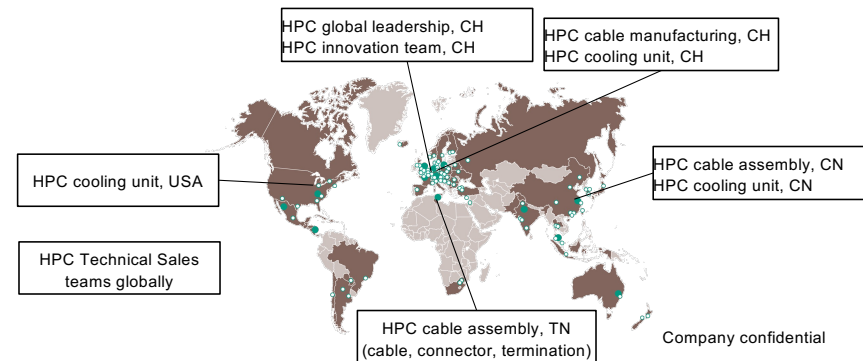
- Radio frequency
- Fiberoptics
- Low frequency

Three core markets

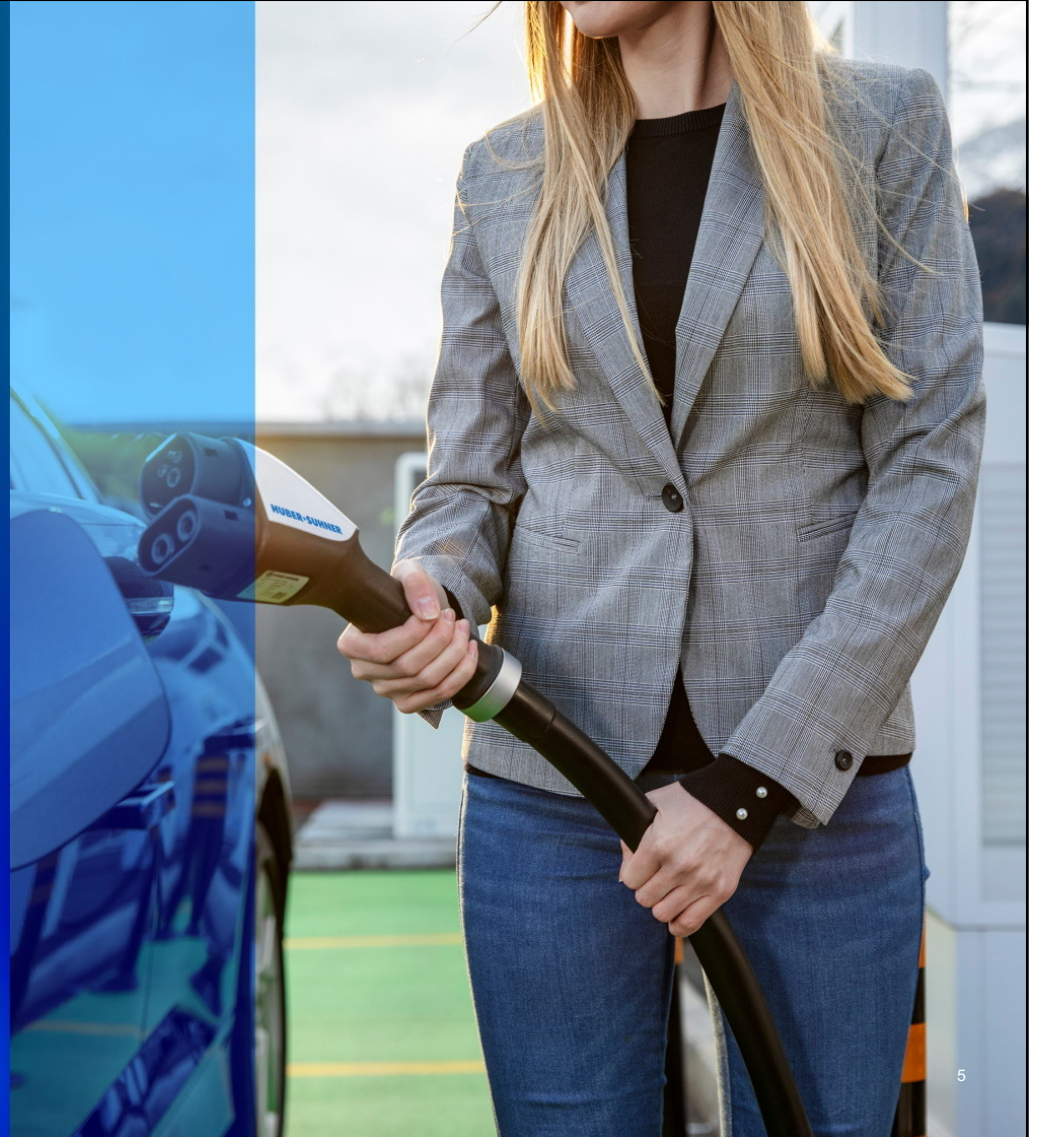
- Industry (incl. HPC, Energy)
- Communication
- Transport

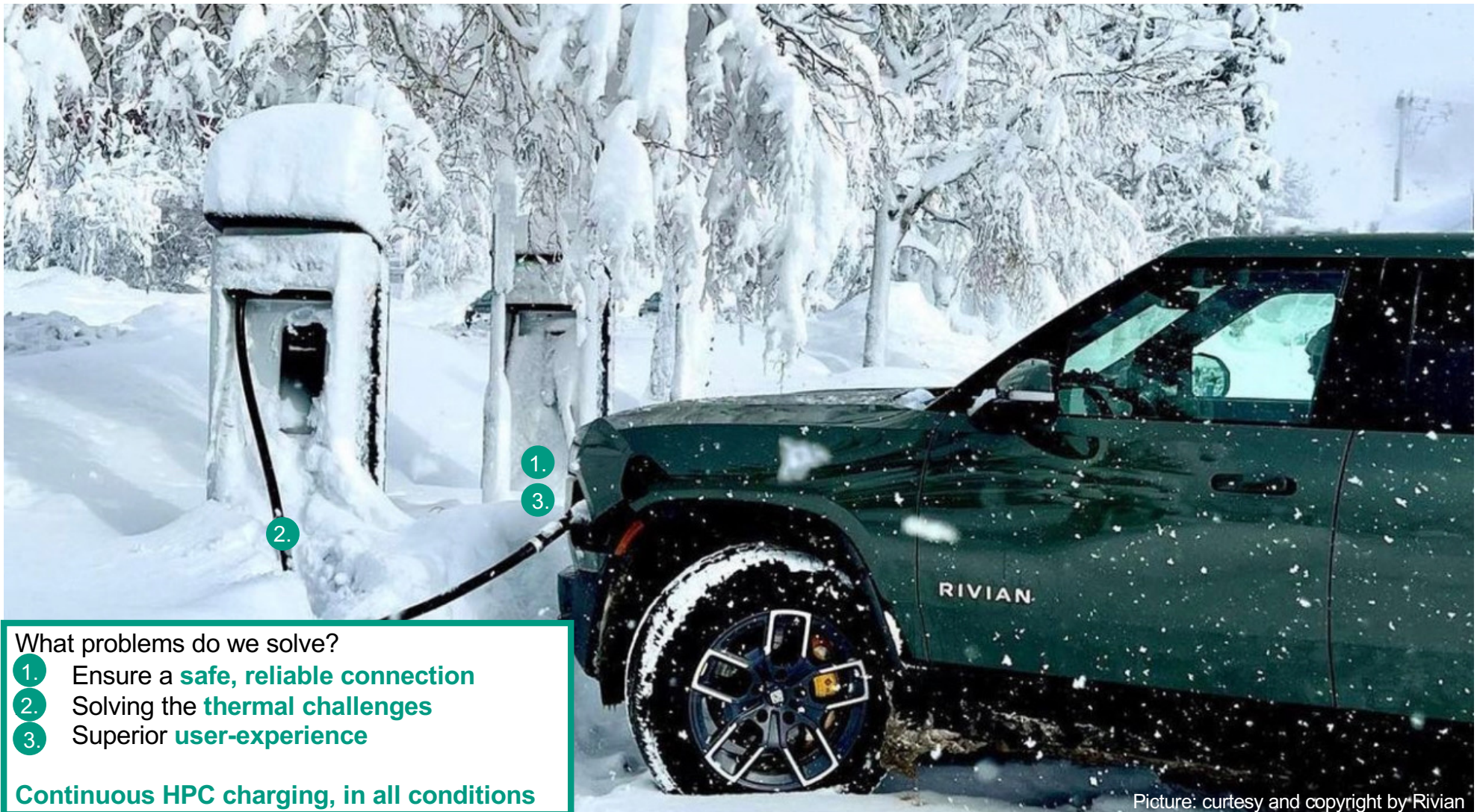


High Power Charging (HPC)



High Power Charging





What problems do we solve?

1. Ensure a **safe, reliable connection**
2. Solving the **thermal challenges**
3. Superior **user-experience**

Continuous HPC charging, in all conditions

Picture: curtesy and copyright by Rivian

Our legacy in High Power Charging



H+S pioneered the development in HPC

2016



Roll-out of RADOX® HPC in US market



RADOX® HPC system global leader for high performance

2019



RADOX® HPC600 GB/T New generation with GB/T interface



2017
World's first certified liquid cooled cable system (RADOX® HPC)



2018
Roll-out of RADOX® HPC system in EU market, spearheaded by IONITY.



2023
Breakthrough in megawatt charging RADOX® MCS 1500



Fast charging in North America



HPC500 is the choice no.1 for the leading CPOs in North America for its HPC charging infrastructure needs



IONITY enables electric travel across Europe



HPC 500 is the choice no.1 for the leading CPOs in Europe for their HPC charging infrastructure needs



Europe's largest EV Charging Station When the experience goes beyond charging.



Sortimo Innovation Park, Zusmarshausen, Germany

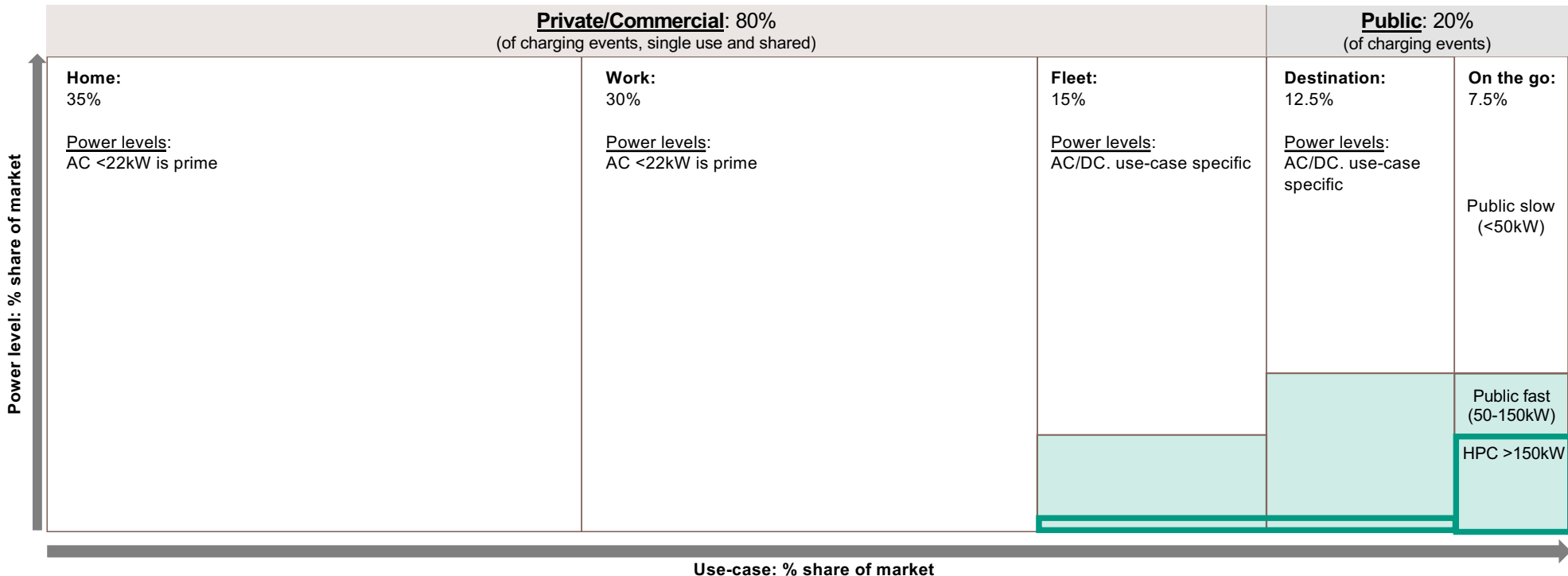
© picture: eLoaded GmbH

EV Charging Infra market: where we play?

HPC Team assessment

Total market (DC fast charging: >50kW)

Addressable market (High Power Charging: >150kW)



HUBER+SUHNER is focused in bringing essential and value-adding solutions to HPC customers worldwide

Note: accessible market and market share defined on unit basis

The breakthrough in
Megawatt Charging
has arrived

Access
NOW

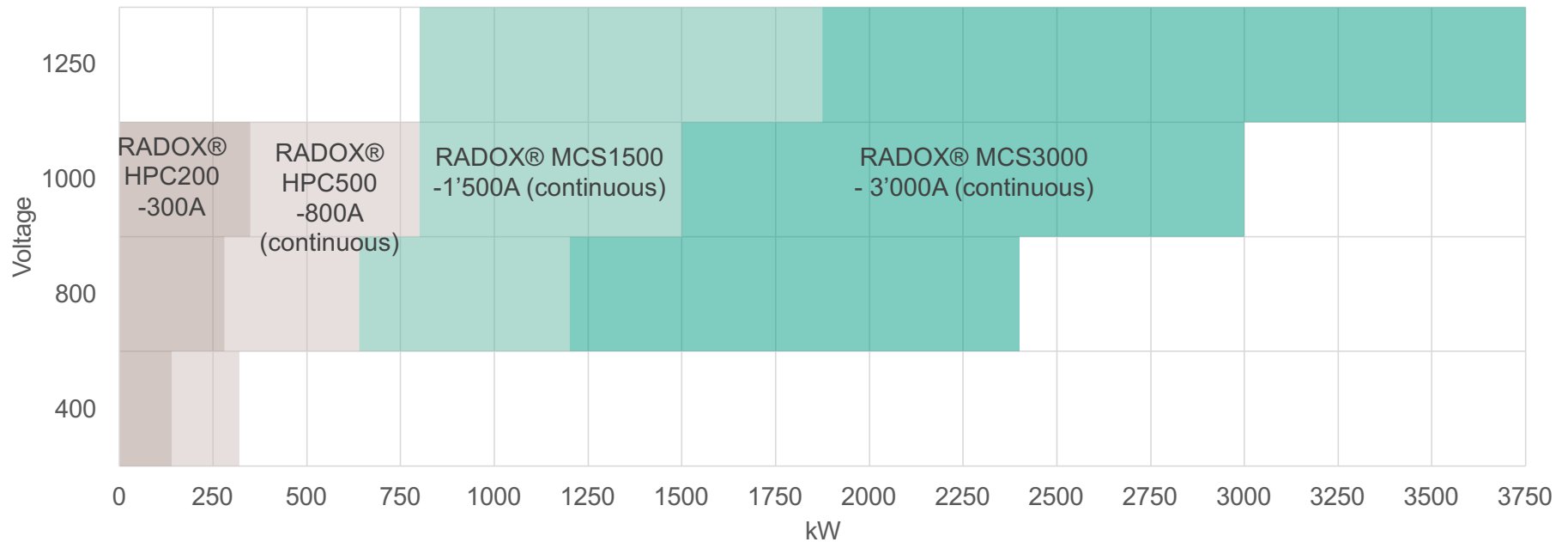
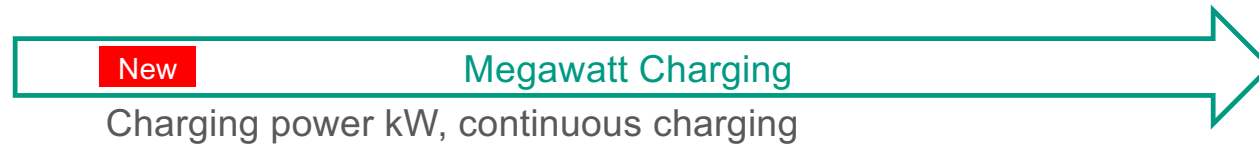


HUBER+SUHNER

Our ambitions in Megawatt Charging:

**Enabling a safe, efficient
and ultra-fast charging
experience for heavy duty
electric vehicles at up to
4,5 MW (3000 Amps)
continuous charging.**

HUBER+SUHNER the leader in High Power Charging



Electric heavy truck charging: 100km in 3 minutes¹⁾

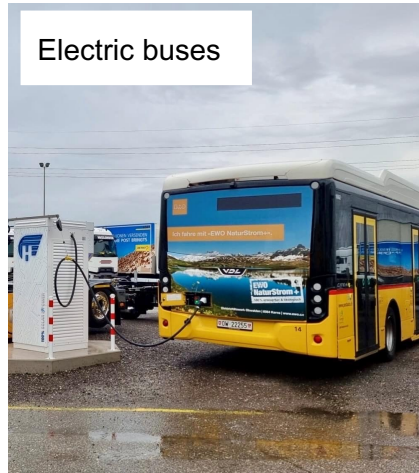
1) Energy consumption: 100kWh / 100km (Mercedes-Benz eActros LH); Energy supply: 1875kW (RADOX® MCS1500), continuous charging

Megawatt Charging: Market segments

Electric trucks



Electric buses



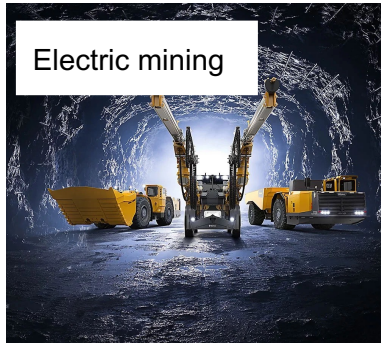
Electric marine



Electric special purpose vehicles



Electric mining



Electric agriculture



Electric construction



Electric aviation



Designwerk Mega Charger



Resource: https://www.linkedin.com/posts/designwerkgroup_dw-designwerk-emobility-activity-7041397151259611137-N6rh?utm_source=share&utm_medium=member_desktop

Meet Sparky, the world's first electric tugboat in operations, in Auckland NZ



PERFORMANCES

Bollard pull ahead	70 t
Bollard pull astern	65 t
Speed	12 kn

*Specified performances in full electric mode (battery powered)

PROPULSION SYSTEM

Main engines (electric)	2x Ramme TW 1400r_L
Total power	3700 kW at 500 rpm
Azimuth thrusters	Kongsberg Maritime US 255 P30 FP
Battery capacity	2782
Propeller diameter	3000 mm
Forced ventilation	38.000 m ³ /h
Exhaust emission	IMO Tier III certified

DAMEN

Resource: [Sparky, the world's first full sized, electric tugboat, starts operating in Auckland](#)

The world's first zero-emission fast ferry goes in operation, in Norway



- Cruising speed during operation: 23 knots
- Max speed: 27 knots
- Length: 30 meters. With: 9 meters.
- Battery capacity: 1524 kWh (Corvus Energy)
- Electric engines: 2x550 kW
- Charge capacity: 2,3 MW

Resource: [The world's first zero-emission fast ferry is ready for operation – Maritime CleanTech](#)

Port of Stavanger picks Blueday Technology's shore power system in megawatt class



Resource: [Port of Stavanger picks Blueday Technology's shore power system - Offshore Energy \(offshore-energy.biz\)](https://www.offshore-energy.biz)

E-Cat Ferry: Helping German ferry operator Reederei Norden-Frisia on its vision for a green future



Resource: [Sustainable synergy - Damen](#)

17 November 2023 | Megawatt Charging: the future of transport is electric | HPC Market Management | S. Buri

Company confidential

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#availabilitymatters



HUBER+SUHNER HPC:

We help fast-charge the EV revolution

Backup

Stefan Buri

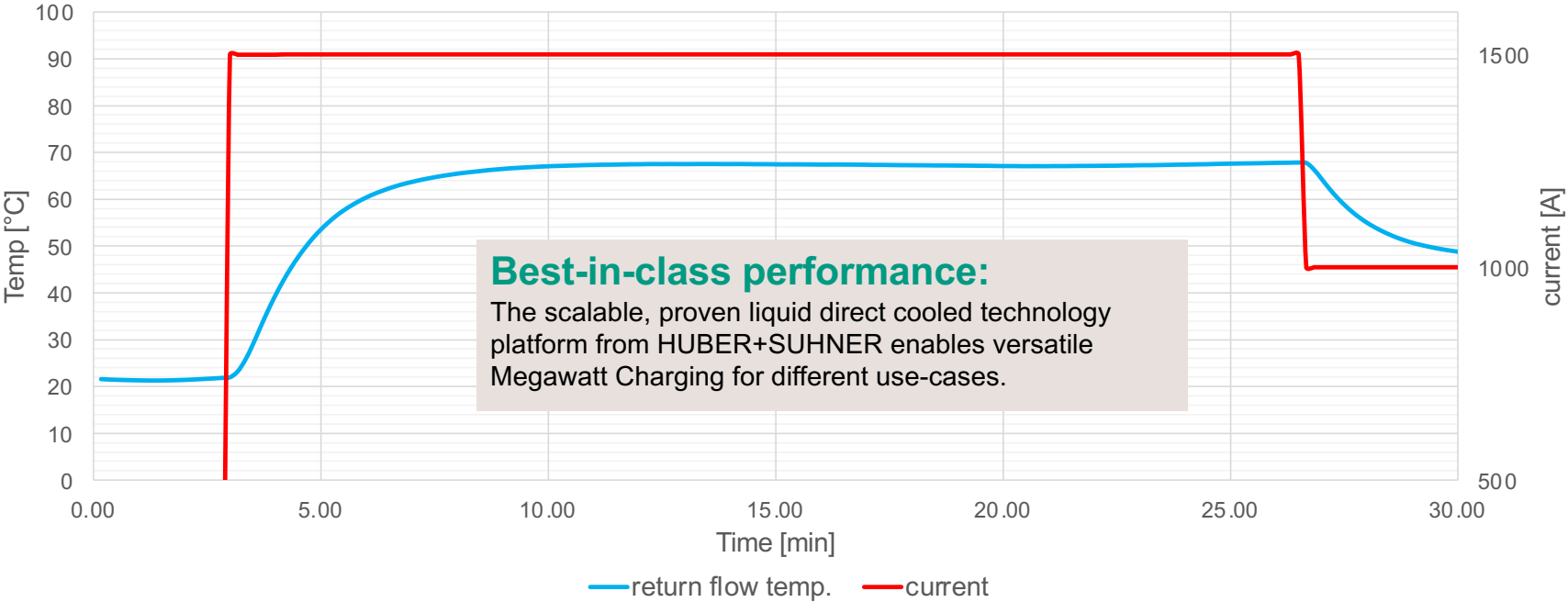
Vice President Market Mgt High Power Charging

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RADOX[®] MCS1500: continuous charging



Set-up: RADOX MCS1500; cable length 6m; ambient temperature: 50°C; cooling unit WKW

RADOX[®] MCS1500: Key benefits

Built on HUBER+SUHNER **superior technology** in HPC.

Reliable, robust and low TCO.

Best-in-class performance thanks to liquid direct cooled cable technology (patent pending).

Continuous charging 1'500A at ambient temperature 50°C.

Maintenance free system, consisting of connector, cable and cooling unit.

Safe and biodegradable dielectric coolant.

Ergonomic and lightweight system for superior user-experience.



Photo: © Designwerk Technologies AG

The background of the slide is a dark blue field filled with a complex network of glowing blue lines and nodes. The nodes are small, bright blue spheres of varying sizes, and the lines are thin, light blue streaks that crisscross the entire area, creating a sense of interconnectedness and data flow. The overall aesthetic is futuristic and technological.

Connecting – today and beyond