



# Empowering the **next level** of e-mobility

CharIN – Charging Interface Initiative e. V.

**Setting up the Right EV Infrastructure**

CEBC MENA Hybrid Mobility Seminar

November 25<sup>th</sup>, 2021



# General Goal

The CO<sub>2</sub> neutral Mobility



CHARIN

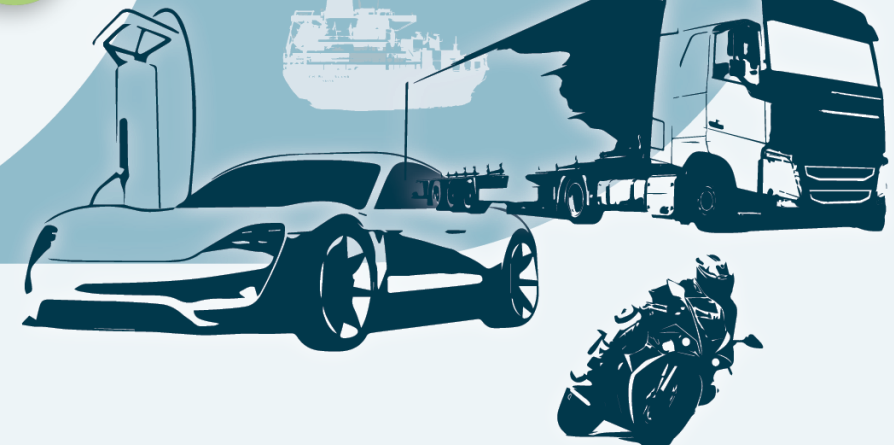
**Solution provided by the  
Combined Charging System (CCS)**



CO<sub>2</sub> neutral  
energy

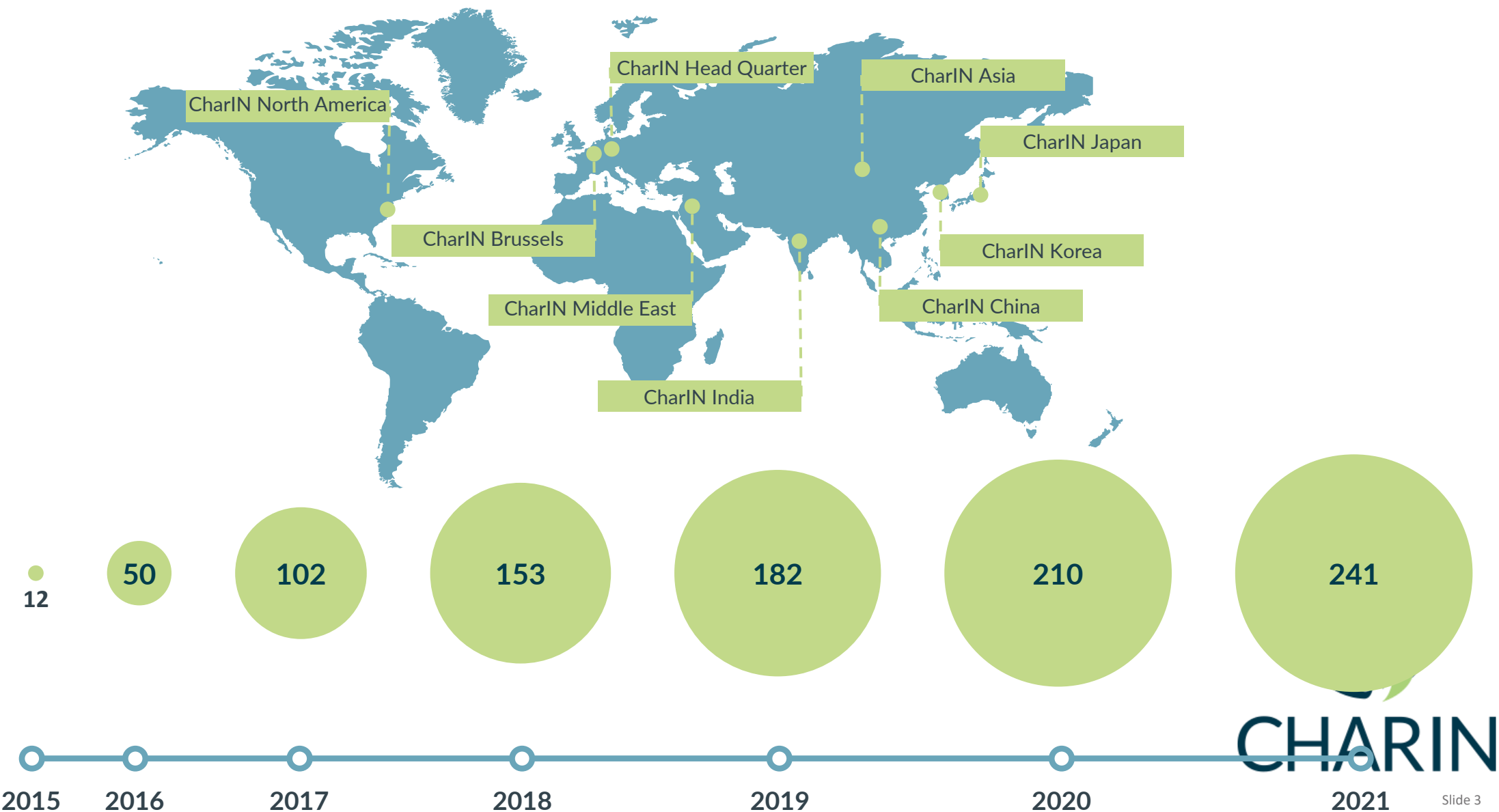


Battery Electric Vehicle (BEV):  
Forecast 40 – 60 Mio. vehicles  
by 2030 in Europe






# Status Quo CharIN

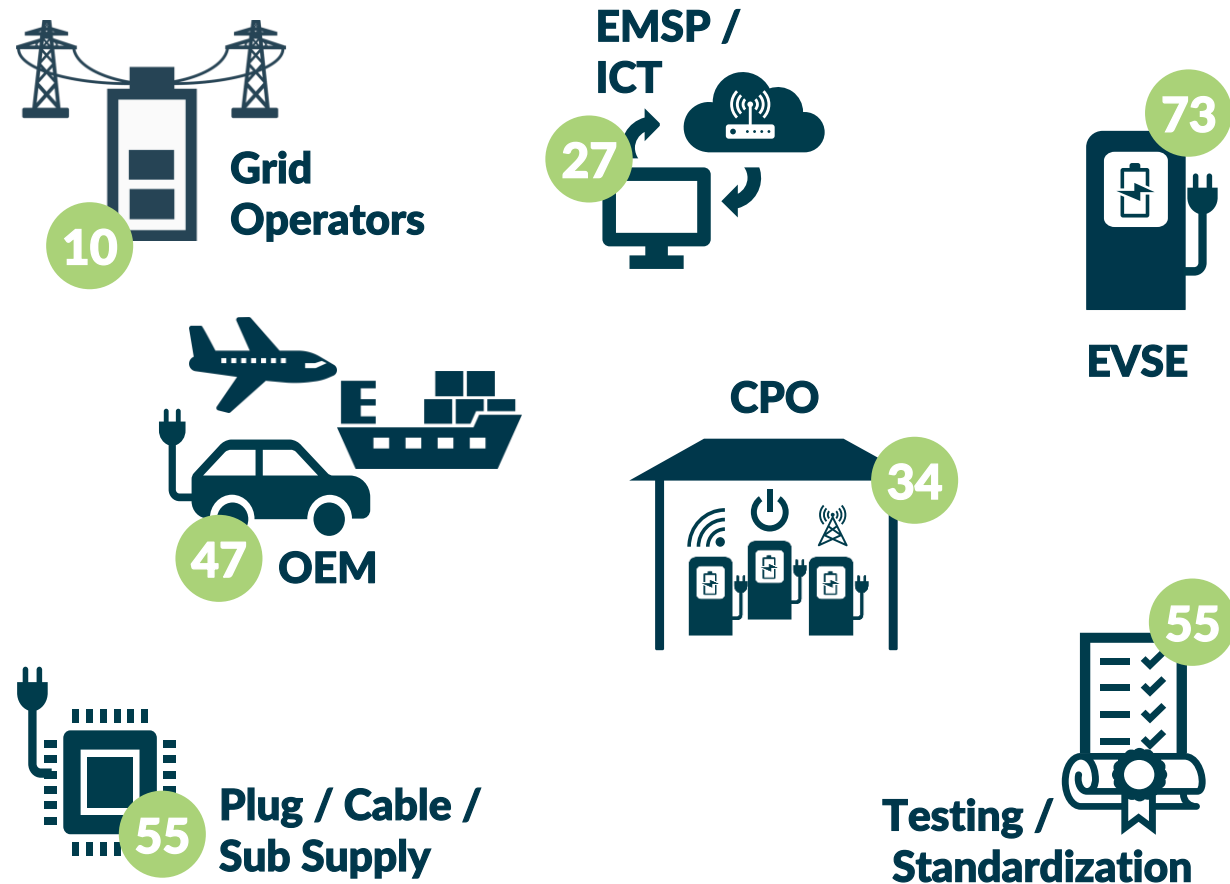
Retro perspective 6 years CharIN

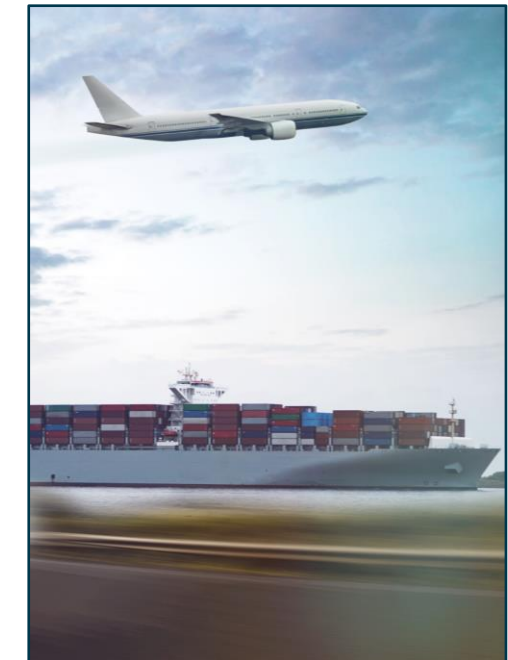


# CharIN's Value Chain

- 132 Core Members
- 107 Regular Members
- 2 Associated Members

- 154  Europe
- 49  Asia / Australia
- 38  North America







# CCS - global, cross industry and holistic

## One System for all: Combined Charging System (CCS)

**Interoperability** by using ISO15118 also for additional features

**Comprehensive infrastructure incl. High Power Charging (HPC) stations**

**Customer Comfort Features** (e.g. Plug and Charge, Automated Conductive/Wireless Charging)

Enabling the environment for easy **infrastructure construction and roll-out**

**Creation of an open PKI ecosystem**, enabling the further Plug and Charge rollout

**Intelligent Load Management** including the vehicle battery in the grid

**Megawatt Charging System (MCS)** for commercial vehicles, suitable for air/maritime transport

**Vehicle to Grid Management (V2G)** with reverse power transfer

### CharIN Focus Groups



Charging  
Connection



Charging  
Communication



Charging  
Infrastructure



Conformance  
Test & IOP



Grid  
Integration



- Alignment of positions and exchange on technical status quo
- Draft Technical Documents, Position Papers & Recommendations
- Published 25 Papers so far
- Further ones in preparation

### Position Papers & Regulation

Electric charging systems and infrastructure provide the backbone for electric mobility. Over the course of the last few years, some decisions have been taken in Europe that support the Combined Charging System standard as the target solution for all charging stations.

Legal Disclaimer: The content of the following documents within this section is not binding nor can be exclusively used as basis for product development.



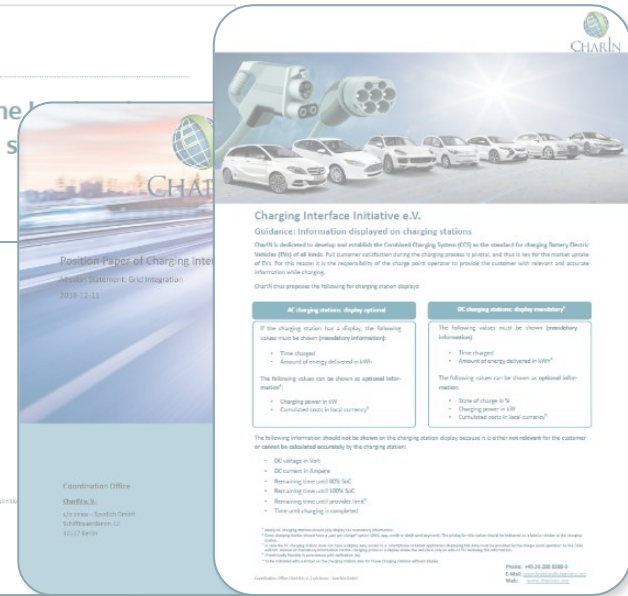
#### CharIN recommendations on connector and cable tests for future applications related to IEC

The Focus Group Charging Connection elaborates the findings of damages on charging infrastructure. A list of potential improvements was created especially addressing frequently used high power charging infrastructure. Promising recommendations will be presented in the following.

#### DC Charging Power Classes

| Range         | Name                           | Short Name      |
|---------------|--------------------------------|-----------------|
| 500W < 1400W  | Fast Charging (standard)       | HC 50           |
| 1400W < 4000W | High Power Charging (standard) | HC 150 HINE 50  |
| 4000W < 6000W | High Power Charging (standard) | HC 150 HINE 200 |

The power classes are specific to the minimum charging power within the scope of a standard power range definition.



# 25k

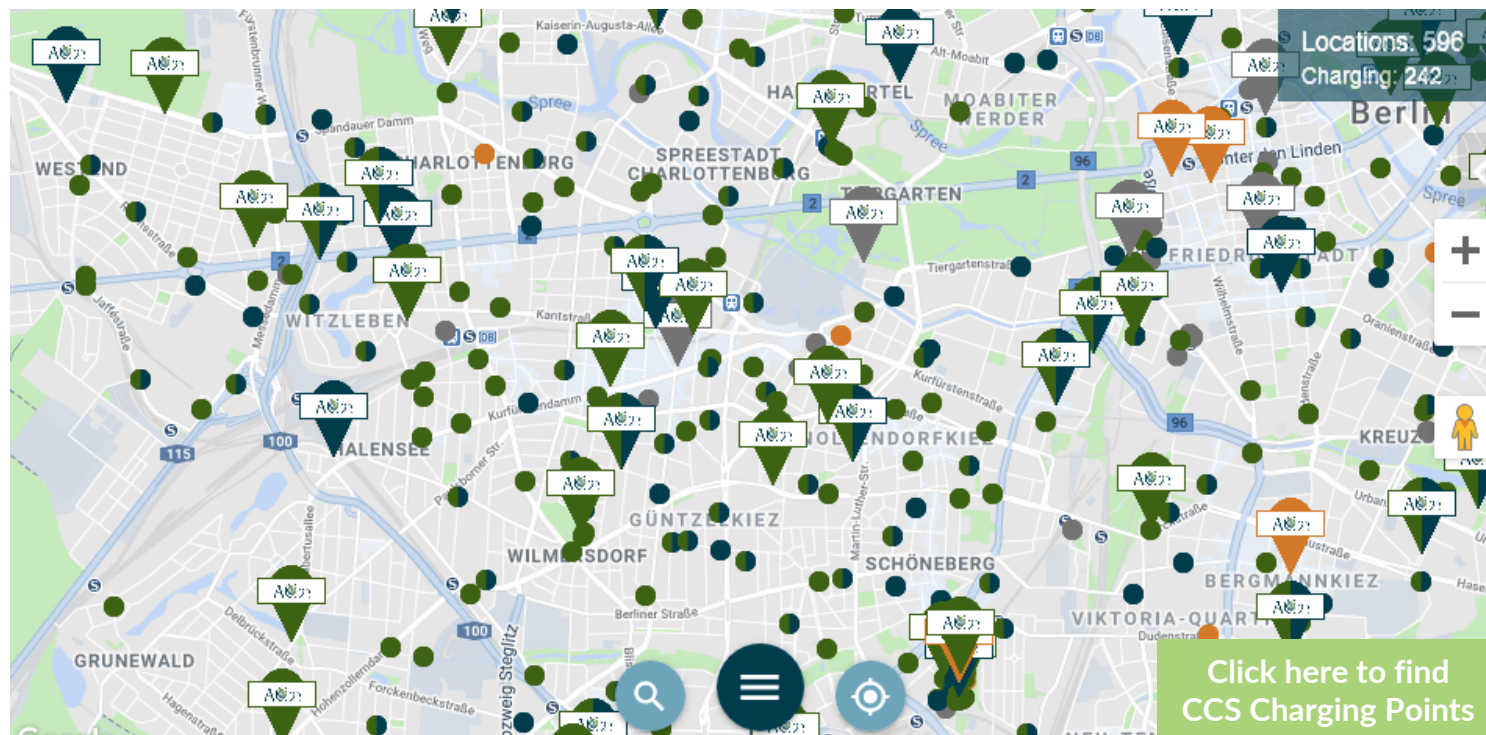
CCS charging points **In Europe.**

# 4853

CCS charging points **In North America.**

# 12k

CCS charging points **In Asia/Pacific.**



| Europe CCS<br>Total 18564 |                   |                    |                    |
|---------------------------|-------------------|--------------------|--------------------|
| DC                        | HPC <sub>50</sub> | HPC <sub>150</sub> | HPC <sub>250</sub> |
| 1762                      | 9258              | 6137               | 1407               |

# Power Classes Overview

FG Charging Infrastructure

| Power Class | Power   | Current | Voltage     | Name                |
|-------------|---------|---------|-------------|---------------------|
| LPC _ _     | <8 kW   | <20 A   | 200 – 920 V | Low-Power Charging  |
| DC _ _      | ≥8 kW   | ≥20 A   | 200 – 920 V | DC Charging         |
| FC _ _      | ≥50 kW  | ≥125 A  | 200 – 920 V | Fast Charging       |
| UFC _ _ _   | ≥100 kW | ≥250 A  | 200 – 920 V | Ultra-Fast Charging |
| HPC _ _ _   | ≥150 kW | ≥500 A  | 200 – 920 V | High-Power Charging |
| MCS         |         |         |             | Megawatt Charging   |

The power a specific EVSE is able to deliver is noted after the power class denomination, e.g. FC 50, HPC 350, UFC 120, DC 24.

EVSE is classified by both power AND current, there can be UFC 150 (150 kW / 375 A) and HPC 150 (150 kW / 500 A).

The power delivery for LPC, DC, FC and UFC is calculated at 400V.

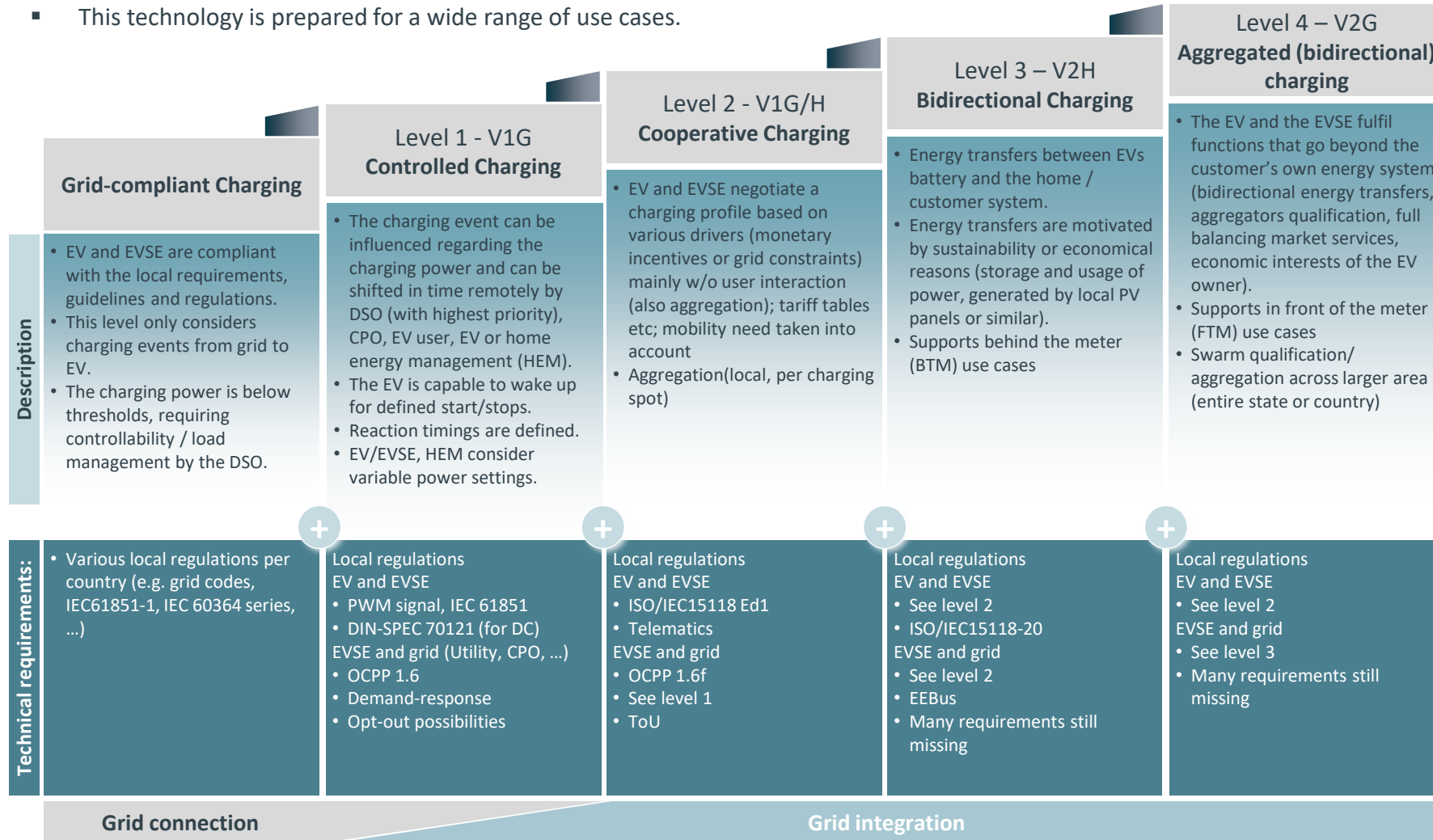
Power Classes can be added to EN17186 electric fuel labels

Details: [https://www.charin.global/media/pages/technology/knowledge-base/6539b64483-1619689951/charin\\_dc\\_ccs\\_power\\_classes.pdf](https://www.charin.global/media/pages/technology/knowledge-base/6539b64483-1619689951/charin_dc_ccs_power_classes.pdf)

# Levels of Grid Integration

## FG Grid Integration


- There are many levels of Grid Integration that can generate value
- CCS with ISO/ISO 15118-20 is the key enabler of Grid Integration and is ready for V2G
- This technology is prepared for a wide range of use cases.



EV – electric vehicle, EVSE – electric vehicle supply equipment, DSO- distributed system operator ,CPO – charge point operator

## Core Members



 **Core members: 132**

## Regular Members



## Associated Members



Our members – currently 241 (total) 3/3

## Cooperations of CharIN



## Supporters of CharIN





Supporters of CharIN: 21

# MOUs, Liaisons, joint efforts



The Association for  
Electromobility  
**AVERE**

AVERE (The European Association for Electromobility) is the European association that promotes electromobility and sustainable transport across Europe.

AVERE is the only European association representing and advocating for electromobility on behalf of the industry, academia, and



Clean Energy  
Business Council  
**CEBC**

Registered as a Not-for-Profit Company in Abu Dhabi Global Market (ADGM), the CEBC is the pre-eminent organisation representing the private sector involved in the clean energy sector across the MENA region.

[www.cebcmena.com](http://www.cebcmena.com)



Electric Power  
Research Institute  
**EPRI**

EPRI provides thought leadership, industry expertise, and collaborative value to help the electricity sector identify issues, technology gaps, and broader needs that can be addressed through effective research and development programs for the benefit of society.

[www.epri.com](http://www.epri.com)



Smart Electric  
Power Alliance  
**SEPA**

The Smart Electric Power Alliance (SEPA) is a nonprofit organization that envisions a carbon-free energy system by 2050. We are one of many entities globally required to make this vision a reality.

[sepapower.org](http://sepapower.org)

In Witness whereof, the Parties have duly executed this Agreement as of 15 July 2021 hereinbelow written.

## WITNESSES:

### For CEBC

Name: Ahmed Samir Elbermbali  
Managing Director

### For CharIN e.V.

Name: Claas Bracklo | Michael Keller  
Charging Interface Initiative e.V.  
c/o innos GmbH

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## MEMORANDUM OF UNDERSTANDING (MOU)

### BY AND BETWEEN

CHARGING INTERFACE INITIATIVE E. V.

### AND

CLEAN ENERGY BUSINESS COUNCIL  
MIDDLE EAST AND NORTH AFRICA

Clean Energy Business Council Middle East  
and North Africa  
Abu Dhabi Global Market (ADGM)  
Abu Dhabi, UAE

Kurfürstendamm 11  
10719 Berlin  
Germany

15 July, 2021

28 July, 2021

Signature A. Samir

Signature Claas Bracklo

## CharIN liaison agreements

With more than 200 active member companies CharIN has become the **largest user group of the present standards**. To serve the market CharIN collects from its members experience in implementing the standards and works on guidelines how to implement those.

CharIN believes that an exchange of these experiences can be of great help in **amending and further developing of the standards** of the Combined Charging System (CCS).



SAE International



ISO International  
Organization for  
Standardization



# Thank you for your kind attention!

## Any questions?

### Contact

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# CHARIN