



CH Λ deMO

ASSOCIATION & PROTOCOL

MARCH 2017

CHAdEMO ASSOCIATION & PROTOCOL

In a nutshell

Who we are

We are an e-mobility collaboration platform around CHAdEMO DC charging protocol. As an ecosystem of companies offering CHAdEMO-related products and services we work together to promote and enable electric mobility on a global scale.

What we do



WE DEVELOP THE PROTOCOL adapting it to the market needs and our members' requests.



WE CERTIFY CHARGERS ensuring compatibility between the infrastructure and the EVs.



WE PROMOTE FAST CHARGERS by actively disseminating their benefits and data through various communication channels.

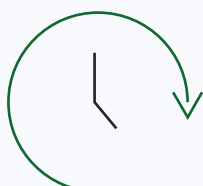
About CHAdEMO Protocol

CHAdEMO is a DC charging protocol currently enabling EV charging with power from 6kW to 50kW with a possibility of 150kW in preparation. It follows 4 principles:



SAFETY

CHAdEMO believes that in the context of high power, electrical safety is crucial and mandates strict guidelines in designing chargers.



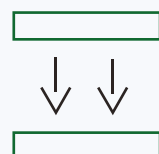
FUTURE-PROOF

CHAdEMO is Smart Grid-ready through its bi-directional charging capability. It is also compatible with any local or optional functions beyond charging.



EASE OF APPLICATION

The protocol works with CAN communication, making its integration with the rest of the car easy and reliable.

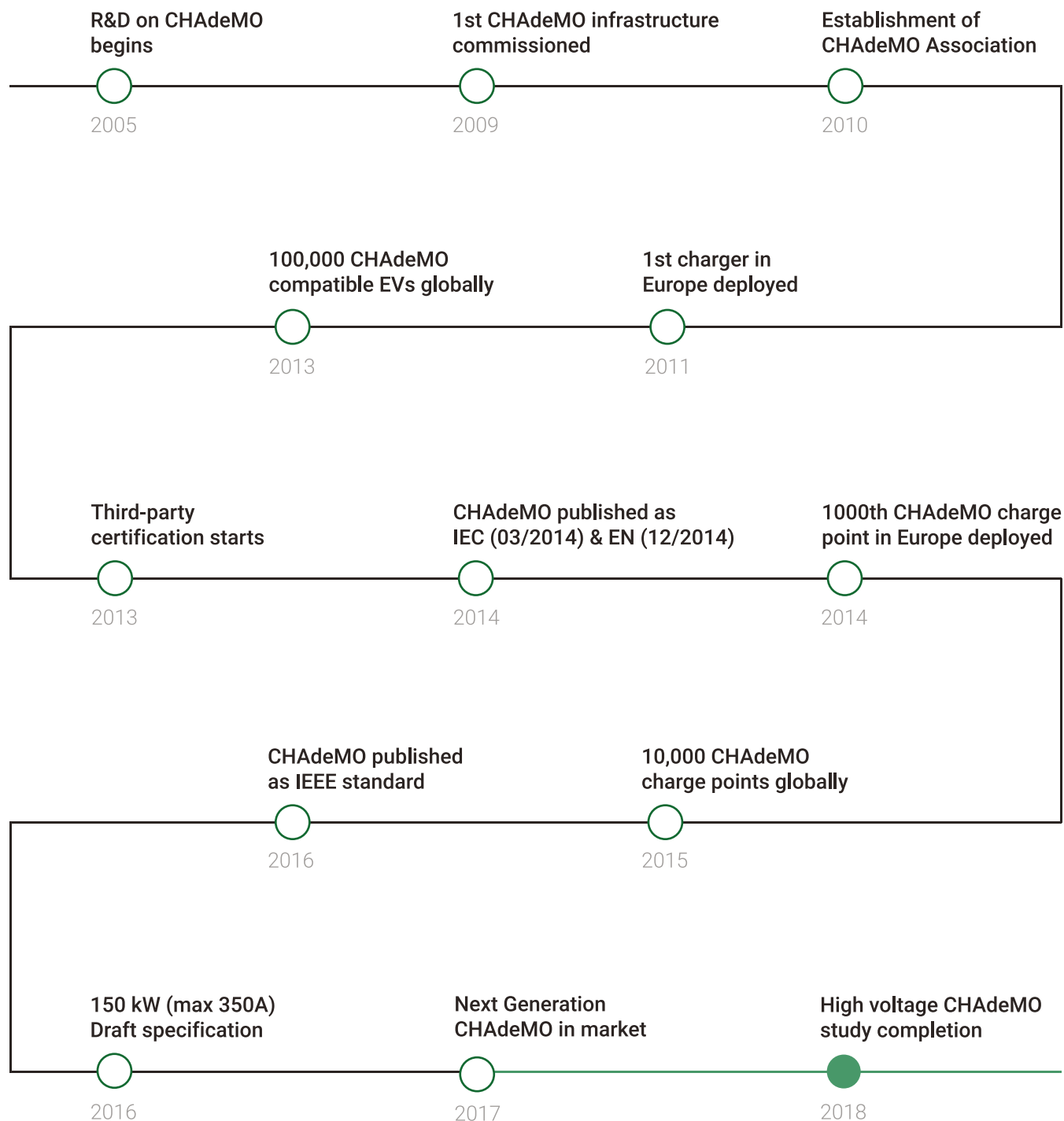


UNIFORMITY

CHAdEMO connector is identical across the globe and is a stand-alone plug that can be with or without an AC connector. It saves costs for EV makers and enables cross-continental EV travels.

DECADE LONG ELECTRIC JOURNEY

and planning for higher power



150kW

To respond to the ever-increasing capacity of EV batteries and to keep the charge time to a minimum, development of the next generation CHAdeMO for higher power is on-going.

LEADING BY NUMBERS

1 The largest global installation base

CHAdEMO-equipped chargers are the most popular EV fast charging infrastructure choice in the world.



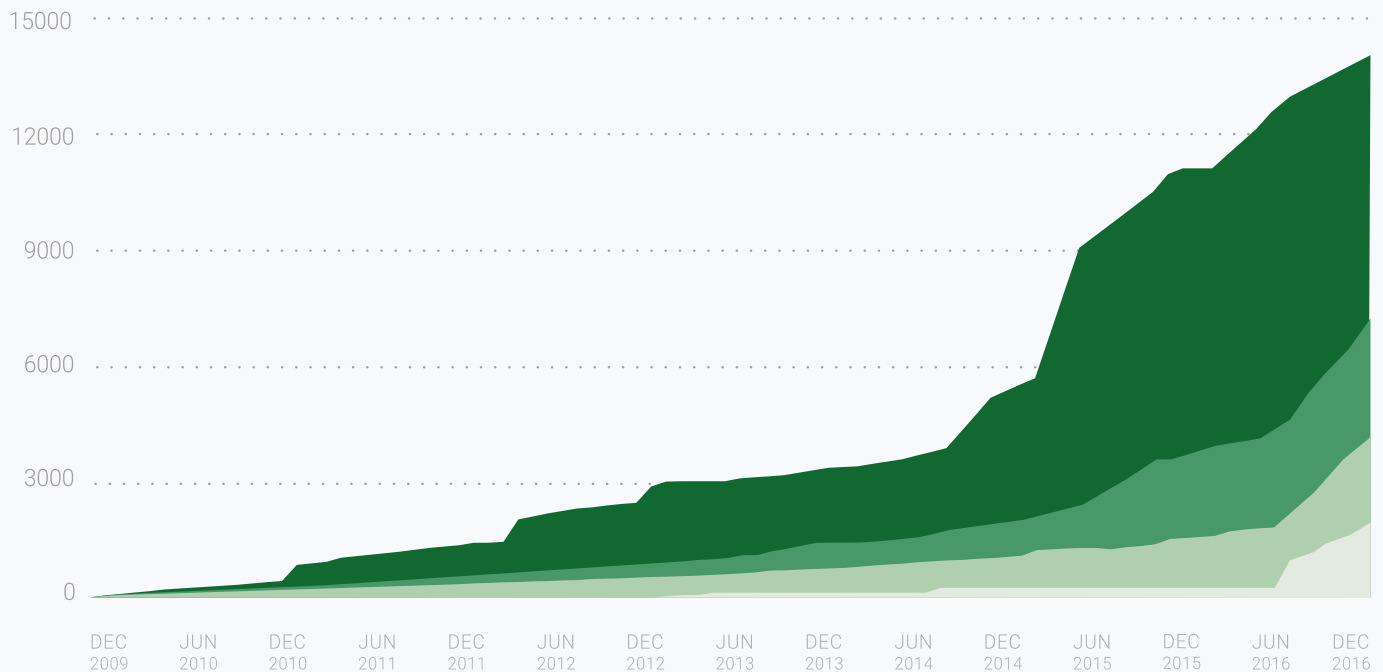
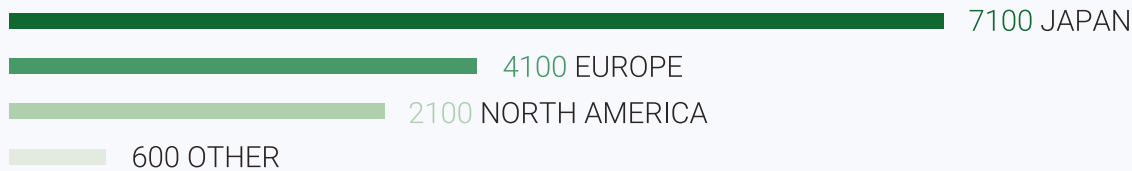
56

COUNTRIES ON 5
CONTINENTS
HAVE CHADEMO
CHARGERS

13900

CHADEMO CHARGE
POINTS ARE
AVAILABLE TO EV
DRIVERS GLOBALLY

CHAdEMO charge point evolution



2 The largest number of certified charger models

First generation CHAdeMO chargers hit global roads in 2010. Since then, the portfolio of certified chargers increased to 233. All leading charger manufacturers as well as a broad range of SMEs providing fast charging infrastructure are our members, testimony to the Association's reach and global recognition.

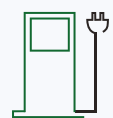
ALL

TOP DC CHARGER
MANUFACTURERS
ARE CHAdeMO
MEMBERS



47

COMPANIES
PRODUCE
CHAdeMO
CHARGERS



CHAdeMO chargers



ABB
(Switzerland)



IES Synergy
(France)



Efacec
(Portugal)



DBT
(France)



ENDESA
(Spain)



EVTEC
(Switzerland)



Delta Electronics
(Taiwan)



Lafon
(France)



Takaoka Toko
(Japan)



SIGNET Systems
(Korea)



Siemens
(Germany)



Andromeda
(Italy)



Tritium
(Australia)



Petrotec
(Portugal)



Hong Kong Productivity
Council (Hong Kong)



Nichicon
(Japan)



Fuji Electric
(Japan)



JoongAng Control
(Korea)



Hitachi
(Japan)



Takasago
(Japan)



PNE Systems
(Korea)



GS Yuasa
(Japan)



Circontrol
(Spain)



Nissan
(Japan)



Hasetec
(Japan)



Schneider
(France)



e8energy
(Germany)



Ingeteam
(Spain)



Magnum Cap
(Portugal)



BTCPower
(USA)

And more ...

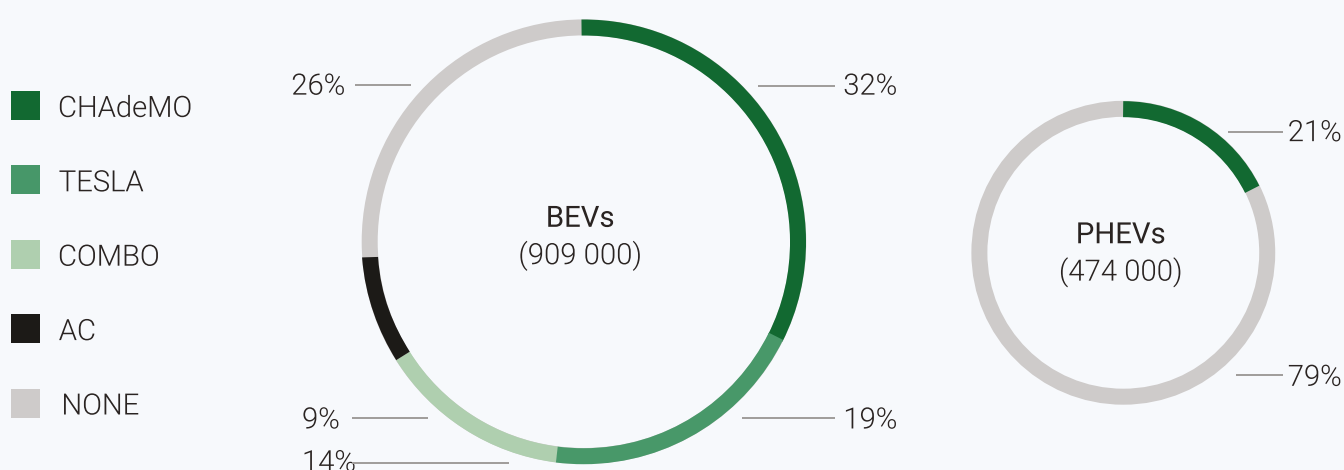
3 CHAdeMO compatible EVs in the market

CHAdeMO leads in the number of EV models using the protocol, including some of the most popular EVs on the market.

Global plug-in sales by fast charging inlet (ex-China)

Source: IHS Automotive

Cumulative 2010-2016 (Passenger vehicles only)



CHAdeMO compatible EVs



Nissan: LEAF



Mitsubishi: Outlander PHEV



Citroen: C-Zero



Toyota: Prius PHV



Peugeot: iOn



Nissan: e-NV200



Tesla Model S (with adapter)



Citroen: Berlingo



Peugeot: Partner



KIA: Soul



Mitsubishi: i-MiEV



Mitsubishi: MINICAB-MiEV



Subaru: Plug-in Stella



Mahindra: e2o



Mazda: Demio EV



Honda: Fit EV



Toyota: eQ



Mitsubishi: MINICAB-MiEV



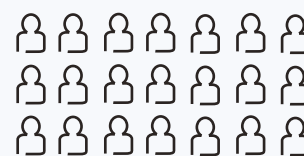
BD Otomotiv: eSCUDO

4 Largest member base as fast charging coalition

The DC charging ecosystem around CHAdeMO brings together top players from various sectors in e-mobility: automakers, utility companies, operators, manufacturers of chargers, connectors, and battery management systems. Together, they make sure CHAdeMO develops according to market needs and continues its growth.

"By enabling drivers to charge faster and encouraging the deployment of the infrastructure CHAdeMO has been instrumental in promoting electric mobility."

Senan McGrath, CTO, ESB eCars



350

GLOBAL MEMBERS

75

MEMBERS IN EUROPE

CHAdeMO Association - selection of members



STANDARDISED AND CERTIFIED

A European and international standard

Confirming its global relevance, CHAdeMO has been published as various international standards by IEC, CENELEC (Europe) and IEEE (US).



EN

61851-24,
61851-23,
62196-3



IEEE

2030.1.1

The European Union recognises the importance of CHAdeMO by explicitly endorsing multi-standard chargers in its directive on the deployment of alternative fuels infrastructure.

“ Interface to charge electric vehicles could include several socket outlets or vehicle connectors as long as one of them complies with the technical specifications set out in this Directive, so as to allow multistandard recharging.

Recital 33, Directive 2014/94/EU

Unique DC charging certification system

One of its kind dedicated to DC charging for EVs, the impartial and transparent process enables any company to build, certify and sell CHAdeMO devices. CHAdeMO certified means the charger conforms to the highest safety standards mandated by CHAdeMO and is fully compatible with all CHAdeMO EVs.

233

CHARGER MODELS
HAVE BEEN
CERTIFIED TO DATE



5

THIRD PARTY CERTIFICATION
BODIES ARE AUTHORISED
TO CERTIFY CHAdeMO CHARGERS

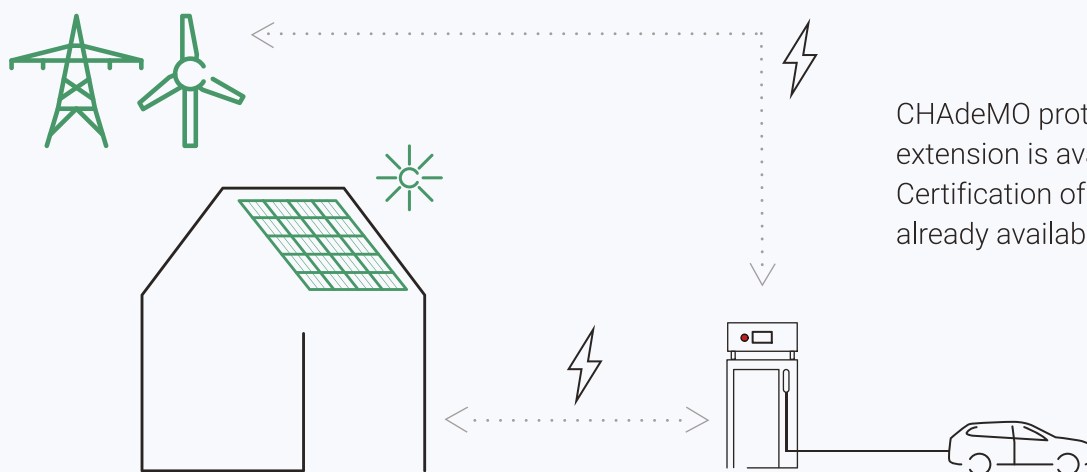


V_{to}H/L

1ST IN THE WORLD
CERTIFICATION OF
DC “VEHICLE TO HOME”
AND “VEHICLE TO
LOAD” DEVICES

SPECIAL FOCUS

Vehicle to X (V2X) already a reality at CHAdeMO



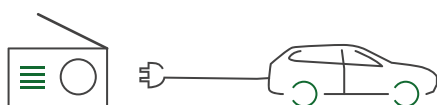
A crucial element for a switch to renewables, V2X technology enables using EVs as both vehicles and portable batteries. With V2X devices, EVs can store energy from home PV panels to use later or feed to the grid and help balance the energy supply, all the while providing financial benefits to the EV owner. Currently, CHAdeMO EVs are the only mass-produced and marketed cars capable of V2X.

“Worldwide revenue from V2G frequency regulation will grow from less than \$900,000 annually in 2013 to \$190.7 million by 2022.

Navigant Research

CHAdeMO V2X products

V2L (Load)



Honda (9kW)



Mitsubishi Motors (1500w)

V2H (Home) & V2G (Grid)



Nichicon (6kW)



Mitsubishi Electric (6kW)



e8energy (10kW)



Tsubakimoto (5kW)



Endesa (10kW)



Princeton Power Systems (10kW, 30kW)



HONDA Power Manager (5.5kW)

CHAdEMO charge points in Europe

4052

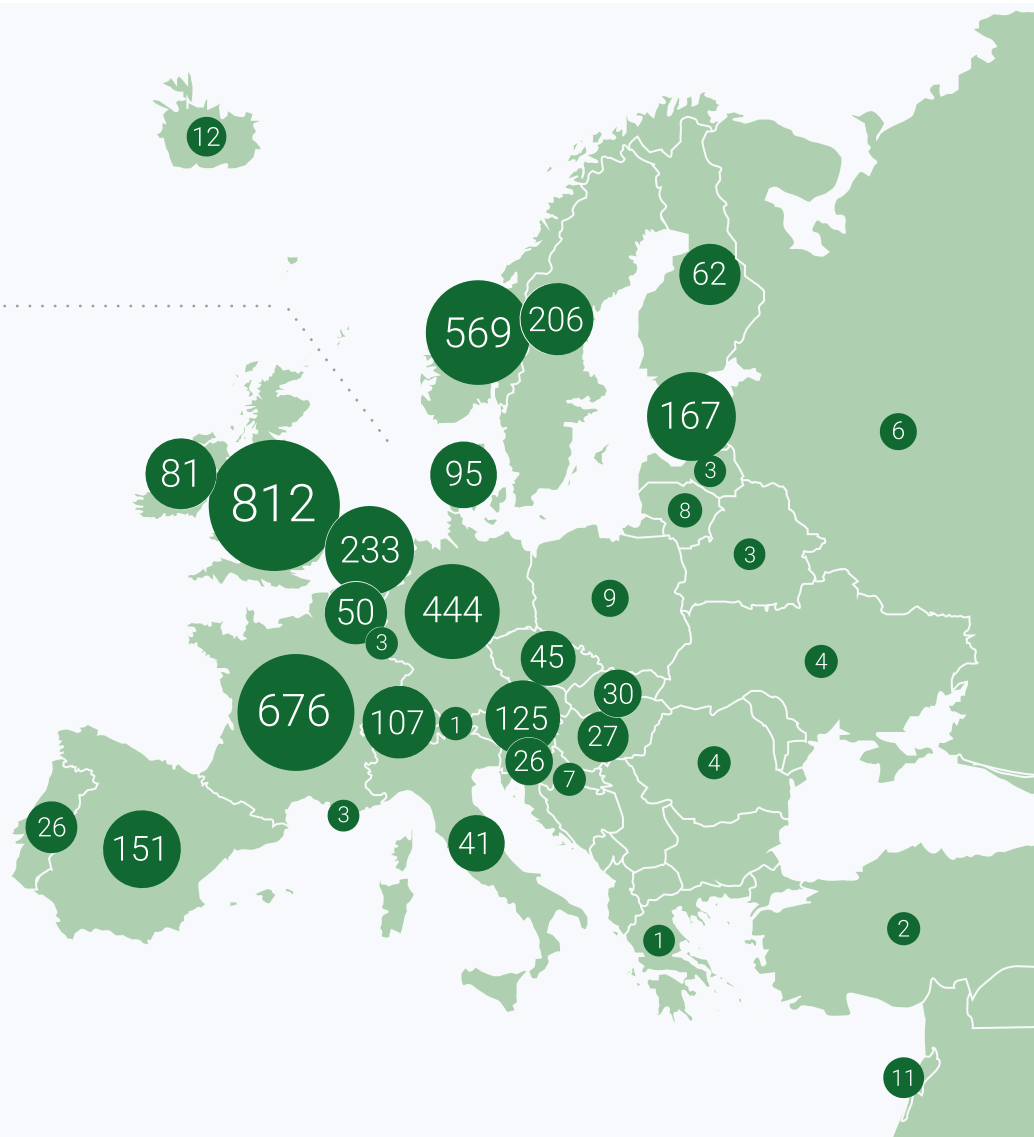
TOTAL INSTALLED

EU projects

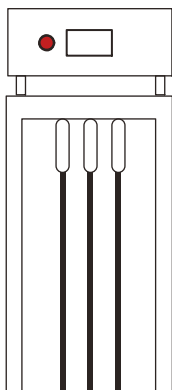
Over 1,600 multi-standard chargers with CHAdeMO will be built in Europe as part of the EU-funded TEN-T /CEF scheme, offering up to 85% financing for chargers deployed on key transport corridors.

1600

CHARGERS PLANNED



Multi-standard chargers



A European invention, multi-standard fast chargers capable of powering all EVs on the market are now used in close to 100% infrastructure projects in Europe, and thus have become a de facto standard. They offer benefits to all:

USERS

have no anxiety about next
charge point being compatible
with their EV

OPERATORS

speed up the recovery of investment with limited incremental cost

AUTOMAKERS

can focus on core product and not plug type

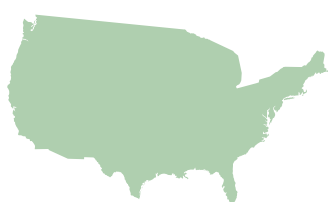
TRENDING IN E-MOBILITY

CHAdEMO-based V2X demo projects



Working together: BMW/Nissan

The success of CHAdEMO has been enabled by the collaborative spirit that permeates its activities. CHAdEMO members regularly join hands with other e-mobility stakeholders to develop fast charging infrastructure globally. One such collaboration between Nissan and BMW will see over 100 chargers deployed across 3 countries.



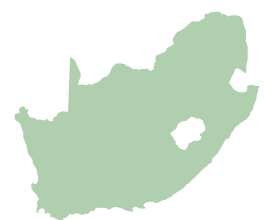
300

USA



20

MEXICO



TBC

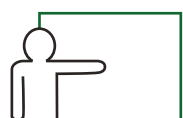
SOUTH AFRICA

CHADEMO ASSOCIATION

Working with and for the members

CHAdEMO develops the protocol but also provides a variety of services that help its members promote their products and keep them updated with the evolution of the market/protocol.

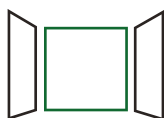
Member services



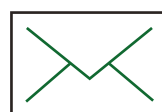
WORKSHOPS



**PROTOCOL
DEVELOPMENT**



**BOOTHS AT
TRADE FAIRS**



**MEMBER
NEWSLETTER**



**TECHNICAL
ASSISTANCE**

Member benefits

REGULAR

- ✓ Participation in Member Meeting
- ✓ Association's newsletter
- ✓ Featuring in marketing materials
- ✓ Participation in joint trade fair stands
- ✓ Certified product listed on CHAdEMO website
- ✓ Access to the protocol
- ✓ Right to certify a product
- ✓ Participation in Technical Workshop

SUPPORTING

- ✓ Participation in Member Meeting
- ✓ Association's newsletter
- ✓ Featuring in marketing materials
- ✓ Participation in joint trade fair stands
- ✓ Certified product listed on CHAdEMO website

SPECIAL

- ✓ Participation in Member Meeting
- ✓ Association's newsletter
- ✓ Featuring in marketing materials

Join us

Joining the association is very easy – email us at info@chademo.eu for details!
Our website: www.chademo.com