

CHAdeMO fast charging solution

The world's first fast charging solution in operation since 2009

CHAdeMO is the DC fast charging standard designed for Electric Vehicles. The R&D of CHAdeMO dates back to 2005. After more than four years of thorough testing and on-site fleet demonstration, the first commercial CHAdeMO charging infrastructure has been commissioned in 2009.

The objective was to develop a public infrastructure of fast chargers that enable EV users to enjoy the driving electric vehicles without worrying about the battery range. More and more CHAdeMO-compatible EVs are produced and sold and their increasing popularity is accompanied by a growing infrastructure of CHAdeMO chargers, which can be found in the US, Europe, Russia, Australia, Japan and other Asian countries.



Today (September 2012), there are as many as CHAdeMO chargers in operation, **2,492** and more than **70,000** CHAdeMO compatible EVs on the road around the world, which accounts for as much as **80%** of all the EVs globally.



IEC standard

CHAdeMO charging system is included in the drafts of international standard at IEC (IEC 61851-23 for charging system, 61851-24 for communication; and IEC 62196-3 for connector). Those standards are to be published in the summer of 2013.



The unique name

The association's name CHAdeMO originates from Japan, anecdotally meaning "let's Charge and Move" in English, and "while having a cup of tea" in Japanese. CHAdeMO can provide electricity for 40-60 km drive with 5-10 minutes.

CHAdMo's Cooperators

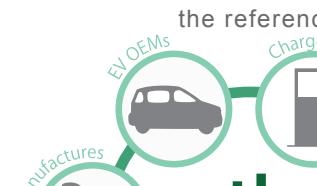
World-class international cooperation across industries

Like IEC standard, CHAdeMO is open to all.

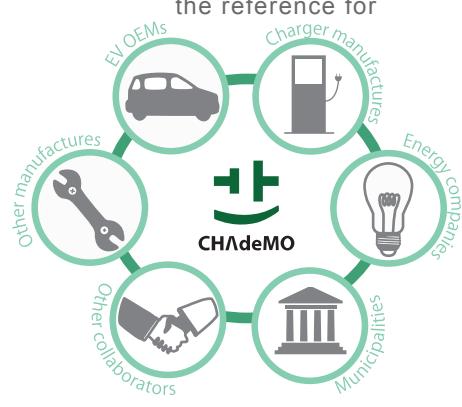
CHAdEMO is a unique open platform for all e-mobility stakeholders to share knowledge and experiences, and continuously improve its solution based on such dialogues.

More than 430 organizations in 26 countries around the world are represented in the CHAdeMO association today. The members of the association, leaders of their domain coming from multiple sectors of the industry and public administration, all share the same vision: promoting sustainable mobility.

The diverse profiles of CHAdeMO members and proponents prove the global recognition and reliability of our technology. Public tenders are being issued regularly stating CHAdeMO as the reference for DC fast charging. At CHAdeMO we are always open and eager to welcome new members who share our convictions.



The diagram illustrates the interconnected ecosystem of CHAdeMO members. It features four main circular nodes connected by green lines. The top-left node is labeled 'EV OEMs' and contains a silhouette of a car. The top-right node is labeled 'Charger manufacturers' and contains an icon of a charging station with a plug. The bottom-left node is labeled 'Other manufacturers' and contains an icon of a wrench. The bottom-right node is labeled 'CHAdeMO' and contains a stylized green 'H' logo. The connections show the relationships between these different sectors.



CHAdeMO Workshops

We organize Infrastructure Workshops to share stakeholders' experiences in different cities and regions, and Technical Workshops to review and improve our technologies. This active communication among CHAdeMO members is a unique way to share and accumulate knowledge and experiences and allows CHAdeMO standard to lead the innovations related to fast charging.

Our global cooperators



Fast charging extends driving freedom of electric vehicle

Thanks to CHAdeMO fast chargers, electric vehicle gains driving range. They can feed an EV with electricity necessary for 40 km in 5 minutes and almost fully charge the car within 30 minutes.

Length	Short Distance	Mid Distance	Long Distance
Charging type	Office charging 	Destination charging 	Pathway charging 
Charger type	Normal	Semi-fast or fast	Fast
Charging Site	Home/Office	Urban area (Super Market, Mall, Restaurant, Parking Lot or Gas station in city)	Inter city / National network (Service Area, Gas station)

Fast charger installation doubled the highway usage.

Only **20%** of all the registered EV drivers dared to take highway when there were only two CHAdeMO fast chargers installed.

Thanks to CHAdeMO fast chargers, the percentage of highway users more than **doubled** on a 350 km highway.

Fast charger : **2** units



Fast charger : **7** units



19% of EV drivers used the highway



46% of EV drivers used the highway

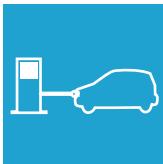
CHAdeMO 6 strengths



Safety design

Users' safety is paramount. CHAdeMO has mandated the strict safety principles to guarantee a safe operation.

- ◆ Communication is duplicated through the exclusive pilot signals and the data signals via CAN communication. These two communication routes can prevent false operation by defining action by AND condition, and stop order by OR condition.
- ◆ The interlocking hardware is structured so that the connector is never disconnected from the inlet while charging, and no active electricity comes to the exposed terminal parts when disconnected.
- ◆ Electricity leakage is prevented through its unique electrical circuit design and the insulation checking procedure. Even if it does ever occur, the impact is limited within the human safety range.



CAN communication

Today, CAN is used as the preferred on board communication network system for all conventional/electric vehicles. Over a number of years it has been recognized as the most reliable and proven solution.. CHAdeMO elected this trusted CAN protocol to ensure maximum safety and reliability to users.



Future flexibility

The CHAdeMO protocol limits the scope of standardization to the strict minimum to make sure that first and foremost charging is safe and interoperable. All other optional functions are left open to meet any specific local requirement and telecommunication environment. Recognizing the heightened expectation for what EV can bring about, this flexibility is stimulating the innovative mind of investors both on the vehicle and infrastructure side.



Smart grid application

The mass deployment of Electric Vehicles happens together with an increasing production of renewable energy. The needs of the grid that accompany those developments change and CHAdeMO is able to respond to them, as it allows bi-directional charging under certain set parameters and with slight modification on the vehicle side and therefore is compatible with Vehicle-to-Home systems In that sense CHAdeMO is already capable of addressing efficiently the future needs of the market. CHAdeMO is an ideal solution for smart city and its validity has been proved in projects in various areas of Japan. Further projects in Spain, France, and the US, for instance, are in the pipeline to demonstrate the advanced features of CHAdeMO, under the umbrella of international Smart City collaboration.



User friendly connector

Connecting device consists of a connector on the charger side and an inlet on the vehicle side. CHAdeMO has been designed and continuously improved to ensure the optimal balance between ergonomics performance, simplicity, and charging capability. The dedicated DC inlet design allows CHAdeMO to keep the weight of connector friendly to customers' everyday use.



Optimal output power

Considering the cost of delivering the required power at the infrastructure side, and the charging time, the majority of utility companies around the world supported CHAdeMO's view in eventually setting the most appropriate power level at 50kW. In terms of the connector design, however, this can be almost doubled. On the other hand, the installation of 20kW units require much less input power and can be an ideal charging solution in certain urban or commercial areas where access to higher power level is not readily available. This flexibility on both ends of the charging power spectrum demonstrates the clear competitive advantage of CHAdeMO in the market.

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