Electric Vehicles Charging Standards: Market Analysis

Client
A leading global standards developing organization

Industry
Automotive

Business Impact

- The client used this study to educate its stakeholders on the current electric vehicle charging standards scenario.

- The analysis helped the client gain insights into which organization had an edge over its competitors in standards or specifications adopted or in process of adoption.

Business Challenges

Electric vehicles are being considered as viable alternatives to reduce dependence on fossil fuel consumption and minimize environmental impact. Several governments are promoting the adoption of electric vehicles in large numbers. However, the lack of charging infrastructure systems and universal charging standards is inhibiting large-scale adoption.

Currently, there are no globally accepted electric vehicle charging standards. Incompatible charging standards have slowed down adoption of electric vehicles and could also put current growth at risk. There are presently four competing standards that are operational across the world — CHAdeMO, SAE Combined Charging System, China GB/T standards, and Tesla Superchargers standards.

Given this scenario, the client wished to understand the electric vehicle charging standards landscape. This included charging standards, specifications developed by organizations or companies, the latest charging systems they were currently working on, type of chargers offered (Alternating Current and Direct Current), their global reach, and collaborations with other international standard organizations.
**Approach**

As a first step, Course5 had detailed discussions with the client to understand the background and gain clear understanding of the objectives and set expectations from the final deliverable.

The research was executed using an all-inclusive secondary/desk research. The required information was gathered from syndicated sources and publicly available information.

- Course5 listed all the organizations or companies working on charging standards or specifications.
- Course5 shared the list with the client to obtain inputs on the organizations or companies that needed to be covered for the study.
- Next, Course5 conducted a deep-dive analysis of each organization shortlisted by the client.
- Course5 also collected information about each organization/company from their respective website, press releases, blogs, and articles, and also from automobile and technology news sites.
- After collecting the information, each organization's current standards or specifications available in the market and their upcoming initiatives for future development of EV charging standards were analyzed.
- A comparative analysis was also carried out to understand trends and user preferences in terms of electric vehicles charging standards or specifications.

**Outcome**

The electric vehicles charging standards landscape report offered the client a comprehensive view of the standards or specifications prevailing in the electric vehicles market. The client found the in-depth information about specific organizations and comparative analysis on organizations developing electric vehicle standards extremely useful.

**Excerpts from the report**

- In most markets, the charging infrastructure suffers from fragmentation, inconsistent data availability, and a lack of consistent standards. Open standards for vehicle-charge point communication and payment may mitigate this issue by enabling interoperability between charging networks, increasing innovation and competition, and reducing costs to drivers.

- As of August 20, 2019, globally there are 2,140 charging stations and 3,010 connectors with CHAdeMO fast charging. CCS still lags behind CHAdeMO in the number of stations by more than 250, while it has about 500 more connectors. Tesla has 678 Supercharger locations with 6,340 connectors.
Currently, multiple plugs and sockets are used to connect vehicles to charging stations. For slow charging, a European standard plug (Type 2 “Mennekes”) has been proposed as a standard by European Committee for Standardizations and is the most common kind. For fast charging, three connector standards are currently in use - The Japanese CHAdeMO, US/European CCS “Combo,” and Tesla Supercharger.

Recent and upcoming Electric Vehicles are designed for DC fast charging speeds of 100 Kilowatts and more and are overwhelmingly favoring Combined Charging Systems (CCS) as the standard charging architecture. Next-generation charging networks in Europe and the US are also supporting CCS.
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