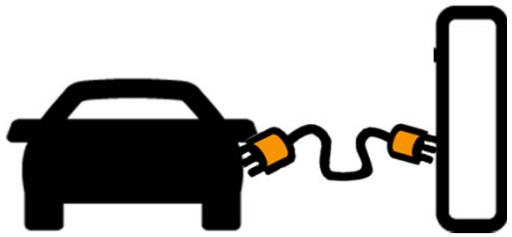
Combined Charging
the universal charging system

OEM and EVSE Manufacturers Rollout Plans

Ross Good, Chrysler LLC



Electric Cars with Combo Inlet.

Announced cars for 2013.

GM
Chevy Spark

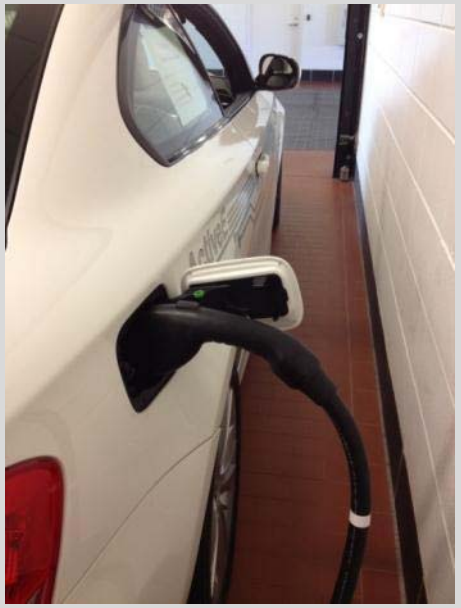
BMW
I3

Volkswagen
e-up!

Combined Charging System

Combined Charging: the universal charging system for electric vehicles has been demonstrated with vehicles of German OEMs at the 15th international conference „Electronics in Vehicles“ at Baden-Baden on October 12-13, 2011.

BMW Active E with fast Charging Option.



Chevrolet Spark EV with DC “SAE Combo” Fast Charging

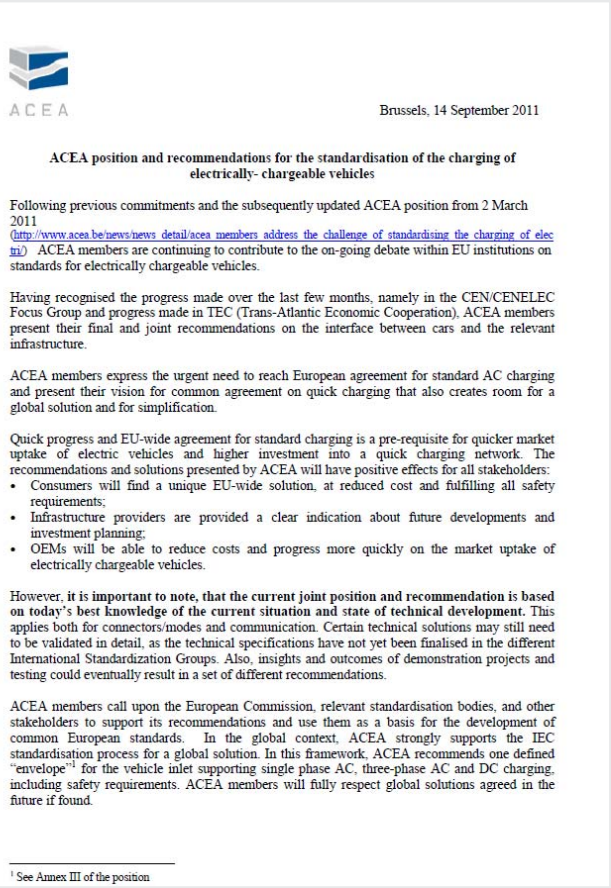
- DC Combo fast-charger used to charge Spark EVs in March during 65% Cal Drive in California

Strategic Assessment of existing Charging Systems

European OEMs have agreed to exclusively support Type 2 / Combo 2 based charging systems after 2017. In the meantime, different systems may be used.

- ACEA selected **Type 2/ Combo 2**
  - to be used in the EU
  - as the standard for **AC/DC charging**
  - both on the side of the vehicle and the public charging infrastructure
- Preference **PLC communication** between EV and EVSE to support integration into smart grid.

- All members of the European Association of Automotive Manufacturers ACEA support the Combined Charging System for Europe:
  - BMW, DAF, Daimler, Fiat, Ford of Europe, General Motors Europe, Hyundai Motor Europe, Jaguar Land Rover, MAN, Porsche, PSA, Renault, Scania, Toyota Motor Europe, Volkswagen, Volvo Cars, and AB Volvo.



ACEA

Brussels, 14 September 2011

ACEA position and recommendations for the standardisation of the charging of electrically- chargeable vehicles

Following previous commitments and the subsequently updated ACEA position from 2 March 2011 (http://www.acea.be/news/news_detail/acea_members_address_the_challenge_of_standardising_the_charging_of_electri) ACEA members are continuing to contribute to the on-going debate within EU institutions on standards for electrically chargeable vehicles.

Having recognised the progress made over the last few months, namely in the CEN/CENELEC Focus Group and progress made in TEC (Trans-Atlantic Economic Cooperation), ACEA members present their final and joint recommendations on the interface between cars and the relevant infrastructure.

ACEA members express the urgent need to reach European agreement for standard AC charging and present their vision for common agreement on quick charging that also creates room for a global solution and for simplification.

Quick progress and EU-wide agreement for standard charging is a pre-requisite for quicker market uptake of electric vehicles and higher investment into a quick charging network. The recommendations and solutions presented by ACEA will have positive effects for all stakeholders:

- Consumers will find a unique EU-wide solution, at reduced cost and fulfilling all safety requirements;
- Infrastructure providers are provided a clear indication about future developments and investment planning;
- OEMs will be able to reduce costs and progress more quickly on the market uptake of electrically chargeable vehicles.

However, **it is important to note, that the current joint position and recommendation is based on today's best knowledge of the current situation and state of technical development.** This applies both for connectors/modes and communication. Certain technical solutions may still need to be validated in detail, as the technical specifications have not yet been finalised in the different International Standardization Groups. Also, insights and outcomes of demonstration projects and testing could eventually result in a set of different recommendations.

ACEA members call upon the European Commission, relevant standardisation bodies, and other stakeholders to support its recommendations and use them as a basis for the development of common European standards. In the global context, ACEA strongly supports the IEC standardisation process for a global solution. In this framework, ACEA recommends one defined "envelope"[1] for the vehicle inlet supporting single phase AC, three-phase AC and DC charging, including safety requirements. ACEA members will fully respect global solutions agreed in the future if found.

[1] See Annex III of the position

See: http://www.acea.be/images/uploads/files/20110922_ACEA_Position_Paper_on_EVs_standardisation.pdf