
E-Mobility

**Development of a „Harmonized Test Procedure“ for
Combined Charging System (CCS) to
Ensure Charging Interoperability for Electric
Vehicles & Home / Public Infrastructure**

**Project of EU & US OEMs with ANL & JRC in
Cooperation with EVSE & Test Devices Suppliers**

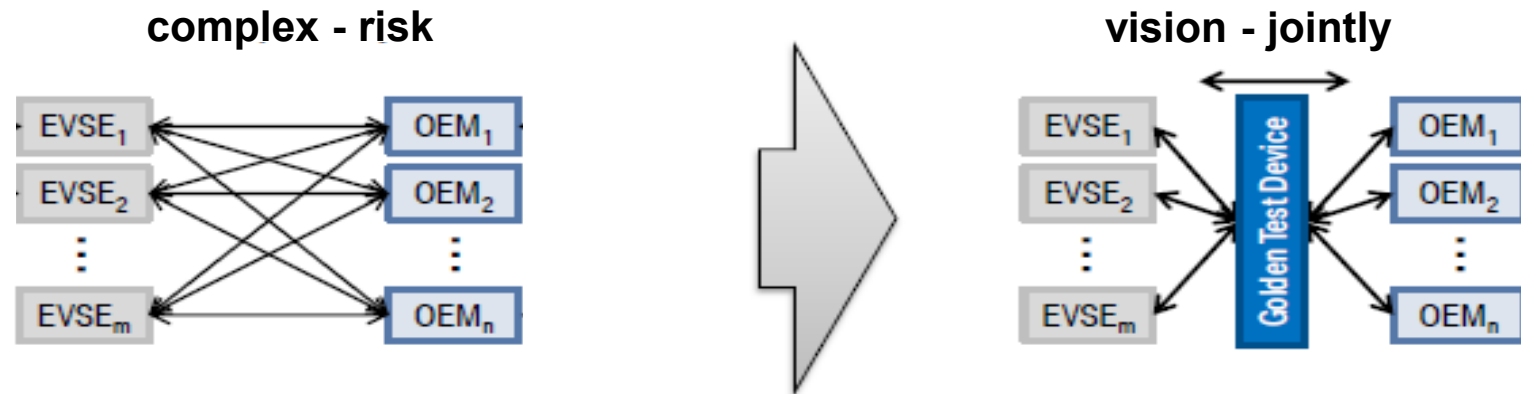


Global Situation

Customer

- Customer can choose amongst a wide range of “Global” EV products
- High customer satisfaction with their “charging experience” due to absence of interoperability issues is a basic assumption
- Not meeting these basic customer expectations will slow down the market opportunities for e-mobility

OEMs & Suppliers Status and Vision



Consequence

End 2013 all members of the „CCS-Coalition“ have founded a working group to develop together with the appropriate institutions of the EU (Joint Research Center – JRC) and the US (Argonne National Laboratory – ANL/DoE) on a new harmonized method to ensure interoperability. This harmonized method is based on customer oriented Use-Cases and on conformity tests.



Approach:

- Identification of the Use-Cases
- Definition of the tests to verify the conformity to standards (US & EU)
- Implementation of „open items“ in the standards IEC/ISO/SAE
- “Free” usage, open documentation (use-cases & test specification)

Collaboration Principals

- Project is internally financed by the participating OEMs, JRC & ANL
- OEM contribution is in-kind service (e.g. vehicles, charging equipment, ...)
- JRC & ANL are providing test facilities and processing test execution
- EVSE manufacturers lend out the hardware free of cost
- Test equipment manufacturers lend out the hardware free of cost
- Test results presented in neutral format (“set golden rules”)

Conclusion: Major cross-atlantic, Global InterOp Project without dedicated project budget possible

Memo:

- Results communicated to all partners involved - via 2 workshops and several teleconferences and one publication so far.
- Since January 2014, 16 different EVs and PHEVs were tested against 69 AC-charging devices (23 AC-Type-1, 22 AC-Type-2 and 24 AC-multi-type public columns).
- DC fast charge tests started

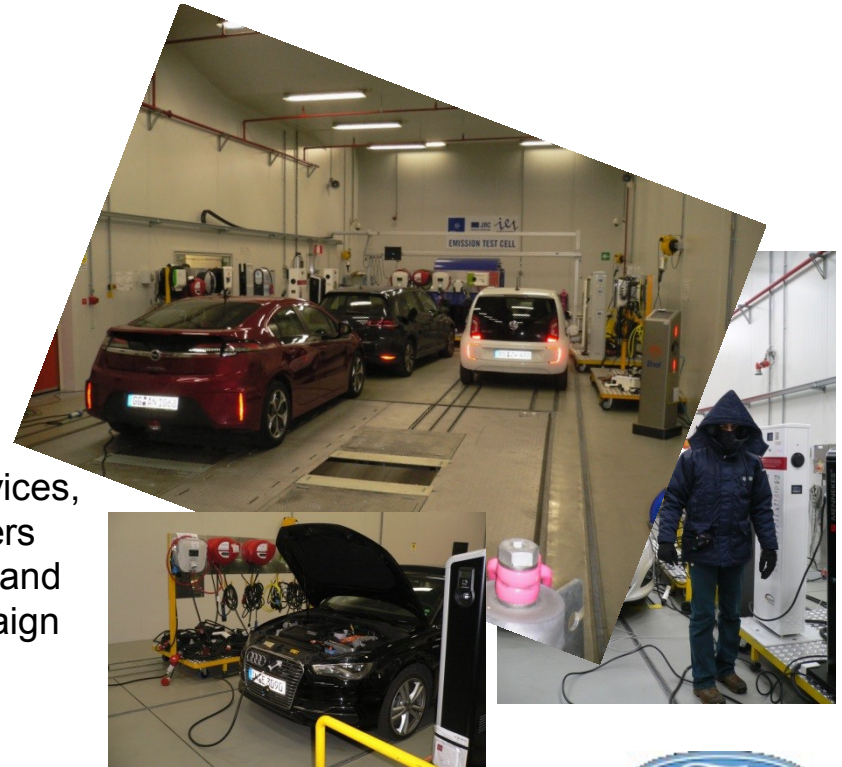
Testing at JRC – Some Impressions

16 different EVs and PHEVs were tested against 69 AC-charging devices (23 Type-1, 22 Type-2 and 24 multi-type public columns)

• Tests featured unique temperature coverage from -30C to +40C

• more than 30 EVSE & 5 test device partners

• The project saw measurement devices, EVs and rechargers improving **due to** and **during** the campaign



Global InterOp Process – Summary

Interoperability and Conformance tests can be conducted by OEMs, EVSE manufacturers and/or test houses

- International harmonized test specifications for EVSE and EV are required – AC v.1.0 ready
- Process proposal for annual review of the test specifications in discussion
- Participate voluntarily. No compulsory for membership in order to keep costs low
- A potential advanced test system shall be modular & function ideally (semi-)automatically

