EV CERTIFICATION
PROCESS TO SUPPORT
INTEROPERABILITY

Grid Connection European Stakeholder Committee

Brussels

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WHO WE REPRESENT

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ABOUT THE EU AUTO INDUSTRY

- 13.2 million Europeans work in the automotive sector
- 10.3% of all manufacturing jobs in the EU
- €383.7 billion in tax revenue for European governments
- €106.7 billion trade surplus for the European Union
- Over 7.5% of EU GDP generated by the auto industry
- €72.8 billion in R&D spending annually, 33% of EU total

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IMPLEMENTING ACT NEEDED TO DEFINE EV CERTIFICATION PROCESS

Interoperability between EV and EVSE is crucial for Mobile Distributed Energy Resources (DER)

EV charging can be implemented through:

- DC Power Exchange: The EVSE must meet the requirements outlined in the DCC & RfG
- AC Power Exchange: The EV and EVSE, when combined, must meet the requirements outlined in the DCC & RfG

Both scenarios require a stable communication between EV and EVSE (e.g.: ISO15118-20).

For **AC Power Exchange**, a consistent implementation within the EV and EVSE is needed. An implementing Act as part of the RfG and DCC could guide the following key aspects:

- Functional Allocation between the EV and EVSE,
- Implementation Guidance on Communication Standards,
- Certification Scheme for V2G AC EV based on harmonized & exhaustive requirements including a reference implementation.

All aspects must be:

- verifiable through testing,
- certifiable by an accredited body,
- and meet the necessary homologation requirements for market approval. (A cross-reference in Annex 2 of (EU) 2018/858 towards 2016/631 is needed)

National guidance documents on Requirements for Generators (RfG) allows Distribution System Operators (DSOs) to define regional requirements fostering proprietary non interoperable solutions.

ACTUAL IMPLEMENTATION OF THE RFG & DCC CAUSES EV TO FOLLOW REGIONAL RULES

EU Regulation

National Transposition Rules to meet EU Regulation

DSO Connection rules

Actual setup for RfG

Regulation EU 2016/631 Requirements for Generators



Comply with

National Standards

GER VDE-AR-N-4105 UK G99/G98 ES NTS-Generators IT CEI-0-16 & 0-21 BE C10/11



Comply with

Regional Implementation to the National Standards

The actual draft allows

- 1. DSO's to define national implementation & additional requirements for the EV & EVSE
- 2. EV and EVSE manufacture are urged to develop proprietary solution's.

The <u>VDE FNN</u> (Germany) offers an example based on VDE-AR-N-4105 of a guidance document illustrating how to implement functional allocation for bidirectional charging.

The example allows for different solutions, but bidirectional charging activation depends on matched pair (EV & EVSE)

GRIDCODE FULL PICTURE FROM REGULATION TO PERMITTING

EU Regulation

Requirement For Generator EU 2016/631

List of harmonized GridCode requirements with parameters configurable range for national implementation

§13.a Technical requirements

- U & Hz operating Range (nominal & deviation) incl power stability
- Resistance to grid event (ROCOF, FRT)
- Grid active support function (LFSM U/O)
- Data exchange interface

Gridcode Harmonize regulation

Comply with

National Transposition Rules to meet EU Regulation

Requirement for Certification (FR, NL,...: EN 50 549 -1 / -10)

Implementation guide for RFG requirements

Gridcode certification : test method & acceptance criteria

Additional Technical requirements

- U; Hz measurement accuracy
- Active & reactive power capacity & accuracy

Additional optional function:

- OVRT
- Voltage Support function (Q(Setp) Q(U), Q(P), cosPhi(P), cosPhi(setp))
- voltage & frequency protection (NS protection)
- Zero current mode
- ..

Third party certification of Gridcode compliance

Comply with

DSO Connection rules

Requirement for Permitting DSO connection rules

National implementation : Value for Gridcode parameters Selected optional function

Administrative process for permitting incl. Gridcode compliance

installation Technical requirements

- Connection to Smartmeters
- Use of "data exchange interface" (§14a)
- Compliance with existing Solar installtatio or stationary storage

In use Technical requirements

- Max allowed Injection power
- Max allowed Charge power
- Max allowed unbalance between phase

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COMPARISON TO THE ACTUAL VEHICLE REGULATION

Vehicle Emission Regulation

Unified EU Process for Vehicles



Reference

Implementing Act 2017/1151



Reference

e.g. UNECE GTR 15 - WLTC

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Regional Implementation to National Standards

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National Transposition Rules to meet EU Regulation

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National Standards

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Regional Implementation to National Standards

Proposed Setup for EVs

Regulation EU 2016/631 Requirements for Generators



Implementing Act XXXX/xxxx



Unified EU Process for Vehicles

Global Technical Guidelines or Certification Standard

The actual proposal follows the Vehicle Emission regulation scheme.

The scheme is a proposal to support customers to buy an interoperable system in an open market.



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