

Workstream: Development of certification schemes for electric vehicles and electric vehicle supply equipment

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Problem Statement

The draft NC RfG 2.0 and NC DC 2.0 mandate an independent certification of electric vehicles (EV) and electrical vehicle supply equipment (EVSE).

However, these two network codes are not legislation which is within the scope of homologation (for EVs) or CE marking (for EVSE).

In addition, the relevant international standards are not complete in terms of all the NC RfG 2.0 and NC DC 2.0 requirements. Consequently, there are a number of uncertainties in implementing the relevant mandatory equipment certification schemes.

In addition to the still evolving standards, there are a large number of directly affected parties, including all European DSOs, EV and EVSE equipment manufacturers, testing laboratories and authorised certifiers/notified bodies, many of whom will be looking for guidance as to what is required of them when the certification regime becomes mandatory. Although the focus might be on the testing of equipment, there may also be requirements for appropriate software simulation models, and these should also be in scope of this work.

Wherever possible, existing testing and/or modelling schemes should be adopted or adapted.

The implementation period for mandatory equipment certificates is expected to be three years after entry into force of the revised NCs. It would be ideal if the issues foreseen in this proposal could be resolved and briefed to DSOs, manufacturers, testing laboratories and potential certifiers as soon as possible after entry into force so that processes and systems are all in place for when certification becomes mandatory.

As EVs and EVSE are mass market products it is essential that the processes for certification are simple for manufacturers, certifiers and DSOs, well understood, and also fully functioning before the end of the implementation period. The processes should be such that domestic customers who become owners of EVs do not need to engage with the compliance process.

Target (objectives)

- Understand the relevant international landscape for standards on technical requirements and compliance testing for EV, EVSE and grid connection. (EV: ISO 5474-x; EVSE: IEC 61851-1/-23, IEC 61980; communication: IEC 61851-1 Annex A, ISO 15118-2/-20/-202; grid connection: EN 50549-1/-2/-10).
- Identify legitimate relevant associated technical requirements which are specified nationally.
- Understand the existing state of compliance schemes and certification nationally and internationally. Identify whether it would be legally possible to include the NC RfG 2.0 and NC DC 2.0 requirements for EVs in the existing homologation requirements and the requirements for EVSE in CE marking in combination with an appropriate conformity assessment.

- Identify gaps in compliance schemes and the relevant international standards for EV, EVSE and grid connection.
- Clarify in which EV/EVSE combinations bidirectional charging is possible.
- Recommend how identified gaps can be closed by appropriate additional specification, and by appropriate evaluation measures (testing, modelling, manufactures' data) including by specific advice from, or actions by, this Expert Group, including possible harmonisation and mutual recognition of the existing and new certification schemes in terms of the technical requirements under the NC RfG 2.0 and NC DC 2.0, if CE marking is not appropriate.
- Recommend steps to be taken by the EC, standards bodies, manufacturers, certifiers and DSOs to close the remaining gaps.
- Ensure relevant briefing material etc is available to all those parties who have future responsibilities for the operation of compliance certification for EVs and EVSE.

Legislative background and standards

Commission Regulation (EU) 2016/631 (NC DC)

Regulation (EU) 2019/1020 (Market surveillance)

Commission Regulation (EU) 2023/180 (déstabilisation of Russia)

Decision No 768/2008/EC (Conformity assessment process)

Regulation (EC) No 765/2008 (notified bodies)

Regulation (EU) 2024/1781 (ESPR)

Commission Regulation (EU) No 813/2013 (Ecodesign for lot 1)

Commission Regulation (EU) No 814/2013 (Ecodesign for lot 2)

Commission Regulation (EU) No 206/2012 (Ecodesign for lot 10)

Commission Regulation (EU) No 2016/2281 (Ecodesign for lot 21)

Blue guide

[Draft NC RfG 2.0](#)

[Draft NC DC 2.0](#)

[EG HCF Final Report \(eepublicdownloads.blob.core.windows.net\)](#)

EN 55014-1

EN 55014-2

EN 61000-3-2

EN 61000-3-3

EN 61000-3-11

EN 61000-3-12

EN 61000-6-1

EN 61000-6-2

EN 61000-6-3

Task description

- Establish dialog together with the EU commission (DG Ener, DG Move and DG Grow) to review homologation legislation and CE marking legislation and create a recommendation introducing it as a proof of conformity instead of developing certification schemes (which may or may not be harmonised) in each member state.
- Review technical requirements with the NC RfG 2.0 (bidirectional charging) and NC DC 2.0 (unidirectional charging), international standards and further national grid code implementations within the Member States
 - Create an overview of required functions for EV and EVSE
 - Prompt the relevant bodies to decide the dedicated function share between EV and EVSE to guarantee interoperability and the required, independent certification. Function share shall be based on the following aspects: technical feasibility; harmonisation potential in the EU member states
 - For AC unidirectional and bidirectional charging: Discuss certification schemes based on the differentiation “certification of a mobile part” (EV) and “certification of a stationary part” (EVSE)
 - Additionally for AC unidirectional charging only: Discuss certification schemes for two mobile parts: EV and Mode 2 EVSE (IC-CPD)
 - For DC unidirectional and bidirectional charging: Discuss certification schemes based on the “certification of a stationary part” (EVSE)
 - For wireless unidirectional and bidirectional charging: Discuss certification schemes based on the differentiation “certification of mobile part” (WPT vehicle unit) and “certification of a stationary part” (WPT ground unit)
- Review existing compliance schemes within EU Member States using information to be gathered from manufacturers, DSOs, authorised certifiers and Expert Group members. Summarise the certification scheme landscape, drawing out apparent attractive and negative features of the schemes examined.
- From an understanding of what is required, suggest what gaps exist in compliance schemes and standards, particularly in relation to DSO requirements which are not within the scope of the NC RfG 2.0 and 50549-1, -2, -10.
- Consider what additional work is necessary to create appropriate compliance schemes for EVs and EVSE in each Member State, and also look to see if existing compliance arrangements can or should be modified to allow for a more consistent approach between Member States, particularly in relation to the necessary actions by manufacturers in order to provide efficient pan-European market access. Ideally each Member State’s scheme should be identical (to match the exhaustive NC requirements), but if not to include the possibility of mutual recognition of the certification schemes.
- Using the information gathered, propose a standard or proforma compliance scheme referring to respective equipment certificates and that can be adopted by DSOs as appropriate for the local/national needs.
- Propose whether and how mobile parts (EV or unidirectional Mode 2 EVSE) proof compliance or possession of equipment certificate to relevant system operators.
- A proposal for standard requirements for any necessary local or national feature which does not currently exist in the NC RfG 2.0 and NC DC 2.0 or in international standards, and which will be part of the DSOs’ compliance schemes.

- Comprehensive briefing material related to the bullet above.

Deliverables

There will be six main deliverables from this work stream:

1. A comprehensive report on the work, findings and recommendations of the work stream.
2. Recommendation if and how EV homologation legislation can be used to ensure compliance with the NC requirements. Recommendation for EVSE if and how to follow existing grid code compliance schemes.
3. Outline additional technical requirements resulting from national grid code survey that can be provided as requirements to international standardisation committee work.
4. A set of recommendations for the EC, standards bodies, manufacturers, prospective certifiers and DSOs.
5. A pro-forma or example compliance and certification scheme that can be adopted by DSOs as appropriate for their existing local or national arrangements, and which is intended to achieve the maximum uniformity of approach.
6. In addition, briefing material on the above for use with affected parties in advance of the compliance deadline.

Timing

- estimated 12 months from October 2024

Team (update TBA)

The following nominations to participate in the workstream:

<i>Name</i>	<i>Organisation</i>	<i>Representation at GC ESC</i>
Mike Kay	GEODE	DSO Entity
Erno Levaniemi	Elenia	DSO Entity
Florentien Benedict	Stedin	DSO Entity
Serdar Bolat	EU DSO Entity	DSO Entity
Tommaso Carbone	EU DSO Entity	DSO Entity
Joost Kuppen	Enexis	DSO Entity
Andrea Hamzova	EU DSO Entity	DSO Entity
Frederic Alonso	Enedis	DSO Entity
Arnaud Rouffignon	Ores	DSO Entity
Julian Treichel	Porsche	CharIn
Andreas Sulzenbacher	Huawei	CharIn
Tobias Kampl	Fronius	CharIn
Glenn Cezanne	Charin	CharIn
Leonhard Bartsch	Ford	ACEA
Didier Deruy	Renault	ACEA
Nico Kreutzer	BMW	ACEA
Mark Pagett	NTC Europe	ACEA
Thomas Moskal	Mercedes Benz	ACEA
Adriana Pop	ACEA	ACEA

Dennis Haub	Bender	CEN/CENELEC
Sebastien Mather	Alpitronic	CEN/CENELEC
Ingo Diefenbach	Westnetz	CEN/CENELEC
Stefan Müller	Bosch	CEN/CENELEC
Miguel Martinez	UL Solutions	CEN/CENELEC
Bernhard Schowe	FGH	EFAC

Estimated workload

- three-weekly (or other appropriate timing) virtual meetings.
- commitment of 40 days per member.

Target audience

- Manufacturers
- DSOs
- TSOs
- Standards bodies
- Authorised certifiers
- GC ESC
- Relevant and/or interested stakeholders on the Connection Network Codes

Appendix

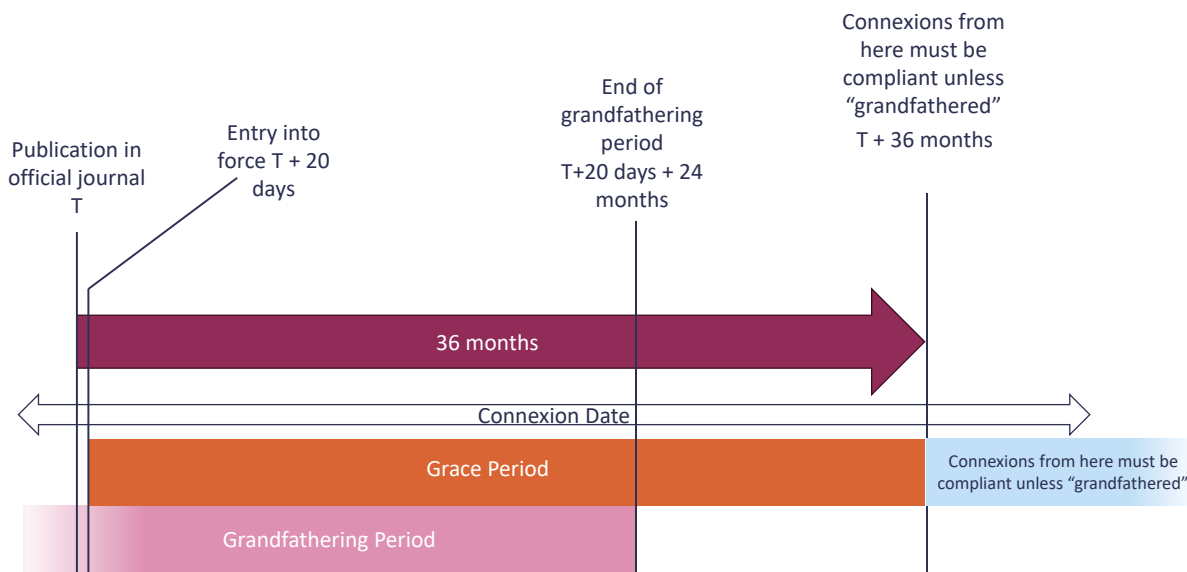
Introduction of the NCs RfG and DC 2.0:

To help stakeholders understand the timescales of the introduction of the NCs RfG 2.0 and NC DC 2.0 requirements and compliance deadlines, reference needs to be made to Articles 4.1, 4.2 and 72 in the NC RfG 2.0 and Articles 4 and 59 in the NC DC 2.0.

The description now focuses on the NC RfG 2.0, although the NC DC 2.0 is essentially the same. NC RfG 2.0 Article 4.1 explains that the NC RfG 2.0 does not apply to existing PGMs, and Article 4.2 explains that a PGM will be considered existing if it was already connected before Entry into Force or if not physically existing, if a contract for the purchase of the main plant has been formalized within two years of Entry into Force. This is the grandfathering period. Example for the grandfathering period: the EVSE is bought (contract existing) one year after Entry into Force. The EVSE is installed one year after the grace period (explanation see below). The EVSE is considered as existing, and the requirements of the NC RfG 2.0 or NC DC 2.0 do not apply.

Article 72 allows that the main requirements of the NC RfG 2.0, and compliance with these requirements, do not take effect until 3 years after publication. This is the grace period.

The following figure shows this diagrammatically.



Relevant NC DC Articles.

Article XX+2

V1G electric vehicles and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps connected at a voltage level of or below 1000 V shall possess equipment certificates, proving compliance with this Regulation.

Article XX+3.1

V1G electric vehicles and associated V1G electric vehicle supply equipment, and heat-pumps connected at a voltage level above 1000 V shall possess equipment certificates, proving compliance with this Regulation.

Article 35.3

The relevant system operator shall make publicly available the list of information and documents to be provided as well as the requirements to be fulfilled by the demand facility owner, the DSO or the CDSO in the frame of the compliance process. The list shall cover at least the following information, documents and requirements:

- (a) all documentation and certificates to be provided by the demand facility owner, the DSO or the CDSO;
- (b) details of the technical data required from the transmission-connected demand facility, the transmission-connected distribution facility, the distribution system, or the demand unit, with relevance to the grid connection or operation;
- (c) requirements for models for steady-state and dynamic system studies;
- (d) timeline for the provision of system data required to perform the studies;
- (e) studies by the demand facility owner, the DSO or the CDSO for demonstrating expected steady-state and dynamic performance referring to the requirements set forth in Article 43, Article 44 and Article 45;
- (f) conditions and procedures including scope for registering equipment certificates;
- (g) conditions and procedures for the use of relevant equipment certificates issued by an authorised certifier by the demand facility owner, the DSO or the CDSO.