

Expert group: Development of certification schemes, particularly for EVs and heat pumps

Draft to be discussed at the GC ESC on 27 June 2024

Chair: TBD

Vice-Chair: TBD

Problem Statement

The draft NC RfG 2.0 includes for the mandatory certification of vehicle-to-grid (V2G) EVs (and associated EV supply equipment (EVSE)). Similarly the draft NC DC 2.0 requires the mandatory certification of V1G EVs (and associated EVSE) and heat pumps.

Much good work was completed by the Expert Group “Harmonization of Certification and product Family Grouping” which reported to the ESC GC in March and June 2023. That report laid out the organizational and legal requirements to support the implementation of equipment certification within the scope of the NC RfG and the NC DC. That report’s recommendations have been taken into consideration in the drafting of the NC RfG 2.0.

Only a few member states do have existing compliance schemes that include formal equipment certificates, but most member states do not. Those without will need to modify their compliance schemes to include certification, and even where formal certification is required, the schemes will need to be extended to include the specific requirement of the NC RfG and NC DC for EVs (and associated EVSE) and heat pumps.

However, the technical specifications for EVs (and EVSE) and heat pumps the associated international standards are not yet mature or complete. 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, international equipment manufacturers, testing laboratories and authorised certifiers, 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 are also requirements for appropriate software models and simulations, and these should also be in scope of this work.

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

A further consideration is the existing national requirements for interface protection (including anti-islanding protection) for generation and electricity storage. These are pre-existing national rules and which will apply to V2G EVs and EVSE, and which are differentiated on a national basis, ie they are not standard. Although not in the direct scope of the requirements of the NC RfG, manufacturers and DSOs will need to consider how these requirement sit alongside the new mandatory certification requirements, and how any resulting additional complexity and costs can be minimised.

The implementation period for mandatory equipment certificates is expected to be three years after entry into force of the revised NCs RfG and DC. 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. Since important international product standards eg IEC 61851-1 (product standards for V1G and V2G AC EV supply equipment) are under revision right now this proposal needs to recognize the likely outcome of those revisions.

As heat pumps and 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, EVSE and heat pumps do not need to engage with the compliance process, and that the engagement for larger customers (eg EV charge park owners) are minimized.

In reviewing the implications for EVs, the expert group should consider the implications, if any, that arise from whether the V2G EV is connected via AC or DC, and whether there is any impact from the vehicle homologation regulation and the Alternative Fuels Infrastructure Regulation.

Due to the nature of electric vehicles having various and undetermined connection points to the electrical grid, some additional thoughts should be given on digital compliance labelling and whether this would be a useful facility for owners, DSOs or others.

Target (objectives)

- Understand the relevant international landscape for standards on technical requirements.
- Identify legitimate relevant associated technical requirements which are specified nationally.
- Understand the existing state of compliance schemes and certification nationally and internationally.
- Identify gaps in compliance schemes and relevant international standards.
- 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.
- Recommend steps to be taken by 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 heat pumps.

Legislative background and standards

Commission Regulation (EU) 2016/631

Commission Regulation (EU) 2016/1447

Commission Regulation (EU) 2018/858

Commission Regulation (EU) 2023/180

NC RfG 2.0

NC DC 2.0

EN 50549-x

IEC 61851-x

ISO 5474-x

ISO 15118

IECRE OD 009

[Are there others, such as heat pump or other product standards legislation? CE marking?]

Task description

- Review technical requirements with the ENC 2.0, international standards and further national grid code implementations within the Member States
- 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 RfG and 50549-1, -2/, -10.
- Consider what additional work is necessary to create appropriate compliance schemes for EVs and heat pumps 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.
- 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.
- A proposal for standard requirements for any necessary local or national feature which does not currently exist in the NCs RfG and DC 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 three main deliverables from this Expert Group:

1. A comprehensive report on the work, findings and recommendations of the Expert Group.
2. Outline additional technical requirements resulting from national grid code survey that can be provided as requirements to international standardisation committee work.
3. A set of recommendations for standards bodies, manufacturers, prospective certifiers and DSOs
4. 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.
5. In addition, briefing material on (3) for use with affected parties in advance of the compliance deadline.

Timing

- estimated [9] months from [June 2024].

Team (update TBA)

The following nominations to participate in EG XX have been received (name and association):

<i>Name</i>	<i>Organisation</i>	<i>Representation at GC ESC</i>

Estimated workload

- three weekly virtual meetings;
- commitment of 40 days per member.

Target audience

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