

# Safe electrification check lists: introduction

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Forum for European Electrical Domestic Safety

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# The electrical safety history



## What is Electrical safety?

Ensuring the **good functioning** of a set of components:  
Electrical installation + the appliances.

This set evolves over time:

- ageing of elements,
- addition of equipment,
- retrofit,
- etc.

# The electrical safety history



The concept of electrical safety can be interpreted in different manners **depending on the intensity** of electricity use.

👉 Electrical safety goes together with the **advancement** of electrification.

# The electrical safety history



## Electrification **stage 1** - *Access to electricity*

- Electrical Safety is largely ensured by awareness and first electrical codes development.
- **Electrical shocks and electrocution** are the predominant concerns.

👉 Only basic protection like insulation of electrical parts is considered.

# The electrical safety history



**Electrification stage 2** - *Common use of electricity, electricity widely used*

- Electrical safety is ensured by more and more detailed codes implementation.
- The risk of electrical shocks and electrocution are better managed, and the fire **risk arises**.

👉 Fault protection devices are installed.

# The electrical safety history



**Electrification stage 3** - *Use of electricity is intensifying, but installations are ageing*

- The risk of electrical shocks and electrocution is lowered.
- **Fire risks** are predominant.

👉 More sensitive protection devices are added, **periodic inspections** are key for fire prevention.

# The legacy of the history of electricity



In the EU:

- **25 to 30%** of domestic fires have an electrical source
- **50%** of accidental domestic fires have an electrical source
- **132 millions** of obsolete electrical installation

# The future of electrical safety



The **Energy Transition** leads to a paradigm shift.

The **Energy Transition** is mainly based on **electrification**.

The **Energy Transition** drives to **stage 4** of electrification.

👉 Learning lessons from the past

👉 We must anticipate

👉 And leave no one behind



# Safe electrification check lists: presentation

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# Check list - goals



- Reference tools in the view of implementation guidelines related to EED, RED and EPBD.
- The check lists focus on electrical safety key points, underlining specific **recommendations**.

👉 **Charging Point (EV CP), Heat Pumps (HP), Battery Storage Systems (BSS) and Photovoltaic installations (PV).**

# Check list - goals



- The check lists concentrate only on common denominators as **general approach**.
  - The check lists are designed to be understood by a large audience: client, installers and regulators/legislators
- 👉 Draw attention on **key actions** to be taken to be successful with the deployment of **high load** installations in the domestic habitat.

# Check list- concept

- 2 angles:  
**User/Installer**
- A timeline: **Before, During and After installation**

## SAFE ELECTRIFICATION CHECK LIST ELECTRICAL VEHICLE CHARGING POINT



### INTRODUCTION

The safe electrification check lists initiated by the Forum for European Electrical Safety (FEEDS, [www.feedsnet.org](http://www.feedsnet.org)) aim to provide the installer and the user with essential information regarding the electrical safety of the installation. This sheet is proposed in collaboration with AVERE - The European Association for Electromobility which regroups national association, charging point operators, manufacturers, OEMs, eMSP, EV users, governmental and research organizations.



### DESCRIPTION

Electric vehicles home charging points are devices installed in garages, garages entrances and underground garages to recharge your battery-electric vehicles. These home charging points have maximum charging power output that can go up to 22kW but generally offer a power output that goes up to 7kW. Home charging points have on average a size of 30 x 20 x 15 cm.



### BEFORE INSTALLATION



#### CLIENT

- Make sure to ask for a qualified and, where relevant, certified installer.
- Assess your needs as a client (See annexe a) in terms of charging point (Power of recharging point, type of recharging point, AC or DC, and smart or bidirectional recharging point).
- Check with local authorities if a permit is required.
- Check the existence of an electrical inspection report. The report can assess the safety, the readiness to accept new equipment. If no report is available, or if the existing report doesn't give the useful information, it is recommended to ask one if the electrical installation has more than 5 years.
- Check whether the available power reserve of the electrical installation is sufficient to supply the intended car charger; if not:



#### INSTALLER

- Plan cables paths and ensure all cables from the power source to the charger will have the appropriate cross-section (See annex b) and that all necessary electrical protection devices will be installed.
- Check connectivity: Wi-Fi, Long Term Evolution (LET)/4G/5G (Apps are often required to install the electric vehicle supply equipment and for the management of advanced functions).
- Check socket-type required (Type 1, Type 2, etc.).
- Make sure that the planned recharging point model has a declaration of conformity.
- Execute and release electrical inspection report on the existing installation to ascertain that the existing installation is safe and is prepared to accommodate the new circuit in a safe and efficient way. Especially:

# Check list - content



## Main technical points:

- Readiness of the electrical installation and inspection report
- Available Power
- Main distribution panel
- Earthing
- Cables sizing
- Maintenance

# Check list – practical example



## Home EV charging point (From the US)

- **63%** had an electrical inspection before installing EV chargers
- **54%** of electric vehicles owners had to upgrade their electrical panel when installing EV chargers
- **20%** had to have charging equipment replaced:
  - 28% charging cable
  - 19% plug /connector
  - 17% Electronic component
  - 12% GFCI (ground-fault circuit interrupter)
  - 9% Overcurrent protection
  - 9% Meter
  - 7% Housing enclosure
  - 2% other

Thank you for your attention!

Safe electrification check lists  
available on:

<https://www.feedsnet.org/>

