

IET Code of Practice for EV Charging Equipment Installation

BEAMA EV Infrastructure Conference
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Carolyn White
Director
IET Standards Limited



Code of Practice
for Electric Vehicle Charging
Equipment Installation



Overview

- Why do we need this Code of Practice?
- Who is the Code of Practice aimed at?
- Key technical recommendations
- Embedding Code of Practice into EV industry
- Communicating EV electrical safety to the public

WHY DO WE NEED THIS CODE OF PRACTICE?



ENABLES EV BUSINESS MODELS

- Provides definitive guidance on safe electrical best practice
- Enables confident procurement and compliance for insurers

Transport Minister Norman Baker:

“This is an excellent example of industry and Government working together to develop **safe and practical solutions for plug-in vehicle recharging**. This Code of Practice represents a real step forward in easing the path for consumers to make the switch to ultra-low emission vehicles.”

Paul Everitt SMMT Chief Executive:

“Electric vehicles can offer a practical and affordable ultra-low carbon driving option for many motorists and this new Code of Practice will **ensure vehicle charging remains hassle-free and safe** across the UK.”

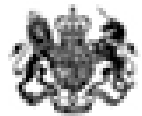


Enables compliance with Wiring Regulations

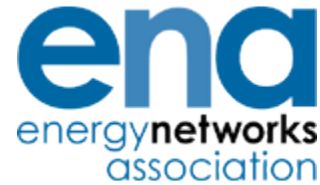
- IET Wiring Regulations BS 7671:2008(2011) does not specifically cover installing EV charging equipment
- IET Code of Practice is fully compliant with Wiring Regulations and IET Technical Regulations team approved text
- References all relevant European and international standards
- Wiring Regulations will reflect CENELEC HD 60364-7-722 Requirements for Supply of Electric Vehicles by 2013



Enables industry to work together



Office for Low
Emission Vehicles



Representing the best in electrical
engineering and building services



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Transport for London



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WHO IS THE CODE OF PRACTICE AIMED AT?



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- Installers – **competent** electricians
 - Part P registration may not be sufficient
- Procurers – specifying EV installation work
- Design engineers – manufacturing EV charging equipment and vehicles
- Electricity supply companies

KEY TECHNICAL RECOMMENDATIONS



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Physical layout of charge points

- Avoiding trip hazards
- No extension leads!
- Access to controls
- Labelling of sockets
- BS 1363 sockets must be on dedicated circuits

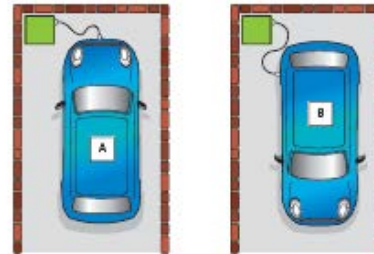
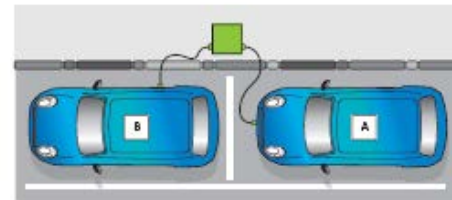
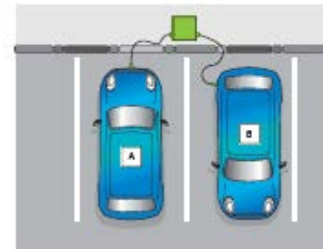
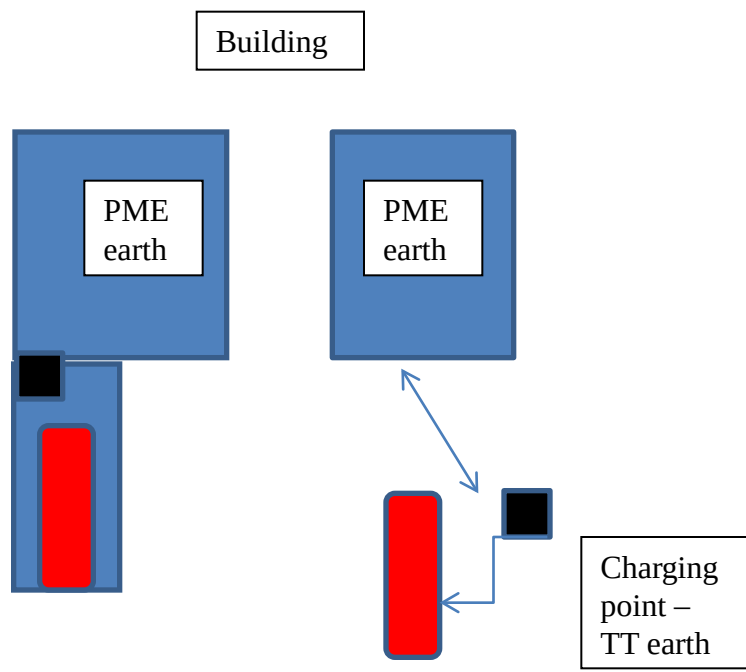


Figure 4.1 –
Charging
equipment
location relative
to parking space



Domestic installation principles



- Conductive parts of separate earthing systems should not be simultaneously accessible
- A risk assessment needs to be conducted on site to determine particular requirements for each installation.
- If car cannot be charged inside the building then may not use the building's PME earth – equipment needs to be on a TT earth outside
OR equipment to disconnect supply could be fitted
- OR achieve electrical separation via an isolating transformer

On-street and commercial recommendations

On-street

- Must not be connected to unmetered supply
- May not be connected to PME earth
- Must not be wired on a loop basis



Commercial

- Can be connected to building earth outside building if part of a guaranteed TN-S system
- Or if building has steel structure or reinforced foundations



Checklists and assessment forms

Checklists for domestic installations

Arrangements prior to installation – Domestic installations				
REF	CHECK	YES	NO	N/A
3.1	Is the incoming supply a metered supply?			
3.2	Is the existing supply adequate for the additional demand?			
3.3	Has the earthing arrangement of the incoming power supply been established?			
	Are the existing earthing and bonding arrangements compliant with BS 7671?			
6.2.3	Is the supply PME?			
6.2.3	If PME, have the precautions necessary been identified?			
6.2.3	If a TT earthing system is being provided for the charging equipment, has a simultaneous contact assessment been carried out? See form C1			
3.6	Has the installer reviewed the installation instructions provided by the charging equipment manufacturer?			
3.7	Has planning permission and/or Building Regulations approval been granted for the electric vehicle charging equipment installation?			
3.9	Have the details of the proposed installation been discussed and agreed with the client?			
	Have any necessary repairs to the existing installation been agreed with the client?			

Risk assessment form C1

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Premise with PME supply and vehicle charging equipment to be installed outdoors where a TT system is proposed to be adopted for charging equipment only

(Form to be included with forms for certification given to the person ordering the work)

Name and address of client	Installation Address
.....	
Postcode.....	Postcode.....
Supply taken from, e.g. main building/house/garage/other	
Location of electric vehicle charging equipment considered in this risk assessment, (approximate distance to reference points)	
.....	
.....	
Step	Record
Step 1 Identify the hazards	
(A) Does the building from which the charging supply is to be obtained have a PME supply?	Yes/No
(B) Is the vehicle charging equipment to be installed outdoors?	Yes/No
(C) Is a TT system to be adopted for the vehicle charging equipment only?	Yes/No
	If the answer to all three of the above questions is YES, the hazard will be:
	In the event of an open circuit neutral in the PME supply system all conductive-parts connected to the main PME earthing terminal, e.g. any exposed- or extraneous-conductive-parts that may be directly, or indirectly, or otherwise connected to this earthing terminal, may become raised to a dangerous voltage relative to true Earth.
Step 2 Decide who might be harmed and how	Any person who can simultaneously touch any conductive-parts or conductor which might be connected to the main PME earth terminal of the building, e.g. a water tap, or metallic gas/water or fuel pipe, or metallic conduit, or item of Class I electrical equipment such as an outside light, switch or socket-outlet, or a boiler flue, or structural steel work, etc., AND the vehicle being charged OR any other conductive-parts or conductor which might be directly or indirectly or otherwise connected to the TT earth terminal of the vehicle charging equipment.



EMBEDDING CODE OF PRACTICE INTO EV INDUSTRY



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Electrical training

- EV installer training courses based on Code of Practice piloting 3 & 4 May at Gateshead College
- Courses cover practical and theoretical electrical knowledge including use of risk assessment forms
- Detailed guidance provided on pre- and post-installation paperwork
- Different modules for residential, public and commercial installation work

Training support

Print



Code of Practice
for Electric Vehicle Charging
Equipment Installation



Digital



Installer certification



- Industry accreditation scheme in partnership with BRE Global
- Consultation day 14 May – email for details
- Installers can be certified to one manufacturer's equipment or to several
- IET to maintain database of certified installers



Advising infrastructure providers

- New research report available 14 May
- Aimed at local authorities and their commercial partners in EV infrastructure
- Strategic and technical guidance backed up with new case studies from UK and Europe
- In depth analysis of business models that work
- Technical advice references Code of Practice

CONTENTS

1. Best practice recommendations
 2. Strategy overview
 3. Using plug-in vehicles to meet local authority policy objectives
 4. Costs and delivery models
 5. Technical guidelines, legislation and standards
- Appendices



COMMUNICATING EV ELECTRICAL SAFETY TO THE PUBLIC



Customer issues

Customers need:

- Clear advice from retailers on what to do
- On-site assessment from competent installer
- Warranties and other documentation from installers and suppliers
- Peace of mind policies to cover breakdown, repair and maintenance
- Easy upgrades and enhancements as new charging equipment and new tariff options come on the market



Simplicity is key

- All customer installations are different. A competent electrician should assess site requirements as part of sales package
- As a minimum customers should be advised that BS 1363 socket outlets should be on separate, dedicated circuits
- Simple 'glove box' advice on charging best practice should be provided with every car

carolynwhite@ietstandards.com

01438 767654



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