INSPECTORS TRAINING

Course Overview

EVSE Safety, Compliance and Calibration Training.

MIRA TECHNOLOGY INSTITUTE
Specialist Skills for the Global Automotive Industry

NWSLC
NORTH WARWICKSHIRE & SOUTH LEICESTERSHIRE COLLEGE

S.P.A
SAFETY PASS ALLIANCE

Course Overview

This course is designed to provide participants with a thorough understanding of the calibration check, test and report process for electric vehicle (EV) chargers. It covers essential topics such as health and safety, site activity hazards and risks, Decarbonisation of Transportation, EV awareness, metrology, calibration regulations, and other critical aspects necessary for ensuring the safety and accuracy of reporting at EV charging stations

Safety Passport Alliance Scheme

Participants will gain their SPA Passport to carry out Electric Vehicle Charger Calibration activities. The Safety Passport Alliance provides a nationally recognised standard of Health and Safety assurance for Contractors, Agency Staff and Employees. Work with a range of industries to develop bespoke courses. Designed to enhance knowledge and skills at multiple levels.

Overall benefits for employers and employees that hold a valid Safety Passport include:

- Developed by the sector to create best practice throughout the sector
- Designed for Contractors, Casual workers or Employees
- A known standard within the sector when recruiting staff
- Exemptions are given to other training where agreed by the sector
- Increased safety awareness contributing to higher standards of safety performance

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Target Audience

This course is tailored to meet the needs of a wide range of professionals who play a crucial role in the calibration testing of the public EV charging point infrastructure. By targeting these groups, the course aims to foster a well-rounded understanding of EV charger calibration, ensuring that all stakeholders are equipped to contribute to the growth and reliability of the EV charging network, in line with the Regulations: **public charge points - GOV.UK.**

Aims:

- Develop the understanding and competence of individuals around EV charger calibration procedures, safety protocols, and compliance with regulatory standards.

Objectives:

- Enhanced knowledge, skills and competency to support accurate calibration.

Learning Outcomes:

Appreciate how they personally can influence good standards within health, safety & the environment

Understand the value of risk assessment and have the knowledge to recognise when change to a generic assessment is required

Understand the common hazards associated with working in this sector

Understand the government's role in promoting carbon reduction.

Analyse policies supporting EV adoption and decarbonisation.

Define carbon footprint and its significance in vehicle manufacturing and usage.

Learning Outcomes:

Calculate and compare carbon footprints of ICE and EV vehicles.

Understand the importance of accurate calibration for EV chargers.

Understand basic calibration tasks and the selection of appropriate tools and techniques.

Understand metrology principles to ensure the accuracy and reliability of EV chargers.

Understand and comply with relevant calibration regulations.

Demonstrate the importance of accuracy when reporting calibration results.

Course Format:

Duration:	4.5 Days 27 GLH with assessments.
Cost:	£TBC
Delivery Method:	Combination of lectures, Online Learning, interactive sessions.
Assessment:	Multiple Choice Question Examinations.
Renewal:	Candidates will be required to renew their passport through this training every 3 years.

Indicative Content

Day 1	SPA core Day, building foundational knowledge on health, safety, and environmental awareness to set the stage for understanding the importance of safety in all subsequent topics.
Day 2	Focus on electrical hazards to highlight the risks associated with EV charging. Move on to EV charging awareness to provide a comprehensive understanding of the technology and its applications.
Day 3	Begin with an introduction to EV charging calibration to build technical knowledge. Progress on to Introducing metrology in EV charging to ensure learners understand the precision and standards required in the field.
Day 4	Building on foundational knowledge from previous sessions, focusing on decarbonisation, carbon footprint, and government policies. linking these topics to practical applications in EV technology and charging.
Day 5 **Half day**	Conclude with Q&A session and recap. With multiple choice exam to assess learner knowledge.

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Indicative Content

Day 1

SPA Core Day Health, Safety and environmental awareness training.

Module 1 Organising for Safety:
- Understanding legal responsibilities of employers and employees.
- Role of enforcing authorities.
- Identifying vulnerable workers.
- Hazard identification and control.

Module 2 The Workplace:
- Creating a safe workplace and promoting safe behaviour.
- Identifying hidden services and specific hazards.
- Risks associated with working at height, asbestos, confined spaces, and permits-to-work.

Module 3 Tools, Plant, and Machinery:
- Risks of powered and non-powered equipment.
- Understanding energy-related hazards.
- Workplace transport safety risks.

Module 4 Health:
- Risks and controls for hazardous substances.
- Addressing musculoskeletal issues, manual handling, noise, and stress.
- Awareness of precautionary measures for workplace health risks.

Module 5 Procedures:
- Importance and benefits of structured procedures.
- Focus on permits to work, emergency protocols, and first aid arrangements.

Module 6 The Environment:
- Environmental requirements for now and the future.
- Safe storage, marking, and waste control hierarchies.
- Emergency planning for environmental incidents.

Indicative Content

Day 2

Hazards of Electricity

Types of Electrical Hazards:
- Shock and electrocution.
- Fire hazards.
- Arc flash and burns.
- Explosions due to electrical faults.

Impact of Electrical Hazards:
- Effects on human health.
- Consequences for equipment and infrastructure.

Mitigation Strategies:
- Grounding and insulation.
- Personal Protective Equipment (PPE).

Focus on EV Charging Risks:
- High voltage systems in EV chargers.
- Risks during carrying out calibration activities.

EV Charging Awareness
- Introduction to EV Charging:
- Basics of EV charging technology.
- Importance of reliable charging infrastructure.

Types of EV Chargers:
- Level 1, Level 2, and DC fast chargers.
- Features and use cases for each type.

Charging Standards and Connectors:
- Overview of global standards (e.g., CCS, CHAdeMO, Tesla, Type 2).
- Interoperability considerations.

Indicative Content

Coninuation of Day 2

Hazards of Electricity

Charging Networks/Infrastructure:
- Key components of charging networks.
- Overview of public vs. private charging stations.

Cost and Efficiency:
- Economic considerations of EV charging.
- Efficiency comparisons among chargers.

Future Trends in EV Charging:
- Wireless charging.
- Integration with renewable energy sources.

Indicative Content

Day 3

Introduction to EV charging calibration

What is Calibration?
- Definition and purpose.
- Importance in ensuring charger accuracy and reliability.

Eichrecht (German Calibration Law):
- Overview and implications for EV chargers.
- Application in international contexts.

Public Charge Point Regulations 2023:
- Key provisions.
- Compliance requirements.

Regulatory Framework and Compliance:
- Overview of global and local regulations.
- Best practices for meeting regulatory requirements.

Safety Guidelines and Best Practices:
- PPE requirements.
- Safe handling of high-voltage systems.

Metrology in EV Charging

Introduction to Metrology in EV Charging:
- Role of metrology in charger performance.
- Relevance to EV industry standards.

Principles of Metrology:
- Units of measurement and accuracy.
- Traceability and calibration intervals.

Indicative Content

Coninuation of Day 3

Introduction to EV charging calibration

Calibration Procedures:
- Step-by-step guide to calibrating EV chargers.
- Key metrics and tools involved.

Tools and Equipment:
- Overview of specialized tools for calibration.
- Maintenance and care of equipment.

Documentation and Reporting:
- Importance of accurate records.
- Examples of calibration reports.

Quality Assurance and Standards:
- Ensuring compliance with ISO and other relevant standards.
- Regular audits and updates to practices.

Indicative Content

Day 4

Decarbonisation and Carbon Reduction

What are Tailpipe Emissions?
- Definition and components (e.g., CO2, NOx, particulates).
- Sources and environmental impact.

Decarbonisation Strategies:
- Transition to EVs and hydrogen vehicles.
- Improved fuel efficiency and hybrid technologies in ICE vehicles.
- Integration of renewable energy in EV charging.

Understanding Carbon Footprint

What is a Carbon Footprint?
- Definition and measurement.
- Key contributors in the automotive lifecycle: manufacturing, operation, and disposal.

Lifecycle Emissions Comparison:
- ICE vs. EV carbon footprints (e.g., fuel production vs. battery manufacturing).
- Role of recycling and sustainable materials in EV production.

Government Policy and the Drive for Carbon Reduction

Global and UK Policies on Carbon Reduction:
- UK 2050 Net-Zero Strategy.
- Ban on new ICE vehicles by 2030.
- Incentives for EV adoption (e.g., grants, tax benefits).

Regulatory Standards:
Emission targets for manufacturers.
Role of carbon credits and penalties.

Indicative Content

Coninuation of Day 4

Decarbonisation and Carbon Reduction

Infrastructure Development:
- Investments in EV charging networks.
- Integration with renewable energy.

Linking Carbon Reduction to Ev Charging

Joining the Dots:
- Health and safety: Impact of reduced tailpipe emissions on public health.
- EV charging awareness: Role of renewable energy in decarbonisation.
- Calibration and metrology: Ensuring energy efficiency and sustainability in EV charging systems.

Future Trends in Carbon Reduction:
- Advancements in battery recycling and second-life applications.
- Hydrogen as a complementary fuel source.
- Role of AI in optimising EV energy consumption.

Indicative Content

Day 5

Assessment Day

Revision Topics Outline for Recap Session:

- Types of Electrical Hazards
- Impact of Electrical Hazards
- Mitigation Strategies
- Focus on EV Charging Risks
- Introduction to EV Charging
- Types of EV Chargers
- Charging Standards and Connectors
- Charging Networks/Infrastructure
- Cost and Efficiency
- Future Trends in EV Charging
- What is Calibration?
- Eichrecht (German Calibration Law)
- Public Charge Point Regulations 2023
- Regulatory Framework and Compliance
- Safety Guidelines and Best Practices
- Metrology in EV Charging
- Introduction to Metrology in EV Charging
- Principles of Metrology
- Calibration Procedures
- Tools and Equipment
- Documentation and Reporting
- Quality Assurance and Standards
- Definition and components (e.g., CO2, NOx, particulates).
- Sources and environmental impact.
- Transition to EVs and hydrogen vehicles.
- Improved fuel efficiency and hybrid technologies in ICE vehicles.
- Integration of renewable energy in EV charging.

Indicative Content

Day 5

Assessment Day

- Definition and measurement.
- Key contributors in the automotive lifecycle: manufacturing, operation, and disposal.
- ICE vs. EV carbon footprints (e.g., fuel production vs. battery manufacturing).
- Role of recycling and sustainable materials in EV production.
- UK 2050 Net-Zero Strategy.
- Ban on new ICE vehicles by 2030.
- Incentives for EV adoption (e.g., grants, tax benefits).
- Emission targets for manufacturers.
- Role of carbon credits and penalties.
- Investments in EV charging networks.
- Integration with renewable energy.
- Health and safety: Impact of reduced tailpipe emissions on public health.
- EV charging awareness: Role of renewable energy in decarbonisation.
- Calibration and metrology: Ensuring energy efficiency and sustainability in EV charging systems.
- Advancements in battery recycling and second-life applications.
- Hydrogen as a complementary fuel source.
- Role of AI in optimising EV energy consumption.

Summary

This enhanced four-day course ensures a comprehensive understanding of EV charger calibration by integrating electrical hazard awareness, detailed calibration techniques, and metrology principles, participants will be well-prepared to contribute effectively to the EV charging industry.