CONFIDENTIAL

EV Charging Installation and Maintenance Training Program

Course Duration: 2 days (14 hours)

Target Audience: Technicians, Engineers, and Installation Professionals

Training Format: Lectures, Practical Workshops, Hands-On Installation, and Assessments

Day 1: Introduction to EV Charging Systems

Module 1: Overview of EV Charging

- Basics of Electric Vehicles and the need for EV charging infrastructure
- Types of EV charging stations: Level 1, Level 2 (AC), and DC Fast Charging (DCFC)
- AC vs. DC Charging: Technical differences and use cases
- Charging standards (IEC, SAE, CHAdeMO, CCS, GB/T, etc.)

Module 2: Safety Protocols and Regulations

- Electrical safety basics: Hazards and precautions
- Safety equipment for installation and maintenance
- Local and international regulations and standards (NEC, IEC 61851, etc.)
- Emergency response protocols and first aid

Module 3: AC Charger Components and Design

- Key components: Power modules, control boards, connectors, and cables
- Understanding AC power levels (single-phase and three-phase)
- AC charger installation requirements and site selection
- Load management and power distribution for AC chargers

Module 4: DCFC Components and Architecture

- Introduction to DCFC architecture: Converters, rectifiers, and control systems
- Key components: Power modules, cooling systems, connectors (CCS, CHAdeMO)
- Understanding power output (50 kW to 350 kW) and connector types
- Installation requirements: Site assessment, power supply needs, and cooling

Module 5: AC Charger Installation

- Pre-installation requirements: Site survey, power availability, and permits
- Step-by-step installation process for AC chargers
- Wiring, cabling, and securing charging units
- Testing and commissioning of AC charging stations

Module 6: DCFC Installation Procedures

- Pre-installation considerations: Power supply, infrastructure, cooling requirements
- Step-by-step DCFC installation and mounting procedures
- Wiring for high voltage and high current applications
- Site layout and cable management
- Commissioning and safety checks for DCFC units

Day 2: System Integration and Software Configuration

Module 7: Communication Protocols and Networking

- Understanding OCPP (Open Charge Point Protocol) and other communication standards
- Networking and connectivity: Wi-Fi, cellular, and Ethernet
- Integration with management software and billing systems

Module 8: Software Setup and Troubleshooting

- Configuring software for AC and DCFC chargers
- Remote monitoring and control features
- Troubleshooting software and communication issues
- Firmware updates and software maintenance

Module 9: Maintenance Procedures

- Routine maintenance for AC and DCFC chargers: Inspection and cleaning
- Identifying wear and tear and replacing components
- Troubleshooting common hardware and software issues

Module 10: Practical Hands-On Assessment and Certification

- Hands-on installation of AC and DC chargers
- Practical troubleshooting and maintenance exercises
- Written and practical assessment
- Certification of competency in EV charger installation and maintenance

Training Outcomes

By the end of the training, participants should be able to:

- Understand the technical differences between AC and DCFC charging systems.
- Safely install, configure, and commission AC and DCFC EV chargers.
- Perform basic maintenance and troubleshoot common issues in EV chargers.
- Follow safety protocols and regulatory standards during installation.