

Electric Vehicle Infrastructure

EV Electrical Services

Power Reliability

The electric vehicle (EV) infrastructure industry has been moving quickly to develop charging sites across the country. As the push to build a nationwide network continues, many challenges are surfacing.

Offering and maintaining reliable and functioning chargers is one major concern. The credibility and reputation at a fast-charging site relies on chargers working properly. For logistic companies, utilizing EV fleets, it is critical that their chargers have power to keep business running smoothly.

Another challenge is ensuring the electrical components that support your EV infrastructure are able to deliver the power demands of the charging site. One component that is critical to maintain is the switchgear.

Did you know electrical switchgear needs to be maintained and tested every 3-5 years? Thus, it is crucial to understand the importance of switchgear maintenance. If there is a failure in the switchgear, chargers will lose power and there may be a long delay in getting that corrected and back on-line.

Let Us Help You:

- Verify your switchgear equipment has integrity and the ability to effectively support your load.
- Ensure the electrical power system is installed and working properly.
- Test to ensure harmonics are not causing power quality issues.
- Create a maintenance program that ensures power reliability 24x7.
- Ensure your emergency plan includes a recovery partner who is familiar with your entire electrical power system and can get you up and running quickly.
- Stay compliant. We are knowledgeable and participate in the development of standards for NFPA, IEEE, and NETA.



We ensure reliability “beyond” the chargers.

While many site owners and operators are focused on ensuring charger uptime, Electrical Reliability Services (ERS) is focused on ensuring the power going to the charger is reliable. Our area of expertise is “beyond” the chargers and with the power distribution system supporting them. ERS NETA (InterNational Electrical Testing Association) certified technicians understand that for the chargers to be reliable, the power system has to function properly and be compliant with industry standards and regulations.

Count on our expertise and experience to provide the necessary electrical testing and maintenance services to keep the flow of power coming into your chargers.

How Do EV Chargers Impact Power Distribution Systems?

Non-linear loads from EV chargers may induce power quality issues within a power distribution system.

- The increase in power consumption can cause higher distribution loss, higher harmonic distortion, and voltage drops.
- Converting AC to DC creates power quality challenges by introducing harmonics. Harmonics can alter the electrical wave shape which can lower the power quality in the grid.

- Harmonic currents in switchgear will increase heating, reduce steady-state ampacity, and degrade insulating components.
- Harmonics can cause protective relays to malfunction, causing them to trip at the wrong values.

Recommended Skill Level

When implementing your power distribution system, you will want to have a highly experienced NETA certified technician, who understands the intricacies of your entire system and has in-depth knowledge of required industry standards and recommendations.

As a founding member of NETA, ERS is a leader in staffing Level 2, 3 and 4 NETA certified technicians. Our team is experienced in working on EV sites and have the processes, tools, and expertise to guide your EV infrastructure power project.

We offer services that protect you from power quality issues.

Acceptance Testing

Our comprehensive acceptance testing (AT) will confirm that your equipment is installed and calibrated to function per the design specifications.

- **Electrical System AT:** We will verify the manufacturer's tolerances and any applicable operation standards are met so that your electrical equipment functions correctly.
- **Switchgear System AT:** We will verify the equipment has integrity and can support the rated load in normal operation. This will ensure the equipment can provide overload and short-circuit protection, as it was designed to do. Our tests will include visual and mechanical inspection, dielectric withstand voltage, ground-resistance, and system function tests and phasing checks.
- **Circuit Breaker AT:** We will verify the quality of installation and confirm key components are in good physical and mechanical condition.

Engineering Services

Power system engineering studies can help you avoid accidents, productivity losses, and determine the presence and location of potential hazards. Some engineering service solutions we offer are:

- Short circuit/coordination studies
- Power quality / harmonics
- Arc flash studies
- Power factor studies
- Grounding studies
- Single-line diagrams

Ongoing & Preventive Maintenance

Being proactive and developing a maintenance program for your electrical equipment will keep employees and visitors safe, while ensuring against electrical system failures.

Emergency Response Services

When an unexpected failure occurs, it can pose serious hazards. It is critical for your emergency plan to include a recovery partner that can deliver a complete set of emergency response electrical services, from damage assessment and inspection to equipment repair and replacement.

Summary

While many owners and operators focus on improving the reliability of chargers, we are focused on ensuring the power going to your charger is reliable. It is imperative to follow the required maintenance standards, such as testing your switchgear every 3-5 years. These standards are in place to ensure the longevity, efficiency, and safety of the electrical infrastructure.

We know it is important for your chargers to work when expected. Our EV electrical services provide that peace of mind by ensuring the power distribution system supporting them is working properly.

Our highly skilled technicians and engineers at ERS have access to our technical knowledge database, which contains details from over 100,000 completed projects supporting ~400,000 pieces of equipment (throughout multiple industries). We understand power systems. You can trust our experts when it comes to your EV infrastructure.

Tests we typically conduct within an EV infrastructure are:

- Contact Resistance Measurements
- Insulation Resistance Measurements
- Power Quality / Harmonics
- Instrument Transformer Testing
- Thermographic Test
- Grounding Test
- Metering Testing
- Surge Arresters
- Partial Discharge Test
- System Function Test
- Circuit Breaker Test
- Protective Relay Test
- Power Conversion Systems

More Information

To learn more about ERS EV Electrical Services, please contact us at: (888) 468-6384 or visit ERS.vertiv.com.

