



VERTIV™

CRITICAL EXPERTISE FOR ELECTRICAL INFRASTRUCTURE



Recharge Your Power System Strategy

Like everything else in the world, power systems have evolved dramatically over the past several years. As the world's demand for power continually increases, the systems that deliver that power are becoming more complex, connected, and dangerous, and the risk continues to grow.

As a result, aging infrastructure is falling short of meeting needs. The people responsible for managing that infrastructure need new strategies and solutions for addressing emerging issues, ranging from the growth of renewable generation resources, to incorporating connected and intelligent devices, to managing security risks, and complying with increasingly stringent regulatory requirements. At the same time, they must remain competitive on a global scale by reducing costs, improving lead times and operational efficiencies, and modernizing their facilities.

Navigating the power transformation and ensuring the best possible electrical infrastructure to meet today's demands and challenges requires strategic investment in the right technologies, processes and services. Facilities that get it right will reap the rewards of safer, more reliable, more efficient power systems that not only keeps the lights on, but enhances operations through better connectivity, communication and control.

Plug Into Our Expertise

Your facility's very survival hinges on the health and efficiency of your electrical assets. Simply put, without power, nothing else matters. That's why choosing the right partner to maintain your electrical power infrastructure and the pulse of your facility is so imperative.

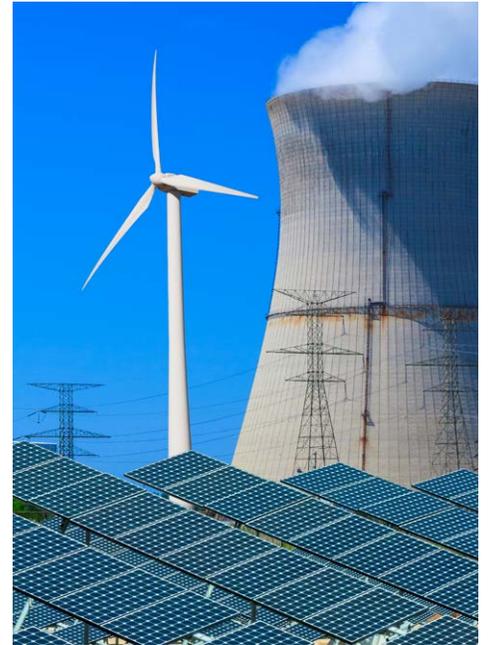
At Vertiv's Electrical Reliability Services, we've been committed to being that partner for data centers, utility, and commercial and industrial facilities since 1971. We do it by applying unprecedented knowledge, know-how, and expertise to

your entire power system. We start by hiring and retaining the best in the business — more than 450 engineers, NETA-certified technicians, and support personnel. Then we empower our experts through investment in tools and technologies that increase their understanding of all makes and models of electrical equipment and the impact of each component on the overall system. Our people apply their knowledge through a unique approach to asset optimization that leverages decades of historical data along with a solid grasp of the power trends and technologies of today and tomorrow.

When you work with Electrical Reliability Services, you benefit from a collaborative approach that puts your needs and goals first. We help facility, maintenance, and engineering managers formulate and implement plans for ensuring reliable, safe, efficient power. With well over 100,000 projects completed, we have the knowledge and experience to quickly troubleshoot, diagnose, and resolve the most challenging power problems you face. Facilities can operate confidently, knowing the power will always be on.

“Implementing a regular preventive maintenance program has paid for itself many times over. [Vertiv] identified and corrected many issues before they led to costly repairs and unexpected downtime. And after having our older systems restored to OEM specifications, we can sleep at night knowing our critical processes are protected. We're confident that our emergency power system will operate when needed, minimizing costly business interruptions.”

INTERNATIONAL REFINING COMPANY



Protect Your Most Critical Assets for Industrial, Utility and Commercial Applications

Vertiv's Electrical Reliability Services helps protect your most critical assets for industrial, utility and commercial facilities. With more than 100,000 projects completed, we have the expertise to quickly resolve your most challenging power system problems.

As the nation's leading independent electrical testing, maintenance, and engineering service company, Electrical Reliability Services focuses on extending the life of your most critical equipment. We offer solutions that allow your facility to start up faster and operate more reliably throughout every phase of its lifecycle.

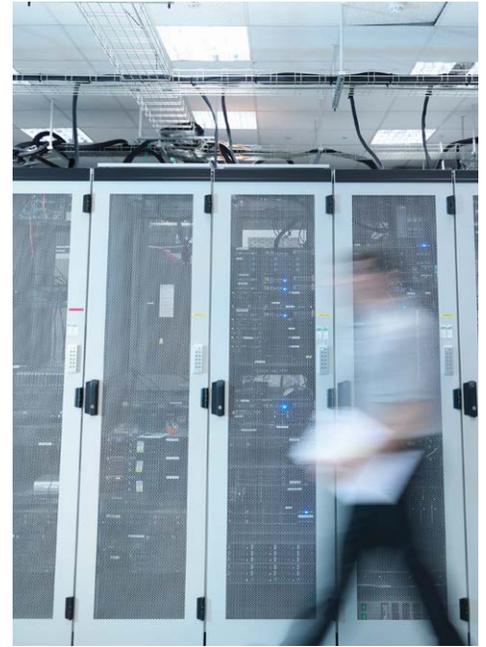
Your facility will see continual improvement in performance made possible through predictive and preventive maintenance strategies,

engineering services, and equipment upgrades and replacements. In an optimized facility, unplanned outages are virtually eliminated while more efficient turnarounds improve performance today, tomorrow and beyond.

As an independent third-party company, our recommendations are unbiased and based on principles of value engineering. We understand that the health and performance of your assets is vital to your success. Our first-hand experience proves that electrical testing and maintenance

has a dramatic impact on increasing the reliability of your electrical power system.

Wherever you are in your facility's lifecycle, healthy assets are the way to a healthier bottom line. As your partner, we can provide the most comprehensive solutions for your electrical system reliability, safety and performance.



Industry Expertise

We have extensive experience supporting major power users across all industries. Our dedicated teams of professionals combine this deep domain knowledge and cross-industry experience to deliver solutions to your toughest power system challenges, ensuring the highest level of reliability, safety and performance.

Data Centers

In a fast-paced dynamic market, you need partners that can evolve as fast as you do. Our services are designed to ensure safe, efficient, and reliable operation of your data center regardless of where you are in your lifecycle.

Metals and Mining

We help the world's largest metals and mining companies ensure safety and compliance through comprehensive electrical testing, maintenance and engineering services.

Utilities and Renewables

Ensuring reliable power among an aging grid is challenging. Leverage our expertise across the utilities and renewables sectors to deliver operational excellence and ensure your power is efficient and reliable.

Chemical, Oil and Gas

By using our deep domain knowledge and market experience, we help the chemical, oil and gas industries benchmark performance with other industries that have experienced similar challenges, helping you resolve issues quickly.

Manufacturing

In today's competitive market, your manufacturing facility is facing increased pressure to reduce costs and improve productivity. Our service solutions help some of the world's leading companies maximize uptime and reliability, while keeping workers safe.

Healthcare

As healthcare companies identify new ways to deliver better value for patients, our experts help you manage the complexity of your electrical power systems.

Education

As technology moves into the classroom, your demand for increased capacity and reliable power is more important than ever. We help colleges, universities, and large campuses implement electrical power solutions to support growing infrastructure.

Telecommunications

With rapid changes in technology, you need a partner that can keep pace with you every step of the way. Our network of experienced field service personnel are available 24x7x365.

Government

We have helped customers in various subsectors of the military, aerospace, public transit, infrastructure, research laboratories and more, address the challenges of operating efficient, reliable electrical power systems.



Rely on Our Specialized Expertise that Aligns with Your Business-Critical Electrical Infrastructure

Commissioning

Trust your mission critical facility to the commissioning experts at Vertiv's Electrical Reliability Services. Through our extensive experience in testing, maintaining, and commissioning complex electrical and mechanical systems, we have developed proven processes which enable us to deliver consistent, quality results — all while increasing your speed to market. Our comprehensive commissioning services for new and existing facilities help owners and operators build and maintain best-in-class facilities that deliver increased flexibility, efficiency, and reliability. Our commissioning services include:

- New building commissioning
- LEED commissioning
- Retro/Recommissioning
- Equipment optimization services
- Project management

Electrical Testing and Maintenance

As a founding member of the InterNational Electrical Testing Association (NETA), we are dedicated to helping set industry standards in electrical maintenance and acceptance testing. This ensures your power generation and delivery infrastructure is installed and operating safely and efficiently and within applicable regulatory guidelines. Our holistic approach and deep infrastructure expertise, amplified by our ability to leverage decades' worth of performance data, gives you insight into asset health and operating trends. This allows you to effectively manage risks, reduce costs and ensure safe, reliable operation of your most critical assets. Our testing and maintenance services include:

- Preventive maintenance
- Predictive maintenance
- Corrective maintenance
- Maintenance management and planning
- Outage and turnaround support

Electrical Engineering

As you begin to plan for a new project, evaluate an existing system, or troubleshoot a specific problem, you need accurate data and analysis to help you make those important decisions. Our highly qualified engineering team has helped thousands of customers perform power system analysis and planning, diagnose problems quickly, and design innovative upgrade solutions. The results are reduced costs and optimized system performance, safety, and capacity that meets your reliability demands. Our engineering services include:

- Electrical engineering design
- Power system studies
- Arc flash services
- Engineering drawings



Protection and Controls

A reliable protection and controls system is paramount to avoiding power disruptions, preventing costly damage to your critical assets, and ensuring the safety of your personnel. We can help you leverage the most advanced protection and controls solutions while keeping pace with changing technology and regulatory requirements for your critical power generation and delivery infrastructure. No one knows your protection and controls system like we do. We can diagnose problems quickly and design innovative upgrade solutions to reduce costs and optimize system performance, giving you peace of mind.

- Protection system design, integration, logic and settings
- Equipment upgrades and replacements
- Acceptance and maintenance testing
- Compliance services (NERC, IEEE, NFPA)
- Engineering drawings, schematics

DC Power

Your DC power system including the UPS, batteries, chargers, inverters and static switches are critical to ensuring reliable power. When power is interrupted, it can cause dangerous chemical process instability, catastrophic damage to process equipment, business systems taken offline, or in some cases, the complete shutdown of the facility — costing millions in wasted product, damaged equipment, and lost information. With so much at stake, it's important to protect your DC power system to ensure these assets are performing properly and will support the critical load when power is interrupted. Whether you need startup support, routine maintenance or emergency response, we are committed to delivering comprehensive services for maintaining this system.

- Applications engineering
- Commissioning and startup services
- Acceptance and maintenance testing and monitoring
- UPS renewal and upgrade services
- Battery replacements

Compliance

Regulatory requirements change constantly. Failing to comply not only puts your people and critical infrastructure at risk, it can cost you hundreds of thousands of dollars in fines. We stay on top of regulations so you don't have to. We help you understand what applies to your facility and how you can achieve compliance in the most efficient way.

- Compliance program management
- Electrical safety assessments
- Arc flash services
- Training services
- Safety programs
- Maintenance planning and management

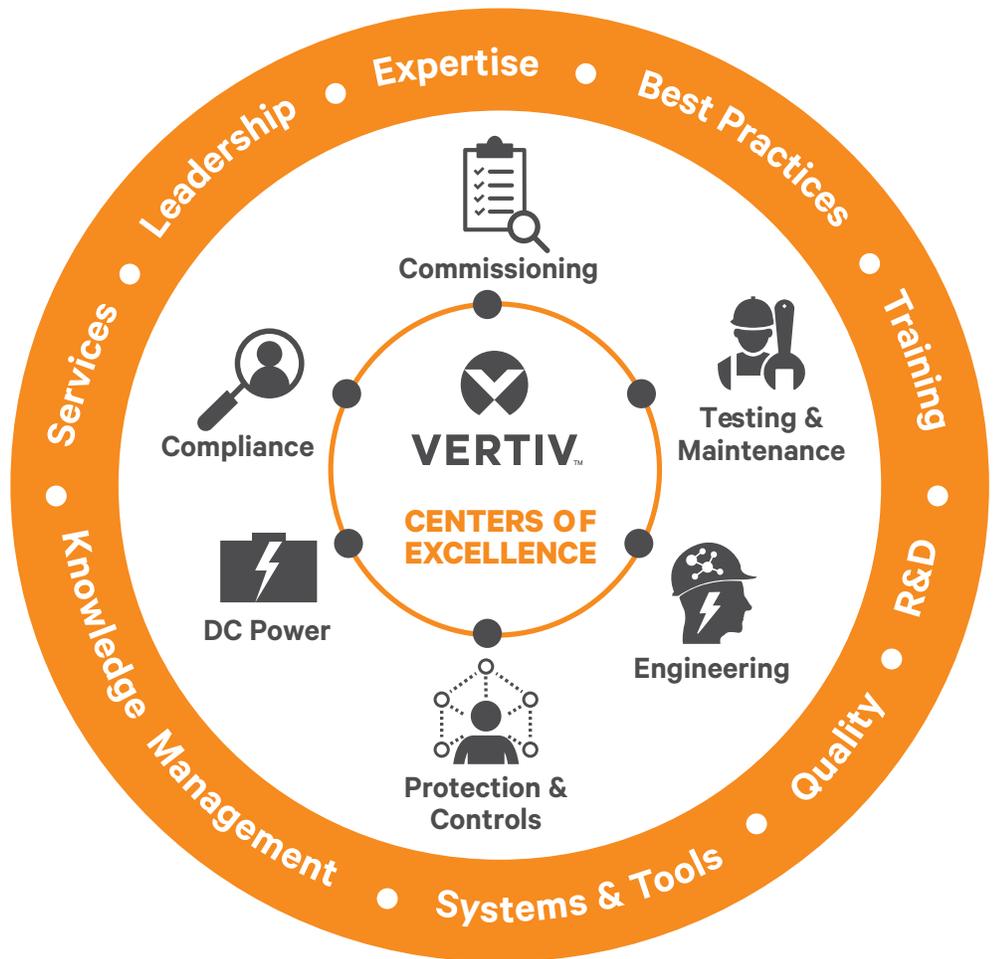
Driving Performance Through Strategic Centers of Excellence

Vertiv’s Electrical Reliability Services drives innovation, best practices, and industry-leading solutions through our specialized Centers of Excellence. These Centers of Excellence bring together dedicated experts, proven processes, and investment in the right technologies to deliver smart, powerful solutions that drive world-class customer satisfaction.

Our Centers of Excellence provide the infrastructure upon which we build and maintain your electrical power system. By continuing to invest in building our own unique knowledge and capabilities in each of these areas, we ensure the best possible approaches and services for meeting your specific power challenges.

Team members from each Center of Excellence include experts and specialists in each field, including registered professional engineers, NETA-certified technicians, compliance engineers, and NFPA 70E-certified trainers. With their deep domain knowledge and hands-on experience, our teams explore issues that are vital to your success. We believe that being an effective partner means understanding our customers’ toughest challenges within the industry and within their individual organizations, and determining the best ways to address those challenges through a dedicated, focused approach.

Each Center of Excellence focuses on how we can exceed expectations around quality, service, and responsiveness, and then develops solutions to fulfil your needs now and in the future.



“We have worked with Vertiv’s Electrical Reliability Services for many years utilizing their expertise in relay testing, so turning to them to manage our relay upgrades was only logical. They were able to pull together just the right resources to meet our specific needs, and have allowed us to continue providing our member systems with affordable power.”

TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION



Leadership

Each Center of Excellence is appointed a business leader that is committed to driving superior service performance, and exceeding your expectations for quality, service and responsiveness. By providing a clear vision, we stay ahead of your needs, market requirements, and changing regulatory standards, ensuring nothing gets overlooked.

Operations and Management

We build our Centers of Excellence around your needs and objectives, and we manage them in a way that ensures we can effectively support projects of all sizes and scope. We are committed to making the right resources available to you to meet your needs safely while keeping your projects on time and within budget.

Processes and Practices

Based on years of experience, decades of historical performance data, and a keen eye on emerging trends, our teams establish standardized processes and methodologies that translate into efficiencies and predictable, repeatable, consistent results for your facility. We utilize advanced tools and technologies, invest in research and development, and focus on continuous improvement to create best practices for maintaining and improving your electrical infrastructure.

Services and Solutions

Electrical Reliability Services focuses on innovative solutions that solve your most pressing challenges. As the power industry evolves and customers' needs change, so do the services we offer. We focus on delivering the right maintenance and performance optimization services for every stage of a facility's lifecycle, so you can always depend on reliable, safe, and efficient power, no matter how your facility or industry is transforming.

Expertise

Our people are our strongest asset. From registered professional engineers, to specialized engineers in field service, commissioning, industrial DC power, protection and controls, and compliance, we have the expertise to cover your electrical reliability needs. As an industry leader in staffing Level 3 and 4 NETA-certified technicians, we have the expertise readily available to oversee your most complex projects. Our staff includes NFPA 70E-certified trainers who are highly qualified to promote electrical expertise in workplace environments. We continually invest in our experts through training and leadership development and provide tools for knowledge and performance management to help people learn and grow every day. As our experts continually improve, so do the solutions we offer.

A Strong Foundation Supporting Your Success

Vertiv's Electrical Reliability Services has a long history of delivering testing, maintenance, and engineering services to more than 15,000 repeat customers. These facilities turn to us time and again not only because of the expertise, innovative solutions, and best practices we bring to the table, but also because we've built our business on a foundation of values and priorities that our customers share, including safety, quality, insight, and responsiveness.

Safety

We are committed to providing a safe and environmentally sound workplace. Excellence in safety is vital to the well-being of our customers, our employees, and their families. It is essential to all aspects of our business.

As a result of our commitment to safety, Electrical Reliability Services is proud to maintain one of the highest safety ratings in our industry, ensuring that our people — and yours — are always protected. However and wherever we work, you can trust us to strictly adhere to all industry safety and compliance regulations.

Industry Leadership

We actively participate in numerous national organizations such as NFPA, ASHRAE, IEEE, NETA and others. Our team members assist in the development of standards important to our industry, ensuring the safe, reliable operation of generation, transmission and electrical distribution equipment. Our knowledgeable team has the expertise in electrical infrastructure that our industry has come to trust and rely on when it comes to promoting the field of electrical engineering and reliability management.

Quality Assurance

Electrical Reliability Services promotes a culture of continuous improvement that starts with listening to you. We measure and monitor our performance on an ongoing basis, and use customer feedback to refine and enhance our efforts. Because of our due diligence, we have successfully passed the quality audits of many government agencies and obtained quality supplier recognition by private industry. More importantly, we have achieved high marks from our loyal customers.

Customer Resolution Center

Unexpected failure can pose serious hazards to your critical infrastructure. Whether it is a large-scale outage or a localized technical glitch, each emergency demands a prompt response. We offer access to technical support and our 24x7 call center, so you always have the dedicated support you need. Whenever an emergency arises, we can dispatch a NETA-certified technician or electrical engineer with the proper equipment required to troubleshoot the problem and quickly resolve unexpected challenges.

Technical Knowledge Base

Electrical Reliability Services has been trending data from more than 400,000 assets over the past four and half decades, collecting millions of data points across all manufacturers' equipment and systems. This rich knowledge base provides critical information, allowing our experts to diagnose problems faster and plan better solutions, while enabling you to make educated decisions on how to best service your assets, target resources, and justify maintenance strategies. In short, it delivers insights that allow facilities to build futures on a stronger foundation.

“Safety is a Vertiv core value. This means we do all things with safety in mind – every job, every day, no exceptions. We strive to achieve an injury-free workplace by relentlessly reducing workplace risks in an effort to reach zero accidents. Vertiv is committed to providing the tools, training, and equipment to enable our employees to work safely.”

ROB JOHNSON, VERTIV CEO



Entrust Your Mission Critical Infrastructure to the Most Dedicated Partner in the Industry

Maintaining your electrical assets isn't a choice. But choosing who you trust with that critical responsibility is.

At Vertiv's Electrical Reliability Services, we combine our deep infrastructure expertise with an unmatched commitment to analyzing decades of performance data and a full suite of lifecycle services. You get greater insight into your assets' health along with all the services you need to ensure reliable operation of your power system today and well into the future.

Beyond keeping the power on, we help you promote how vital your electrical infrastructure is to ensuring your organization's strategic vision. We show you ways to leverage your assets to manage risks, reduce costs, unlock new efficiencies and profit potential, and position your facility to win in your market.

In an era where power is evolving rapidly, choosing a partner that is committed to helping you navigate the landscape and best meet your reliability, safety, and efficiency goals is more paramount than ever. Plug into our expertise today, and re-energize your organization's future.



VertivCo.com | Vertiv - Electrical Reliability Services, Inc. 1-877-468-6384

© 2018 Vertiv Co. All rights reserved. Vertiv and the Vertiv logo are trademarks or registered trademarks of Vertiv Co. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness herein, Vertiv Co. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications are subject to change without notice.

CB-02-099 (R04/18)