



POWER PLANT ELECTRICAL SYSTEM SOLUTIONS

Maintaining Safety and Compliance

SynchroGrid is a consulting company in the power industry that provides state-of-the-art system protection solutions for utilities. We can provide NERC compliance services, design services, technical analyses, power system studies, and more to ensure your power plant stays up to date and complies with regulations.



NERC Readiness Services PRC-002, PRC-005, PRC-019, etc.



Design Services to Develop or Update Electrical Systems



Technical Analysis for Informed Decision Making



Power System Studies to Identify Issues

TALENT. EXPERIENCE. INNOVATION.

NERC Compliance

SynchroGrid works closely with the client to identify possible compliance issues by thoroughly reviewing regulation requirements, detailed documentation, and critical technical information for the system. Our engineers are well-versed in NERC PRC requirements and will work with the client to deliver well-integrated and cost-effective solutions.



NERC READINESS STANDARDS. NERC violations could result in fines totaling millions of dollars. We have performed numerous compliance services and maintain expertise in PER-006, PRC-002, PRC-005, PRC-019, PRC-024, PRC-025, PRC-026, PRC-027, etc.



NERC MOCK AUDITS. We can help you prepare for the next NERC audit by performing a mock audit of your system, uncovering issues that may need to be addressed.



NERC GAP ANALYSIS. We provide NERC gap analyses to help identify areas where your system may not be in compliance with NERC regulations. Our team's systematic review process can uncover holes that could potentially result in enormous fines.

Design Services

SynchroGrid offers a number of design services and has broad experience with updating and developing new systems. Some of these services are included below.



ELECTRICAL SYSTEM ENGINEERING. We have the expertise to design an electrical system with specific power process needs regardless of the type of power plant, delivering an economical, safe, reliable, and quality system integration. Our solutions extend across the entire power path from generator terminals to high-voltage grid connections.



CABLE ENGINEERING. We provide comprehensive, practical solutions for cable and cable tray systems by performing a variety of studies to properly define the needs and options available.



PROTECTIVE RELAYING. We offer generator protection solutions for all types and sizes of generators and generator transformer units, and we are highly experienced with all types of relays.



RELAY PANEL UPGRADES. We offer high-quality design services covering breaker replacement, elevation schematics, relay panel upgrades, cable and conduit mapping, and electrical design. We also do improvements, retrofits, expansions, etc.

TALENT. EXPERIENCE. INNOVATION.

Technical Analysis

As our clients plan new installations or upgrade existing power plants, we support them by identifying, outlining, and designing network systems to match their needs, allowing them to make more informed decisions.



POWER QUALITY ANALYSIS. We identify and investigate system issues by analyzing the symptoms, examining the damaged equipment, assessing the power and grounding in a given area, collecting data, and creating a report to document the most probable causes of the issues. In addition, our report also offers recommendations for mitigating future problems.



SITE ASSESSMENT. We provide basic condition evaluations of system equipment by conducting a walk-through of a facility to visually inspect electrical equipment for signs of deterioration due to age, environmental stress, etc.



MISOPERATION ANALYSIS. Our engineers have unique experience in the utility, manufacturing, and consulting sectors, allowing us to perform in-depth misoperation investigations. We have analyzed misoperation events for numerous utilities, and our investigations have resulted in changes to utilities' internal maintenance procedures, development of standardization methods, and improvements to analysis software.

Power System Studies

SynchroGrid has the capabilities to perform a number of different power system studies to help identify the root of present or future problems within the power system, empowering the client to reduce future operating costs, make more informed decisions, and prevent future equipment or system failures.



POWER FLOW STUDIES. These studies allow us to determine active and reactive power flows, bus voltage magnitude, and bus phase angle at all the buses in a specified power system configuration. We can also use them to determine operating conditions.



SHORT-CIRCUIT STUDIES. We use these studies to determine the currents and voltages on a power system under fault conditions. With this information, we can develop a solid protection system and determine interrupting requirements for circuit breakers at each switching location.



MOTOR STARTING STUDIES. We can perform studies to determine the optimal way for starting the motor, selecting the proper motor application, and choosing the proper system design.



HARMONIC ANALYSIS PROGRAMS. We can evaluate the effect of the harmonic sources and the effectiveness of the harmonic filters by computing indices such as the total voltage harmonic distortion factor at system buses. In addition, we can generate driving point impedance plots for the buses of interest to determine whether the series or parallel resonance phenomenon occurs at any harmonic frequency of interest.

TALENT. EXPERIENCE. INNOVATION.

Power System Studies Continued



RELAY COORDINATION STUDIES. We provide relay coordination studies to ensure that all protective systems are properly coordinated and protected against misoperations and damage resulting from short-circuit currents.



ARC FLASH STUDIES. We provide thorough arc flash studies in which we evaluate the system and collect data, model the power system and develop an electrical one-line diagram, conduct engineering calculations and a hazard analysis, generate and present our report, and finally, provide recommendations, ultimately ensuring that the utility complies with OSHA, NFPA-70E, and insurance requirements.

Training Services

We offer hands-on training covering the principles of protection systems for utility personnel. This training includes different protection schemes such as transmission and distribution lines, generators, buses, motors, transformers, and more. Our training services can be customized to meet your needs for course content, location, and class size.

SynchroGrid offers a wealth of knowledge gained from years of experience in the field, creating and implementing solutions for the power industry.

