Protection, Control, and Automation Made Easy

Complete Switchgear Automation Design & Consulting

At Schneider Electric, we understand that reliable and uninterruptable electric power is critical to your operations when even a momentary power outage can mean significant monetary and safety risks. The Schneider Electric™ Power System Engineering (PSE) team provides consulting and turnkey services for all your critical power protection, control, and automation (PCA) needs. In addition to affecting the bottom line, manual restoration of facility loads individually after an outage can expose personnel to many hazards. To prevent these costly and unsafe conditions, we offer state-of-the-art technologies and support with the goal of eliminating power supply interruption.

Utility generation/substation protection and control using Intelligent Electronic Devices (IED), system monitoring, integrated into Supervisory Control and Data Acquisition (SCADA) applications.

Uninterrupted power to your data center via switchgear automation and generator control.

Continuous operation of your water/wastewater facility via switchgear automation and generator control with a seamless interface to your industrial control system.

Integrated control of inverter-based distributed energy resources.

Uninterrupted power delivered to critical operations of your facilities via switchgear automation and generator control with secure access to your SCADA system (Energy and Transportation).

Consulting and services for compliance with NEC Article 517 and NFPA 99 for essential healthcare power systems.

Fully integrated PCA consulting services by Schneider Electric provide for the following applications:

1. Utility generation/substation protection and control using Intelligent Electronic Devices (IED), system monitoring, integrated into Supervisory Control and Data Acquisition (SCADA) applications.
2. Uninterrupted power to your data center via switchgear automation and generator control.
3. Continuous operation of your water/wastewater facility via switchgear automation and generator control with a seamless interface to your industrial control system.
4. Integrated control of inverter-based distributed energy resources.
5. Uninterrupted power delivered to critical operations of your facilities via switchgear automation and generator control with secure access to your SCADA system (Energy and Transportation).
6. Consulting and services for compliance with NEC Article 517 and NFPA 99 for essential healthcare power systems.

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Comprehensive Custom Solutions
We provide application engineering support around specific state-of-the-art hardware platforms. Our solutions leverage IEDs to provide fully integrated, transparent, and best-value solutions. Two examples of the integrated solutions that we provide are:

• Automatic Transfer Schemes (ATS)
Once fully deployed, our ATS solution provides single generator interface, generator synchronizing, and load sharing controls. The ATS seamlessly transfers power sources without human intervention, reducing employee exposure to a potentially hazardous situation and reducing downtime — which saves your company money.

• Relay Protection Plans
Facilities with equipment upgrade needs must first establish a relay protection plan to take full advantage of available capabilities in modern relays. Proper planning will ensure successful leverage of these capabilities when replacing legacy relays. Although purchasing may be a piecemeal process over years, following a strategic plan to implement a cohesive relay architecture will reduce unnecessary outages, minimize stress to equipment, increase understanding of power demand requirements, and bolster reliability with the use of advanced intelligent systems.

Our whole-system-level approach provides maximum protection against the myriad hazards to your operations’ power needs. According to the Edison Electric Institute, utility outages across the United States are caused by weather 70 percent of the time. Another 11 percent of instances are caused by electric line contact by animals (e.g., birds). The remaining 19 percent of outages are related to human accidents or error and utility maintenance. One of the numerous benefits of the Schneider Electric whole-systems approach is that we work with your team to minimize human-initiated hazards while mitigating the impacts of unavoidable risks by understanding your most critical operations and tailoring solutions that meet your design objectives.

Sources of Utility Outages
Edison Electric Institute

Weather – 70%
Human error/accident, Utility maintenance, etc. – 19%
Animal contact – 11%

Full-service Support — From Conception to Commissioning
We offer the following services:

• Risk Assessment — Identify vulnerabilities in critical power control systems and provide recommendations to mitigate risk.

• Preventive Maintenance — Validate operation of existing system; replace expendable or obsolete components.

• Modernization — Upgrade legacy controls (PLCs, relays, UPSs) with modern IEDs.

• Retrofit — Install intelligent controls in legacy switchgear.

• Commissioning Services — Develop sequence of operation, method of procedures, commissioning checklists.

The Schneider Electric PSE team bridges the gap between equipment manufacturers and separate third-party firms that provide the protection and control of the power distribution infrastructure, eliminating the need for multiple suppliers. Whether it’s a relatively simple transfer or a seemingly more complex system, our experts will evaluate your situation and work with you through every step of the process, from conception to commissioning and life cycle services — and beyond.
For legacy power distribution systems, the PSE team will retrofit the system with intelligent controls for maximum effectiveness and safety. If our assessment reveals a need for modernization, the PSE team will help update your system, addressing all end-of-life issues, obsolescence, firmware updates, and product releases. Once your system is deployed, our job is not done. We offer continued support through employee training, troubleshooting, warranty issues, and maintenance.

**Case Study**

In order to more fully illustrate the comprehensive and integrated Schneider Electric approach, consider the case of Acme Widgetworx. During the design and construction phases of their facility, Acme wisely constructed two utility feeds and an on-site stand-by generator. Initial operations went well with minimal interruption. As time passed and the business reduced operating expenses, the Electrical Preventive Maintenance (EPM) plan was not followed given past success and across-the-board cost-cutting measures. Operations progressed smoothly until power was lost at the facility during a thunderstorm, requiring a transfer to another power source; this is when the real problems started. The system failed to operate as designed to transfer to backup generation after determining there were no remaining utility sources, but the generators failed to start. The outage lasted three hours until an electrician was called to restore power; although power was restored after a system reset, the technician was not able to determine the source of the fault. The cost to business operations was severe due to the need for continuous power to their process.

The outage also impacted customer commitments, jeopardizing future revenue. This situation brings to mind the following questions:

1. Did a utility fault cause the outage or was it Acme induced?
2. Did the transfer scheme have a hardware or software failure?
3. Did the equipment installation include complete testing and commissioning to ensure interoperability of equipment and proper action during a fault?
4. Was there one or multiple instances of equipment malfunction?
5. Was the local utility performing maintenance at or around the time of the fault?

Any one of these issues, or others, could have caused the problem. Another potential source of the problem is lack of regular maintenance; the NFPA highlights the importance of maintenance in 70B, stating the following: Maintenance costs can be placed in either of two basic categories — preventive maintenance or breakdown repairs. The money spent for preventive maintenance will be reflected as less money required for breakdown repairs. An effective EPM program holds the sum of these two expenditures to a minimum.

To avoid these types of issues, engage Schneider Electric early in the design phase of your project to ensure intelligent design, installation, commissioning, and EPM. If your facility is operational now, we will be happy to assess the resilience of your system and identify any shortfalls that you have and solutions to remedy the problems so that you have the critical power you need when you need it.
Key Benefits of PCA

- Minimize downtime and save money with an automated system to transfer facility load to a backup power source during a utility outage.
- Reduce employee exposure to hazards by never again having to manually restore power to facility loads individually after an outage.
- Improve the reliability of your operations and get an edge over the competition with fast power supply restoration.
- Protect your operations and have peace of mind knowing our turnkey engineered ATS offers fast and seamless switching to a backup source of electric power when the primary source fails.
- Obtain a comprehensive ATS solution — design, hardware, protection, control, commissioning, and follow-up support — from an innovative global leader in the industry.

Your company could be at a significant monetary and safety risk if your mission-critical power supply is at all compromised. For your customized evaluation and ATS solution from Schneider Electric, schedule a site visit with one of our engineers today.

For more information …

Email EngineeringServices@schneider-electric.com
Visit schneider-electric.us/go/engineeringservices