Solutions for Data Centers

Implement scalable, standardized power system solutions

- Optimize uptime with a comprehensive catalog of protection, control, automation, metering, and power quality solutions.
- Rapidly deploy new facilities across the globe using standardized designs tailored to your needs.
- Reduce your carbon footprint by seamlessly integrating renewable energy sources into your microgrid.
- Safeguard operational technology (OT) network traffic against threat actors with a zero-trust, deny-by-default architecture.

Our Approach

For nearly 40 years, SEL has specialized in designing, manufacturing, and implementing solutions for power system challenges. In the event of an electrical fault or unexpected outage, our fast-tripping digital relays and sophisticated automation systems respond quickly to isolate problematic portions of your power system and automatically balance load and demand using alternative power sources.

Scalable Designs

We design our solutions to scale effectively from edge to hyperscale data centers, allowing you to deploy new facilities rapidly with highly configurable, switchgear-agnostic protection and control solutions. At the enterprise level, these solutions streamline electrical power management system (EPMS) integration and enable centralization for large-scale designs.

Sustainable Solutions

Reduce your carbon footprint with SEL microgrid controls, which help you seamlessly integrate renewable energy sources. SEL engages in our own sustainable and environmentally responsible practices through:

- Continuous efforts on our campuses, including the use of SEL meters to reduce our daily water consumption.
- Custom-engineered molds made of recycled foam to minimize packaging and shipping waste.
- High-quality products designed and manufactured to stay in service for over 20 years.

Securely Manufactured in the U.S.A.

SEL specializes in creating digital products and systems that protect, control, and automate electric power systems. Headquartered in Pullman, Washington, we manufacture all our electronic devices in the United States and serve customers worldwide.

We believe that a robust foundation in cybersecurity needs to start at the component level. To that end, we've developed a five-part approach to supply chain security:

1. Build trusted supply chain networks by fostering strong supplier partnerships.
2. Ensure component integrity and availability while minimizing the impact of disruptions.
3. Verify the security of firmware and software with rigorous internal testing and digital signatures.
4. Protect operations and control access with a layered approach to security, including exhaustive background checks for all SEL employees.
5. Monitor for quality and security vulnerabilities, releasing service and security bulletins when applicable and supporting customers in their implementation.

Our Solutions

Every solution from SEL delivers field-proven reliability by starting with the fundamentals of protection. Our products are designed to protect critical power system equipment against failure or damage—tripping for faults when they're supposed to and, just as importantly, not tripping when they shouldn't.

Beyond the fundamentals of protection, tailor solutions to your operational needs with automated failover to adjacent sites, extensive analytics and reporting, and strict OT cybersecurity.

Critical Protection and Monitoring

Critical Protection

Power system protection has always been the core of SEL's mission. Our comprehensive catalog of solutions helps ensure uninterrupted power to servers and cooling systems.

- Protect utility interconnections using IEEE C37.118 synchrophasors and enhanced circuit breaker monitoring.
- Take advantage of features such as an intuitive touchscreen, adaptable I/O options, and detailed event analysis for feeder protection.
- Integrate overcurrent protection, Time-Domain Link (TiDL®) technology, and dynamic zone configuration into your bus protection.
- Guarantee motor operation using differential protection, broken rotor bar detection, and comprehensive asset monitoring.
- Safeguard transformers with multiwinding protection, frequency tracking, and through-fault monitoring and protection.
- Protect and control generators using current differential protection, islanding detection, and breaker wear monitoring.
- Add arc-flash protection to reduce incident energy by up to 88 percent, helping keep operations and maintenance personnel safe and limit equipment damage—even during a catastrophic event.

Power Quality Monitoring

Our power quality and usage monitoring devices are fully Class A-compliant to the IEC 61000-4-30 power quality standard. They also exceed ANSI C12.20-2015 0.1 and IEC 62053-22:2003 0.1 S accuracy class requirements, enabling operators to identify power system anomalies and isolate their source with confidence.

With reliable Class A measurement, colocation facilities can simplify client billing and management.

Wide-Scale Automation

Microgrid and Distributed Energy Resource (DER) Control

Our intelligent, scalable POWERMAX® Power Management and Control System microgrid controls are ranked first on the Guidehouse Insights Leaderboard and ensure continued power stability for your facility using a three-step "separate, survive, and synchronize" algorithm. Upon sensing a power disturbance from the bulk power system, SEL POWERMAX automatically:

1. Separates your system from the rest of the electric grid.
2. Dispatches available DERs and performs seamless load balancing to keep critical equipment operational.
3. Synchronizes your DERs back to the utility and reconnects to the grid upon sensing the bulk power system has resumed normal activity.

Redundant Power With Automated Control

For larger facilities with demanding operational requirements—such as more complex distribution systems and additional server racks—fully redundant power systems ensure continuous operation in the event of equipment failure or an unexpected outage.

Our Real-Time Automation Controllers (RTACs) help prevent outages from affecting your customers by enabling automated failover to an adjacent site. Designed to be entirely switchgear-agnostic, RTACs can be installed in any system and communicate with any other protective equipment.

Analytics and Reporting

Advanced automated data reporting and analysis provides access to useful metrics for improving energy efficiency. The SEL Blueframe™ application platform—our security-first, container-based platform for OT applications—includes multiple applications expressly designed for that purpose. Simplify the ongoing management of your system of devices with the Data Management and Automation (DMA) application suite, which collects, stores, and manages device-specific information.

Secure OT Networking

SEL's OT software-defined networking (SDN) solution serves as a foundational piece of zero-trust network architecture. Safeguard OT network traffic against threat actors while guaranteeing that devices such as protective relays remain available and responsive against faults.

A true deny-by-default solution, OT SDN allows the operator to define all communications flows and specify exactly what type of traffic and devices are allowed on the network. Anything not matching those specifications is identified, denied by default, and dropped.

As of July 2021, SEL's OT SDN solution is certified on the U.S. Department of Defense Information Network (DoDIN) Approved Products List (APL).

Our Services

From consulting and design to installation and commissioning, SEL is a full-service partner with the added expertise and connections that come with manufacturing the products we install.

Our teams of experienced engineers are prepared to assist you by standardizing protection scheme designs, performing system modeling and studies, and testing your system for cybersecurity preparedness.

Design Standardization and Implementation

Our teams work with you to standardize protection scheme designs across multiple facilities, expediting development and construction for new data centers and streamlining upgrades for existing facilities.

System Modeling and Studies

We use advanced modeling and simulation, informed by decades of power engineering experience, to analyze system requirements, validate full system designs, and optimize the performance of the power system through the devices that protect and control it.

With the actual protection and control hardware that will be installed in your system wired into a Real-Time Digital Simulator (RTDS) test bed, we use our extensive library of validated power system models to systematically test thousands of faults and adverse scenarios, providing the equivalent of years of operational history in only a few days.

Cybersecurity Preparedness

Strengthen your OT defenses, and streamline the demands of maintenance and compliance. Partner with our engineers to evaluate cybersecurity controls, centralize asset management, develop secure remote access, and more.

The Industry's Best Warranty and Support

SEL devices are designed for a working life of at least 20 years, and every SEL-manufactured device comes with a 10-year warranty—the best in the electric power industry. If it fails under warranty, repair and replacement are free. Every device we manufacture also comes with free lifetime technical support.

selinc.com/solutions/data-centers

SEL SCHWEITZER ENGINEERING LABORATORIES

Making Electric Power Safer, More Reliable, and More Economical
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