



Project Highlight



NAMIBIA POWER CORPORATION (NAMPOWER)

First fully digital secondary system in Africa

Digital secondary systems (DSSs)—also called digital substations—use electronic devices and digital communications to protect, monitor, and control substation primary equipment and power lines. DSSs offer many benefits, including enhanced situational awareness and asset management, improved system availability, and extended maintenance intervals through self-diagnostics and alerts that detect secondary system failures or abnormalities.

Challenge

In response to rapid load growth and transmission constraints in Namibia's Erongo region, NamPower initiated the Sekelduin Substation project to strengthen grid reliability, improve system visibility, and support remote operations. By implementing the first fully digital secondary system in Africa—supported by conventional hardwired backup—NamPower aimed to deliver dependable power while reducing operational costs. The DSS project required a rugged, resilient solution capable of real-time monitoring and faster, more precise fault detection.

Solution

NamPower worked with SEL, through engineering, procurement, and construction contractor ACTOM, to build the DSS solution, incorporating IEC 61850 process and station bus architectures. Technologies in the solution include the following:

- SEL-2488 Satellite-Synchronized Network Clocks in a redundant configuration enable seamless switchover and continuous synchronization.
- The SEL-3555 Real-Time Automation Controller (RTAC) delivers IEC 61850 GOOSE and Manufacturing Message Specification (MMS) communications; real-time Sampled Values; and remote monitoring and control.
- SEL-401 Protection, Automation, and Control Merging Units convert analog inputs into time-aligned digital data while providing integrated overcurrent and breaker failure protection.

Results

The NamPower Sekelduin Substation system delivers reliability through advanced automation, enhanced visibility, and remote operation capabilities.

The DSS solution uses synchronized clocks and real-time automation to present data in a single interface, which enables secure and remote monitoring of system health. The solution also improves fault-locating accuracy for NamPower, reducing their response and restoration times and lowering operational costs. The digital solution further reduces costs by removing most substation copper wiring.

The flexible, scalable platform supports future expansion and represents a significant advancement in energy infrastructure for Namibia and Africa.

About SEL

SEL was founded in 1982 with the invention of the digital protective relay. Today, SEL is a 100 percent employee-owned company that specializes in creating products and solutions that monitor, protect, control, automate, and secure power systems and other critical infrastructure around the world. SEL is headquartered in Pullman, Washington, and serves customers in more than 170 countries.

World-Class Manufacturing

At SEL, we design and manufacture our electronic devices, including circuit boards, in factories we own and operate in the United States. Additionally, we assemble custom panels in our factories in the United States, Mexico, Colombia, and Brazil. Our robust manufacturing infrastructure includes vertical integration, streamlined processes, and supply chain risk management to ensure the quality, reliability, and availability of our products.

Cybersecurity Philosophy

SEL believes the safety of your system and availability of devices come first, which is why we have emphasized cybersecurity since our founding. Our earliest devices featured two levels of password-protected access, and today, we secure our operations and products with layered defenses. We practice our cybersecurity philosophy throughout our business, from product development and manufacturing to our engineering and cyber services departments.

Proven Reliability

For more than forty years, electric utilities, heavy industries, and critical infrastructure around the world have trusted SEL solutions to keep their essential systems and processes running. These solutions are built on the capabilities of our rugged devices, which are designed and tested to operate in temperature ranges as wide as -40° to $+85^{\circ}\text{C}$ (-40° to $+185^{\circ}\text{F}$) and meet or exceed industry standards for performing in harsh operating conditions.

Industry-Leading Warranty

We back our products with a worldwide, ten-year warranty. If a product fails under warranty, we'll repair or replace it at no cost.

Local Support, Global Expertise

Technical support is available at no cost for the entire service life of every SEL product. With application engineers located around the world, we provide expert support no matter where you are.

Contact Us

Whether it's finding the right devices to protect, automate, or optimize your systems or designing a custom turnkey solution, we will work with you to find the best way to achieve your objectives.



Connect with our experts, and explore solutions tailored to your goals.