

EDP Spain Improves Power Availability and Response Time with New Network Architecture

Customer

More than 1.5 million people across Spain rely on energy distribution from EDP Spain, a subsidiary of multinational group EDP and an electrical power utility focused on power generation and distribution.

Part of EDP Spain, E-REDES manages a network made up of more than 20,000 km of aerial and underground power lines, 149 substations and 6,700 low-voltage stations (secondary transformers) that provide electricity to 650,000+ industrial and residential consumers.

It leverages the smart grid and digitalization to improve the quality of the electricity it supplies. E-REDES also implements advanced digital communications technologies and intelligent devices that allow monitoring and control of electrical assets and remote network management for improved downtime prevention.

As a result, it has become one of the best electrical utilities in Spain when it comes to quality of service and the customer experience.

CASE STUDY

Customer.....	1
Challenges	2
Collaboration & Discovery	2
Solution	2
Impact & Results.....	3

Belden helped E-REDES deploy a new network infrastructure that enhances interoperability, supports remote operations and real-time monitoring, improves power availability and boosts efficiency through data-driven decision-making.

utility's short-term and long-term goals based on what was learned from initial conversations and analyses. Working as a team, solutions were selected to address organizational, technical and environmental objectives while keeping budgets and schedules in mind.

After a solution was chosen, the team tested proofs of concept and helped E-REDES configure and test different architectures implemented throughout substations so the utility could confidently deploy a network that would enhance interoperability, support remote operations and real-time monitoring, improve power availability, boost efficiency and reduce maintenance time and risks. Performance was validated within the utility's unique environment, and adjustments were made based on what the proofs of concept revealed.

E-REDES' tailored system integrates Hirschmann Ethernet switches and routers designed for utilities. They support PTP (precision time protocol, as defined in the IEEE 1588 standard) and PRP (parallel redundancy protocol) to ensure hitless recovery in case of network link failure.

All switches and routers use the same HiOS operating system, which reduces the amount of time E-REDES spends learning about, supporting, maintaining and ensuring seamless compatibility between devices.

All network elements are identified, monitored and configured to provide real-time insight into network status, alerts and changes through HiVision 8 network management software.

With its new network infrastructure in place, E-REDES was able to implement an advanced fault locator system to identify faults across power lines with reliable accuracy and reduce fault resolution time. Data from IEDs and fault recorders is now automatically retrieved and transmitted to the disturbance recorder data management system in real time using PTP synchronization across PRP networks, allowing E-REDES to collect reliable and trusted data it can use to make informed decisions.

The new communication network, which supports the distribution substations, also connects protection and control IEDs, power meters with RTUs (remote terminal units), the SCADA and distribution management system at the dispatching center, and the centralized network management system. This eliminates siloed designs and brings data from different business units together.

Remote control of substations is now possible as well, allowing E-REDES to analyze and restore the system when one line is down and ensuring advanced protection schemes that provide safety and minimize damage in case of a network problem.

To help E-REDES run its systems as efficiently as possible, engineers from Belden's Customer Innovation Center conduct hands-on training on how to use and manage the utility network.

Impact & Results

With its new network architecture in place, E-REDES is experiencing many positive changes that reduce time and costs, as well as improve the customer experience.

First, the utility has drastically reduced the amount of time that maintenance crews spend on fault location. In the past, it took crews an average of more than two hours to locate a fault. [The new system reduces response time to approximately 40 minutes on average, allowing workers to restore power to customers hours faster and avoid lost revenue.](#)

Because they can locate faults remotely and spend less time on the road, the utility also reduced travel costs, decreased carbon emissions generated from travel and improved worker safety.

By establishing network architecture that supports advanced fault location, network availability has also improved. Availability is measured through SAIDI (System Average Interruption Duration Index) or TIEPI (Interruption Time Equivalent to Installed Power) metrics. These represent the average outage duration on a per-customer basis and are measured in units of time. To confirm the quality of service that utilities provide to customers, SAIDI/TIEPI metrics must be reported to the government regularly. Today, E-REDES' SAIDI/TIEPI metric indicates steady availability improvement.

Finally, this new network infrastructure allows the utility to practice predictive maintenance. Crews receive early warnings about potential problems so they can make informed decisions about what actions to take. This avoids downtime, extends asset lifecycle and helps E-REDES improve customer satisfaction.

The partnership between Belden and E-REDES continues today as Belden's Customer Innovation Center acts as a trusted consultant, helping E-REDES create and test new proofs of concept for upcoming projects to move the utility further along in its digital journey.

About Belden

Belden Inc. delivers the infrastructure that makes the digital journey simpler, smarter and secure. We're moving beyond connectivity, from what we make to what we make possible through a performance-driven portfolio, forward-thinking expertise and purpose-built solutions. With a legacy of quality and reliability spanning 120-plus years, we have a strong foundation to continue building the future. We are headquartered in St. Louis and have manufacturing capabilities in North America, Europe, Asia, and Africa. For more information, visit us at www.belden.com; follow us on [Facebook](#), [LinkedIn](#) and [Twitter](#).

Contact Us

emea.cic@belden.com

apac.cic@belden.com

americas.cic@belden.com