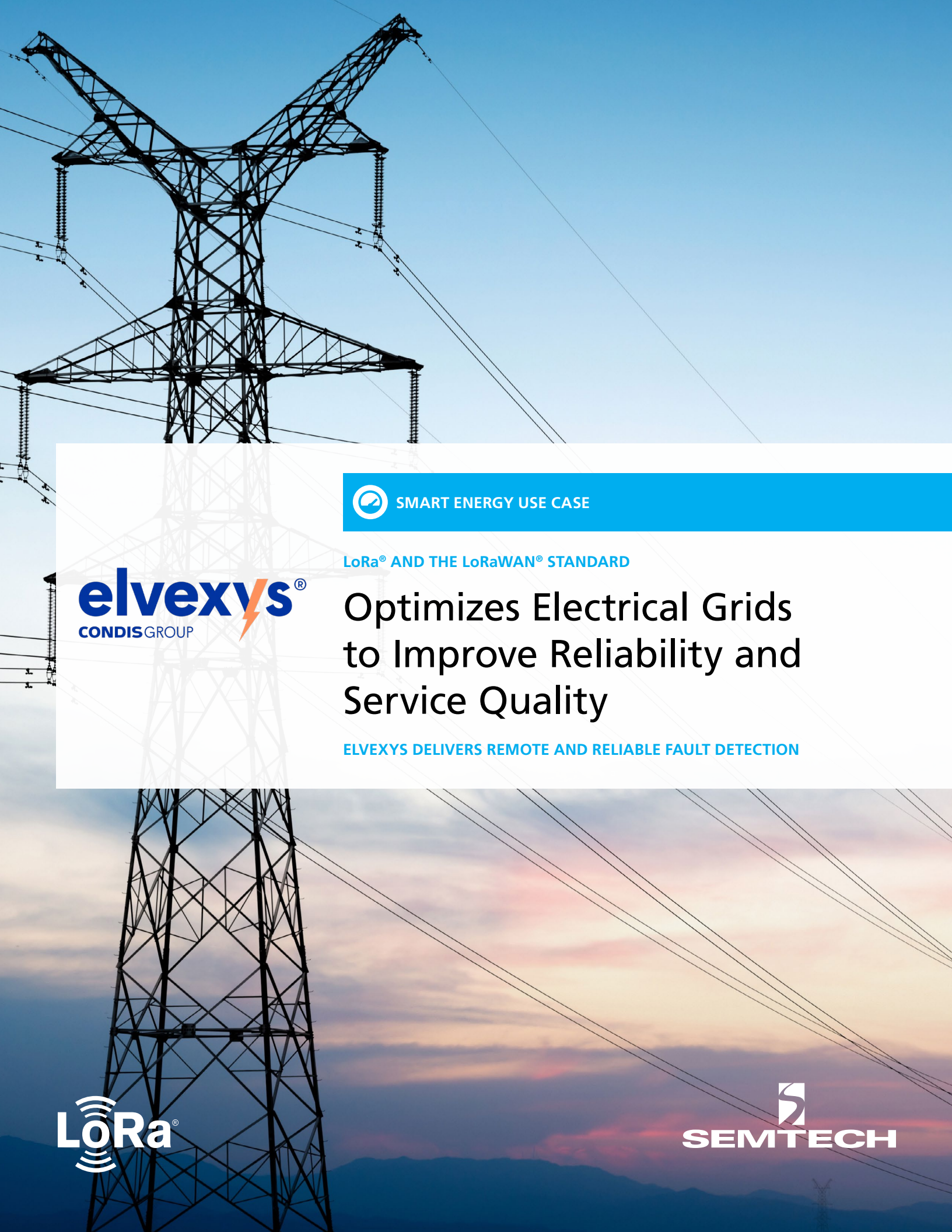


SMART ENERGY USE CASE

elvexys®
CONDIS GROUP

LoRa® AND THE LoRaWAN® STANDARD

Optimizes Electrical Grids to Improve Reliability and Service Quality

ELVEXYS DELIVERS REMOTE AND RELIABLE FAULT DETECTION

LoRa®

SEMTECH

TRANSFORMING UTILITY INFRASTRUCTURES

One of the fundamental objectives for electric utility distribution companies around the globe is ensuring a continuous supply of electricity to its customers. An outage in the power grid can leave entire communities without electricity for hours or even days until the fault is located and corrected. The U.S. Energy Information Administration reported that in 2018, power outage durations for U.S. electricity customers averaged 5.8 hours per customer.

There are many reasons power outages occur. The three most common causes are natural environmental factors, human error and grid overload. To improve performance and minimize interruptions in electric power, it is essential for utilities to be able to detect, locate and clear faults in its distribution lines quickly and efficiently.

The transformation and digitalization of utility infrastructures, including new fault monitoring systems that combine "smart" sensors with low power wide area network (LPWAN) connectivity, are enabling flexible and scalable systems to address traditional electrical power blackout challenges.

ELVEXYS DEVELOPING SOLUTIONS FOR TOMORROW

Since 1998, Elvexys SA has been providing clients with innovative technologically advanced solutions for the energy services industry. The Switzerland-based company has developed a wide range of expertise in a variety of technologies, such as IEC 61850, industrial Internet of Things (IoT), communication gateways, cybersecurity, and LoRaWAN® networks.

Semtech's LoRa devices and the LoRaWAN standard enable long range connectivity of IoT devices and connect sensors to the Cloud. The technology's long range performance coupled with its low power consumption enhance the overall performance of smart sensors to capture actionable data in real time.

"LoRa allows our energy utility customers to set up their own independent network infrastructure. That is really important for them because they are used to operating critical infrastructure and they want to manage and master every single component of the system and offer the best quality of service for their customers. With LoRa this is possible."

-Fabrice Strevens, Business Development Manager, Elvexys

Elvexys is a member of the LoRa Alliance®, a nonprofit technology association that drives the standardization and global harmonization of the LoRaWAN standard. Elvexys deploys LoRaWAN networks utilizing its custom LoRaWAN XPG Communication Gateways. The end-to-end IoT solution can easily and quickly be installed to immediately transmit sensor data to a customer's Supervisory Control and Data Acquisition (SCADA) system.

LoRa®
Use Case

IoT Challenge

- Remotely monitor electric current in substations
- Locate source of power outage in an electrical power grid
- Send notification alarms when short circuits occur

LoRa Technology Used

- Gateways provide up to 15km of coverage in open terrain
- Sensors connect to the Cloud and transmit actionable data
- Easy to deploy private LoRaWAN networks

Business Value

- Monitor power grid and locate faults in real time
- Reduce time to restore power by 75%
- Increase visibility of power grid and improve quality of service

For More Information

About Semtech's LoRa devices for utility applications, go to
semtech.com/LoRa

About Elvexys
Elvexys.com

"Fast deployment is the key here, especially in mountainous regions, like our client Oiken. In this instance, a technician may have to drive three hours up a mountain, so spending eight hours up there each time you want to install something, it's just not feasible. For us, the easy and flexible deployment of a LoRaWAN® network is a huge advantage, and for our clients, the cost-to-benefit ratio is very appealing."

-Christian Leggett, Project Manager, Elvexys

FASTER FAULT MONITORING

Oiken, the largest electricity distributor in the Swiss canton Valais, serves 24 municipalities that are spread between Salquenen and Conthey. Oiken also manages the hydroelectric facilities, drinking water supply, public lighting, and internet services for the area. In 2017, the utility reached out to Elvexys to explore technology that would be able to measure and monitor its vast voltage network, encompassing 700 square kilometers and serving more than 90,000 people.

Oiken's main objective was to improve the time it takes to locate the source of a power outage within its electrical grid – the intricate system that provides electricity from its generation to customers. Before the power line networks were mainly aerial, for both low and medium voltages. Nowadays, these networks are mainly underground, giving the advantage of better reliability, but also the drawback of being more difficult to locate line failure. Before it was easily visible to see failures and find short circuits by trying to isolate a specific region where a problem has occurred then send a technician to test every substation manually until the anomaly is discovered.

Electrical substations are the interface between the distribution grid and transmission systems. They protect the system and can be used to control the flow of current in various directions and filter voltage fluctuations caused by, for example, an increased load.

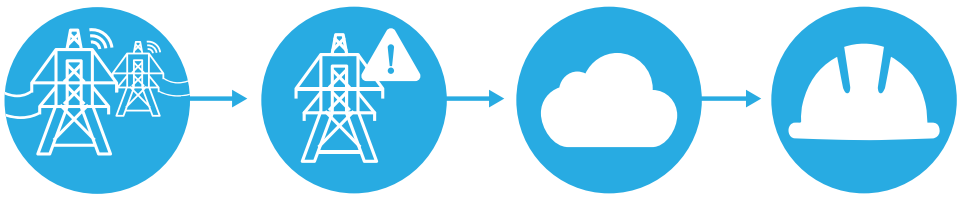
"Oiken has about 1,200 substations interconnected together. Digitalization and LoRa® technology serves as the foundation for new reliable, cost-effective and efficient substation monitoring systems."

-Fabrice Strevens, Business Development Manager, Elvexys

Engineering teams from Elvexys and Oiken leveraged LoRa to co-create the LEM-301 an innovative end-to-end, wireless sensor IoT solution that can remotely monitor the voltage level, and flow of electric current in its substations – unlocking the ability to easily detect the exact location of the fault in the grid caused by a short circuit – in real time. For detection of short circuits, in purpose of better smart grid monitoring, ELVEXYS has deployed two sensors LEM-301 per substation

Oiken estimates the amount of time to find and restore power after an electrical outage has been reduced from three or four hours to just 30 minutes.

HOW IT WORKS:



The step-by-step process of Elvexys' LoRa-enabled solution

"There are so many advantages with this LoRa® solution. The remote alarm and location functionality saves us a lot of time in detecting failures and saves money in terms of protecting our assets and those of our customers."

-Alain Perruchoud, Network Convergence Director, Oiken

"It's clear that an equivalent solution based on control command would have taken about 20 years to deploy and would have cost us 10 times more."

-Xavier Emery, Network Supervisor, Oiken

In Europe

4
Million

existing power substations could benefit from such a solution

8
Million

sensor units need to deploy to address market

Semtech's LoRa® Platform

Semtech's LoRa device-to-Cloud platform is a globally adopted long range, low power solution for IoT applications, enabling the rapid development and deployment of ultra-low power, cost efficient and long range IoT networks, gateways, sensors, module products, and IoT services worldwide. Semtech's LoRa technology provides the communication layer for the LoRaWAN® standard, which is maintained by the LoRa Alliance®, an open IoT alliance for Low Power Wide Area Network (LPWAN) applications that has been used to deploy IoT networks in over 170 countries. With the proliferation of LoRa devices and the LoRaWAN standard, the LoRa Developer Portal is a place to learn, connect, collaborate, and find resources to help accelerate your LoRa development process. Semtech is a founding member of the LoRa Alliance.

To learn more about how LoRa enables IoT, visit
semtech.com/LoRa

Semtech Corporation

A leading global supplier of high performance analog and mixed-signal semiconductors and advanced algorithms for infrastructure, high-end consumer and industrial equipment. Products are designed to benefit the engineering community as well as the global community. The Company is dedicated to reducing the impact it, and its products, have on the environment. Internal green programs seek to reduce waste through material and manufacturing control, use of green technology and designing for resource reduction. Publicly traded since 1967, Semtech is listed on the NASDAQ Global Select Market under the symbol SMTC.

For more information, visit
semtech.com

LoRa Alliance®

An open, nonprofit association that has become one of the largest and fastest-growing alliances in the technology sector since its inception in 2015. Its members closely collaborate and share expertise to develop and promote the LoRaWAN® standard, which is the de facto global standard for secure, carrier-grade IoT LPWAN connectivity. LoRaWAN has the technical flexibility to address a broad range of IoT applications, both fixed and mobile, and a robust LoRaWAN Certification program to guarantee that devices perform as specified. The LoRaWAN standard has been deployed by more than 165 major mobile network operators globally, with connectivity available worldwide.

For more information, visit
LoRa-Alliance.org

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