



zenon
by COPA-DATA



Digital Substations

How IEC 61850 and zenon help you to
future-proof substation development and operation



COPA-DATA

Leveraging the power of independence, since 1987

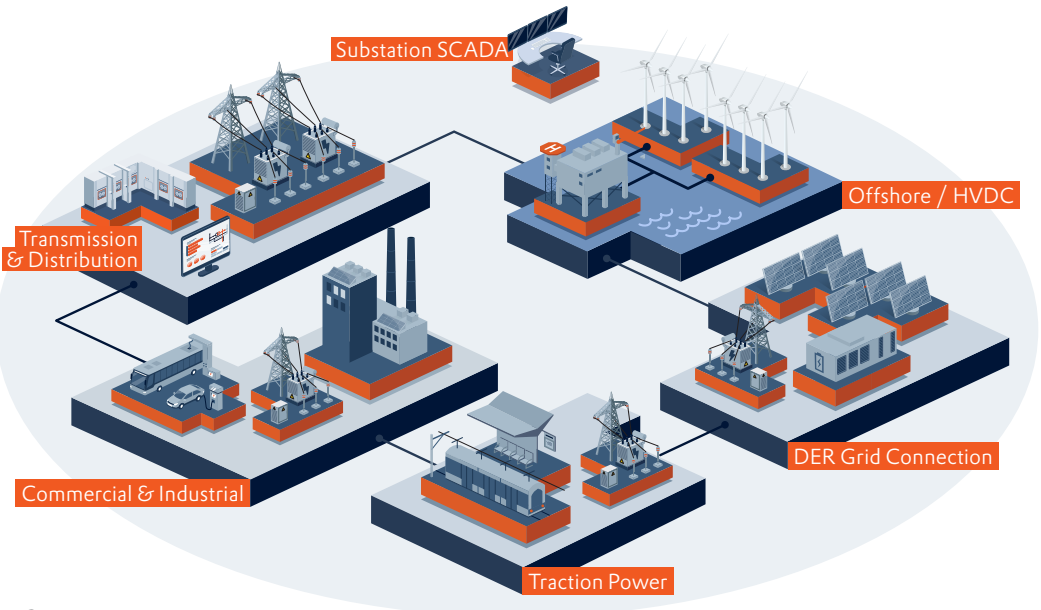
COPA-DATA is a global leader in industrial automation software, delivering substantial solutions for substation automation in any environment.

The zenon Software Platform consistently ensures reliable and efficient operation. With its independent connectivity, scalability and security, the software helps energy companies to streamline substation management over the entire asset lifecycle.

Engineering simplicity, individual standardization and open integration possibilities regularly enable system integrators and developers to realize projects at unparalleled pace.

More than 5,000 companies worldwide, such as transmission, distribution, and industrial companies successfully utilize zenon.

SUBSTATION SOLUTIONS FOR ANY ENVIRONMENT



STANDARDS AND MEMBERSHIPS :



END-USERS AND PARTNERS :



Secrets of the Digital Substation



The IEC 61850 standard for Digital Substations streamlines substation design, implementation, and operation. It lays the foundation for multi-vendor interoperability. Hence, IEC 61850 is key to the optimization of investment (CAPEX) and operational cost (OPEX). This standard leads to:

- ▶ Significant reduction of physical cabling
- ▶ Independent equipment design
- ▶ Functional adaptation through software (re)configuration
- ▶ Non-invasive testing and component replacement
- ▶ Increased equipment availability through high-quality information
- ▶ Open system configuration and interoperability

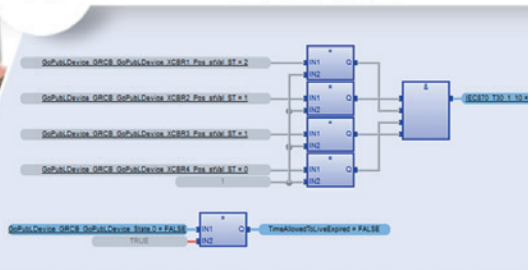
**White Paper
IEC-61850
and zenon:**



CONVENTIONAL

VS

DIGITAL



zenon: The integrated platform for substation automation



DE-FACTO STANDARD FOR STATION-LEVEL AND CONTROL CENTER SOLUTIONS

- ▶ **Station Level HMI:** Full situational awareness and control through interactive process views and generic command processing
- ▶ **Substation Gateway:** Connects to regional and national control centers using established protocols for robust data transmission
- ▶ **Substation Control Center (SCADA):** Monitors and controls of all assets in a unified control center environment, consistently representing any detail
- ▶ **Efficient Project Development:** Profits from an environment that integrates all aspects of the solution creating a versatile digital tool-chain

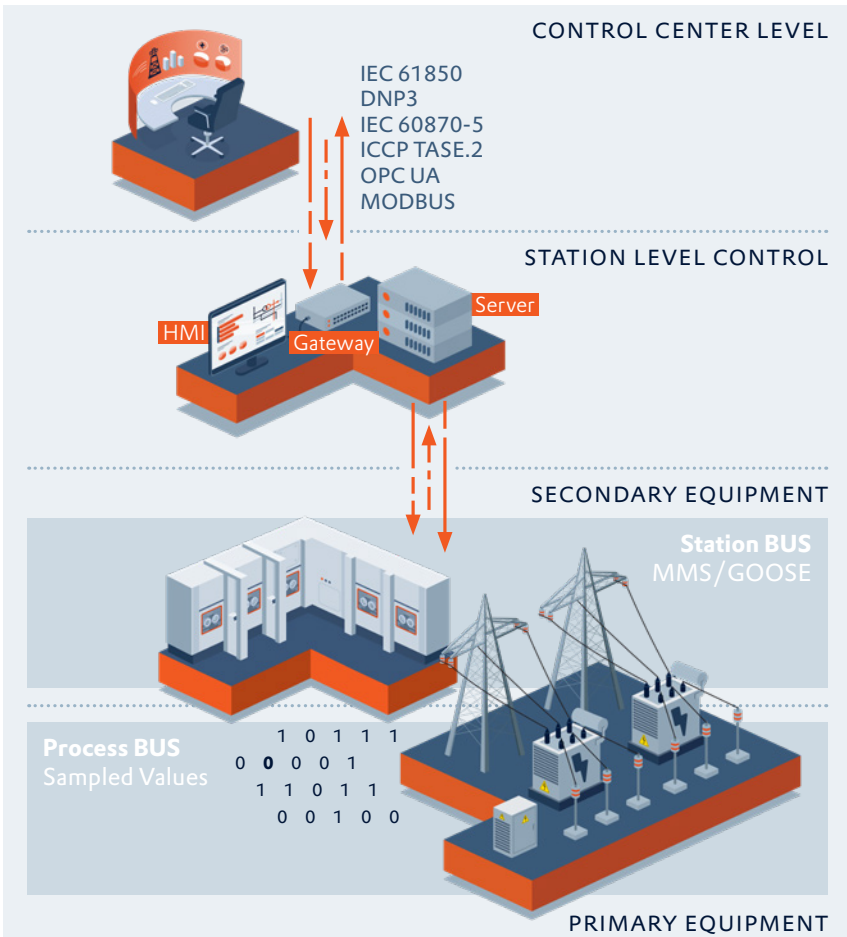
zenon
IEC-61850
certification:



Independent connectivity and scalability

ESTABLISHING THE STANDARD IN GREEN AND BROWN FIELD ENVIRONMENTS

With comprehensive support for all relevant energy industry protocols, both for IED and control center connectivity, zenon can integrate all your assets and maintain compatibility throughout the entire lifecycle of your substation fleets.





zenon

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Supported Protocols (Selection)

- ▶ IEC 61850 MMS Client
- ▶ IEC 61850 MMS Server
- ▶ IEC 61850 GOOSE Publisher/Subscriber
- ▶ DNP3 Master/Outstation
- ▶ IEC 60870-5 (101/103/104) Master/Slave
- ▶ MODBUS Master/Slave
- ▶ ICCP/TASE.2 Server/Client
- ▶ OPC UA / OPC DA Server/Client
- ▶ IEEE C37.118 (Synchrophasor)
- ▶ IEC 61850-90-5 (Synchrophasor)
- ▶ 62056-21 (Metering)
- ▶ SYSLOG
- ▶ SNMP v1,v2,v3
- ▶ PRP (Parallel Redundancy Protocol)
- ▶ IEC 62351 for TLS-based encryption and Secure Authentication for selected protocols

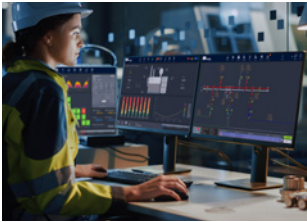
Additional solutions in a nutshell

FOR SMOOTH DEVELOPMENT, OPERATION...



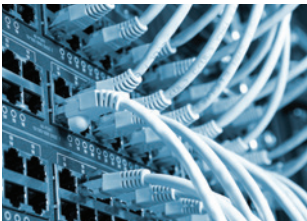
Station Control System and Substation HMI

zenon provides full situational awareness and safe control for modern substations. It achieves this by connecting to any hardware with flexible MMS and GOOSE drivers, integrating both Edition 1 and Edition 2 devices, and supporting various communication protocols for heterogeneous and legacy environments.



Substation Gateway

zenon's integrated process gateway enables central monitoring and consistent control of substation equipment from regional or national control rooms, supporting a wide array of protocols such as IEC 60870, DNP3, IEC 61850, MODBUS, and OPC UA.



High availability networking with PRP

The PRP (Parallel Redundancy Protocol) in zenon ensures seamless failover for all Ethernet-based communication protocols. This includes the IEC 61850 MMS Client and Server, as well as GOOSE, thereby enhancing network reliability and availability.



GOOSE Communication Monitoring and Substitution

zenon's support for IEC 61850 GOOSE protocol enables comprehensive monitoring and substitution of GOOSE messages, thereby ensuring enhanced availability and instilling greater confidence in the technology.

... AND MAINTENANCE OF DIGITAL SUBSTATIONS.



Device exchange and equipment validation

Streamline the process of regularly validating protection devices and swiftly replacing defective substation equipment in digitalized substations. Use zenon to perform in-system tests, indicate device operating modes, interpret IEC 61850 information for transparency, and ensure quick routing of values to replacement devices, regardless of their type and model.



Unified management of disturbance records

The unified management of disturbance records enables high precision oscillography and status data, captured by IEDs to be collected via zenon's File Transfer function. This data is then forwarded for central investigation, and visualized using an integrated COMTRADE viewer.



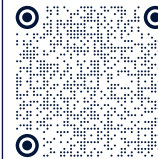
Commissioning support (FAT/SAT)

Leverage zenon's powerful tools for creating dynamic simulations to substitute missing assets. This provides pretesting capabilities, utilizes a variable diagnostic list for data point overview, monitors system screens communication, and uses alarm statistics to identify rework hotspots during trial operations.

**Check out
our substation
demo:**



**Detailed info on
IEC 61850
capabilities:**



Top-Down and Bottom-Up



EFFICIENT ENGINEERING OF DIGITAL SUBSTATIONS

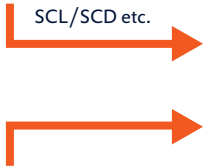
Pushing productivity limits with an all-digital tool-chain. With zenon, project configurations can be generated automatically, based on the given design files. This can save up to 90 % engineering time and promoted the use of standardized, pre-qualified building blocks.

Utilizing the IEC 61850 standard data models and design artifacts (description files), zenon offers clearly arranged configuration tools for its Client, Server and GOOSE interfaces. These tools allow for the fast setup of communication links, based on the settings of already configured devices.

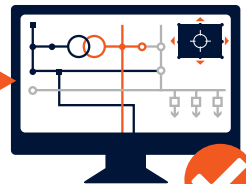


Independent Configuration Tool (ICT)

SCL/SCD etc.



Match and generate



Utility Design/
planning data

RAPID PROJECT DEVELOPMENT



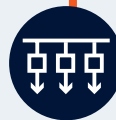
Create your HMI/SCADA application from **Independent Configuration Tool (ICT) designed files**

TOP DOWN



BOTTOM UP

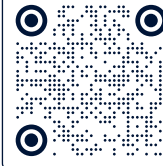
Create your HMI/SCADA application from **configured IEDs (online browsing of variables etc.)**



More info on Automated Engineering:



Automated HMI Engineering video:

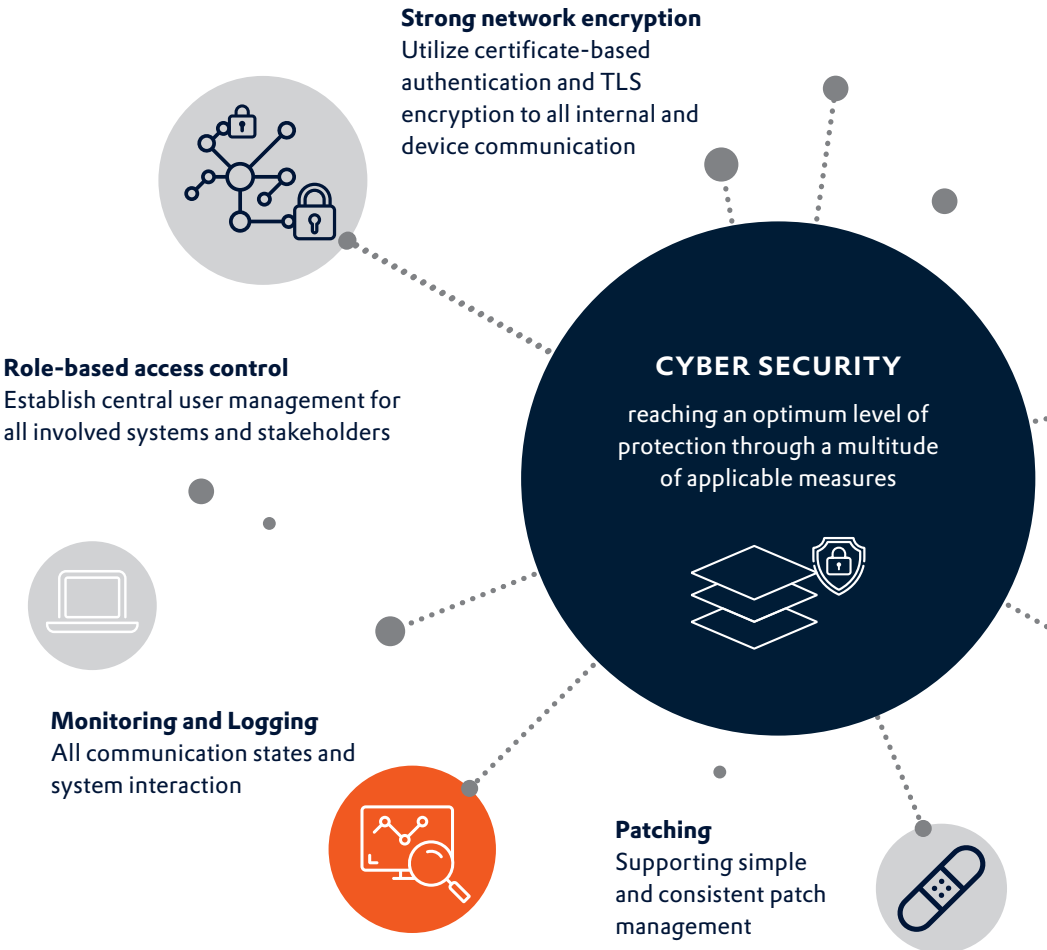


Managing Cyber Security



STAYING CYBER SECURE WHEN DIGITALIZING YOUR ASSETS

Operational flexibility and the ability to adapt should not jeopardize the cyber integrity of your mission-critical application. zenon helps you master this challenge with a multitude of cybersecurity functions, enabling you to build a strong “Defense in Depth”-oriented system architecture.

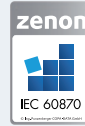


System Hardening

Precisely adjust the system's security features and close-down any unused service or interface



Modular Architecture Building zones with clear interfaces for effective security monitoring by modern firewalls and IDS



IEC 62351 for TLS-based encryption and Secure Authentication

- ▶ IEC 61850
- ▶ IEC 60870-5-104
- ▶ DNP3
- ▶ ICCP / TASE.2

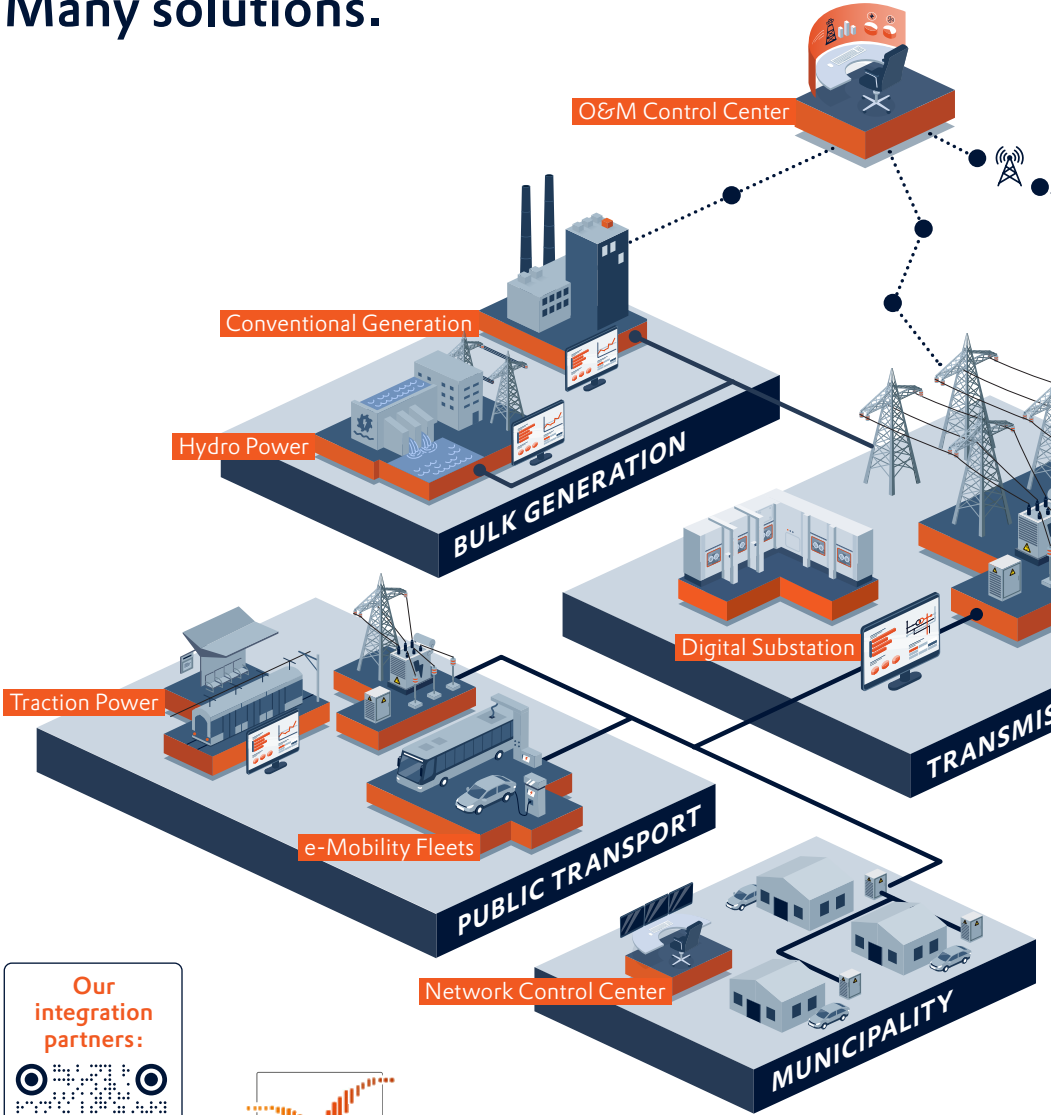


IEC 62443-4-1 compliant Secure Development Lifecycle Process (SDL)

Integrated User Management:

- ▶ Microsoft Active Directory
- ▶ Azure Active Directory
- ▶ OpenLDAP
- ▶ RADIUS
- ▶ OpenID Connect
- ▶ Keycloak

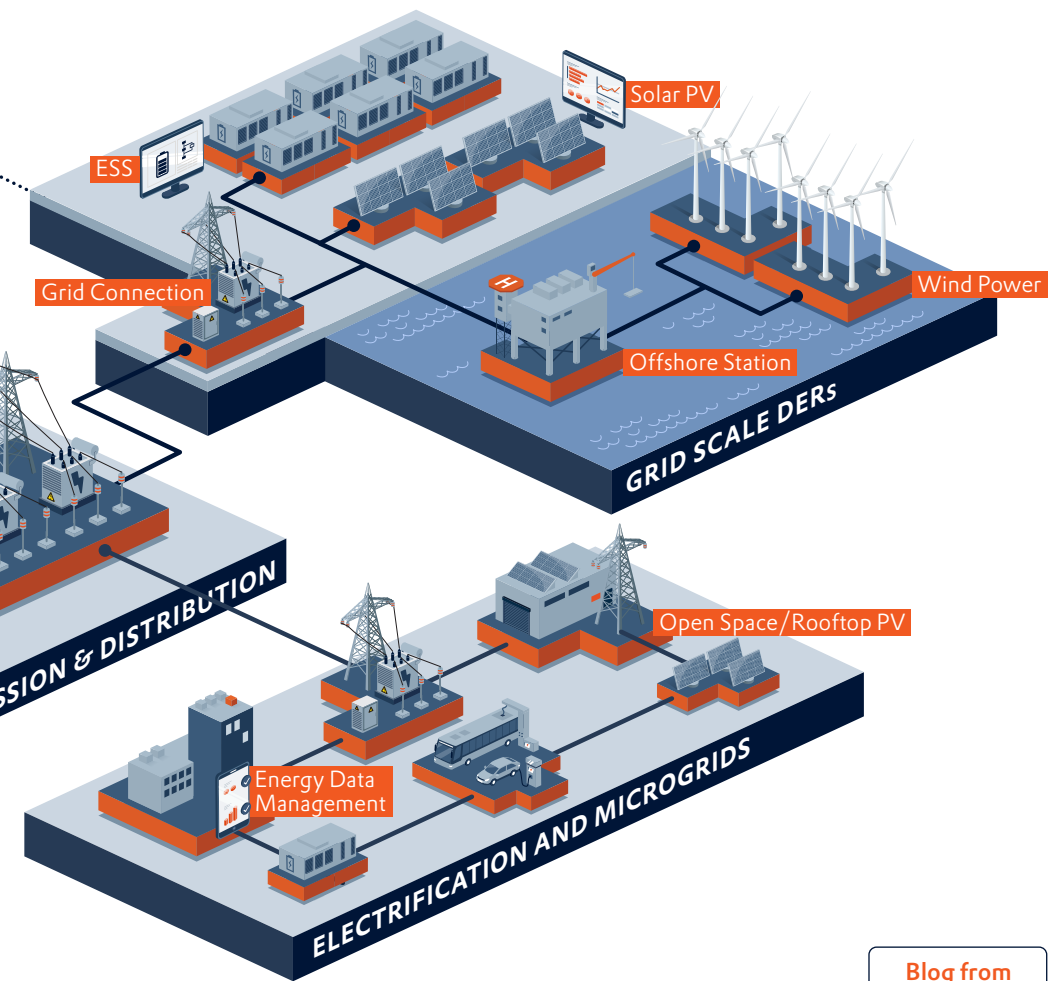
One software platform. Many solutions.



Our integration partners:



COPADATA
Partner Community



Blog from our Thought Leaders



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zenon Energy Edition
**One software platform.
Many solutions.**

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