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SIEMENS

Go beyond … IEC 61850

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Answers for infrastructure and cities.

Bank on the expertise of the technology leader

The IEC 61850 standard is more than just an Ethernet-based substation automation protocol. It comprehensively defines the engineering process, data and service models, the conformance test, and the entire communication within substations.

IEC 61850 has become firmly established in the field of substation automation. With Edition 2, its advantages now become available to other fields of the energy supply business.

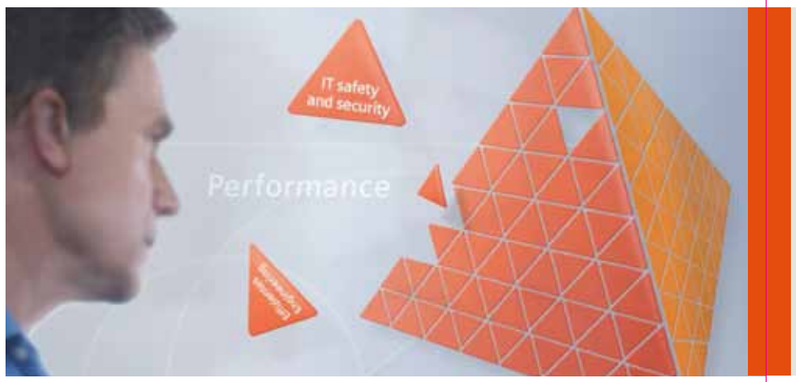
Only a consistently designed implementation of the IEC 61850 standard makes it possible to reap its full benefits. This is where Siemens' applied technology leadership pays off: Siemens is the driving force behind this standard – no one knows its entire potential better.

Siemens participates in most standardization bodies and user groups on the international stage and has the largest installed base worldwide: more than 200,000 Siemens devices with IEC 61850 are in operation around the globe.

This advantage of experience is incorporated into all Siemens solutions and products. They set the benchmark when it comes to performance, interoperability, and availability. They make the entire workflow easier, deliver a safety and security advantage, and ultimately save real money.

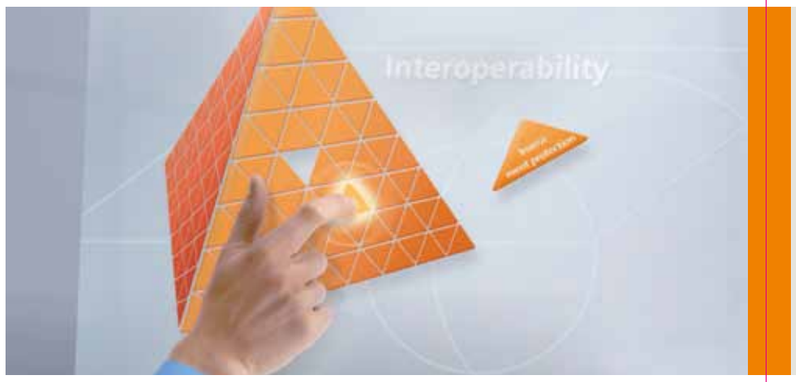
Siemens offers users the possibility to draw maximum benefits from IEC 61850. Discover what it means to tap the full potential of the IEC 61850 standard.

Meet the standard
IEC 61850



Performance with a perspective

- **Easier station engineering and operation**
- **Optimal support of individual operating requirements and system architectures**
- **Reliable and comprehensive protection of investment, even with migrations**
- **Ready for the Smart Grids of the future**



Interaction without limits

- **Targeted use of the various services in the IEC 61850 framework**
- **Compatibility of Editions 1 and 2**
- **Support of user profiles**
- **Seamless adaptation to existing systems**

À la carte availability

- **Scalable solutions enable individual adaptation of availability**
- **Comprehensive redundancies for reliable data transmission at any time**
- **Support of PRP, HSR, and RSTP protocols**

There are plenty of benefits for you

Top: SIPROTEC 5

Middle: experimental setup for interoperability test

Solutions from Siemens unleash untapped potential. They make the complex IEC 61850 data model easily manageable by translating it into your common user language. Individual operating requirements and system architectures are optimally supported.

Engineering
The Siemens experts ensure that the IEC 61850-standard representations always correspond to the actual function of the device. This makes possible an integrated and consistent device and system engineering from the single line of the station to device parameterization – comfortable to manage, time-saving, and reliable during engineering and station operation.

Security
Today, reliable performance requires the utmost security. The architecture of Siemens energy automation systems fulfills the strict security requirements of the BDEW (German Association of Energy and Water Industries) whitepaper and the NERC CIP (North American Electric Reliability Corporation Critical Infrastructure Protection) standard. The entire communication line between the parameterization tool and the terminal equipment is encrypted, the communication between station control and control center protected according to the IEC 62351 standard. Moreover, all access attempts and critical actions to devices and systems are logged automatically. This multilayered concept of security ensures reliable operation and the highest possible availability at any time.

Solutions from Siemens increase your systems' integration capacity. Flexible object modeling and communication services, as well as degrees of freedom of object addressing, ensure the highest possible degree of interoperability as well as efficiency in daily operation, equipment replacement, and system expansions – independent from specific manufacturers and with little planning effort.

Protection of investment
Investments are reliably protected in the case of system and functional expansions and even migrations. It goes without saying that all Siemens devices are KEMA-certified as level A devices according to UCA (Utility Communication Architecture) and have passed the interoperability test of FGH (research association of the electricity supply industry and electrical industry).

Edition 2
Siemens has played an active role in the definition of the new Edition 2 and contributed its vast field experience. Both editions can be integrated simultaneously in Siemens station control systems – fully adapted to your individual operating requirements.

Smart Grid-ready
IEC 61850 with Siemens means that your systems already fulfill the demands of future Smart Grids today: They enable the reliable and standardized data exchange among all grid elements – from the charging station for electric vehicles all the way to the high-voltage power transmission system.

Solutions from Siemens make it possible to adapt the availability factor of a station individually. Redundancy protocols and functional redundancies implemented with SICAM and SIPROTEC devices ensure the safe transmission of all data – because reliable data communication is the basis of all automation tasks and, thus, for the operational safety of a substation.

Redundancy
Whether buffered or unbuffered reporting, or redundant uninterruptible and lossless data transmission with PRP (Parallel Redundancy Protocol) and HSR (High-availability Seamless Ring Redundancy): Siemens station control systems support all operating requirements and system architectures in an optimal manner.

Field experience
Today, more than 200,000 Siemens devices are in operation worldwide in stations with RSTP (Rapid Spanning Tree Protocol). The necessary interoperability test of the Siemens devices for HSR was performed and passed during CIGRE 2010.