

The background image is a photograph of a high-voltage electrical substation at sunset or sunrise. Two workers in safety gear are in the lower left, looking at a large blueprint. The substation's steel structures and power lines stretch into the distance. Overlaid on the image are various digital graphics: a blue hexagonal grid in the upper right, yellow and blue circuit diagrams, binary code (0s and 1s), and a cloud icon with the word 'WAN' inside it.

SIEMENS

Ingenuity for life

Time to switch

Rugged communications for
the digital substation

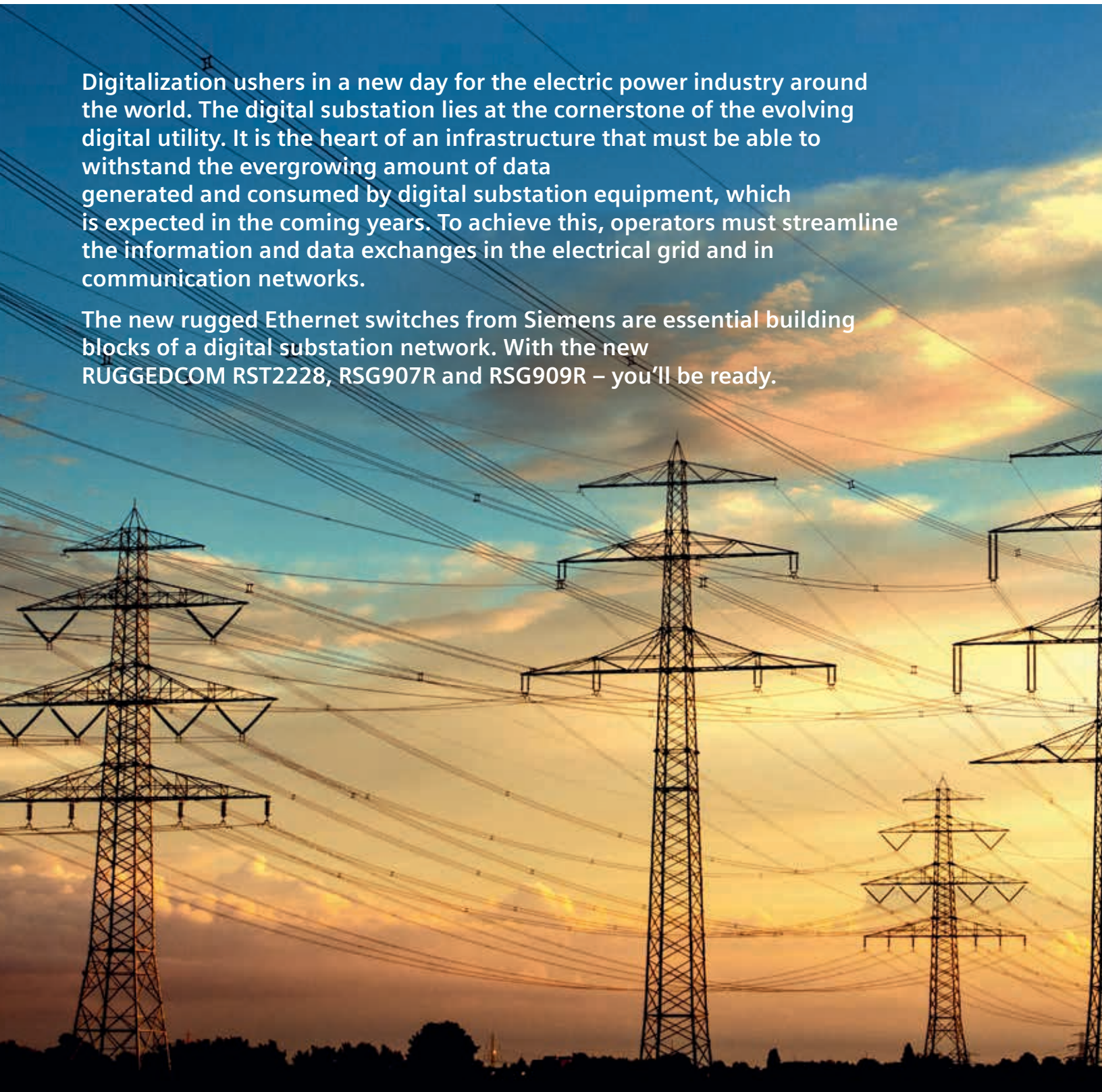
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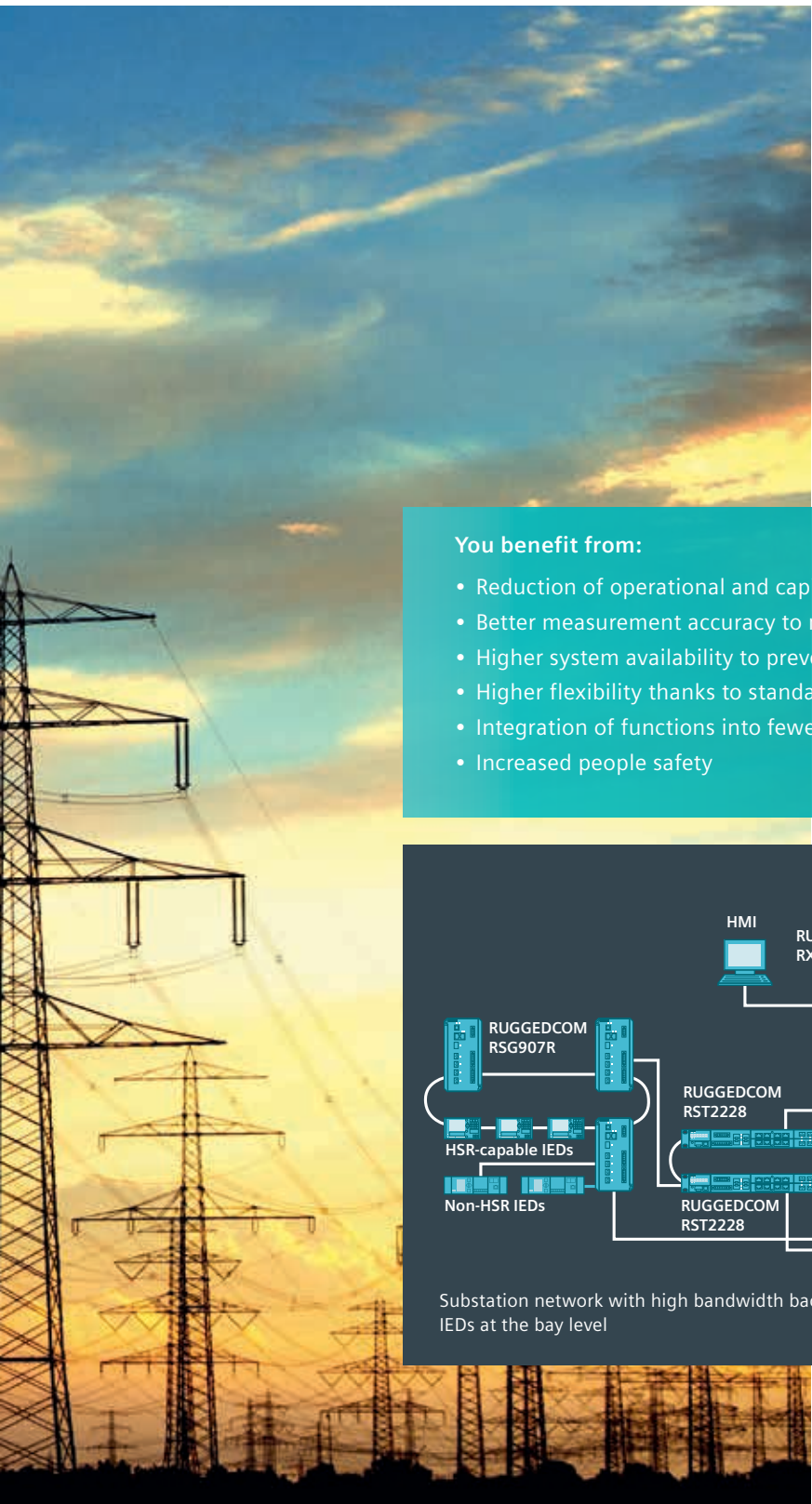
It's a new day

Rugged communications enable digitalization of substations worldwide

Digitalization ushers in a new day for the electric power industry around the world. The digital substation lies at the cornerstone of the evolving digital utility. It is the heart of an infrastructure that must be able to withstand the evergrowing amount of data generated and consumed by digital substation equipment, which is expected in the coming years. To achieve this, operators must streamline the information and data exchanges in the electrical grid and in communication networks.

The new rugged Ethernet switches from Siemens are essential building blocks of a digital substation network. With the new RUGGEDCOM RST2228, RSG907R and RSG909R – you'll be ready.





The new RUGGEDCOM Ethernet switches are part of Siemens industrial communication networks portfolio. They provide secure, real-time communication with large bandwidths and high system availability – ideal for a digital substation network.

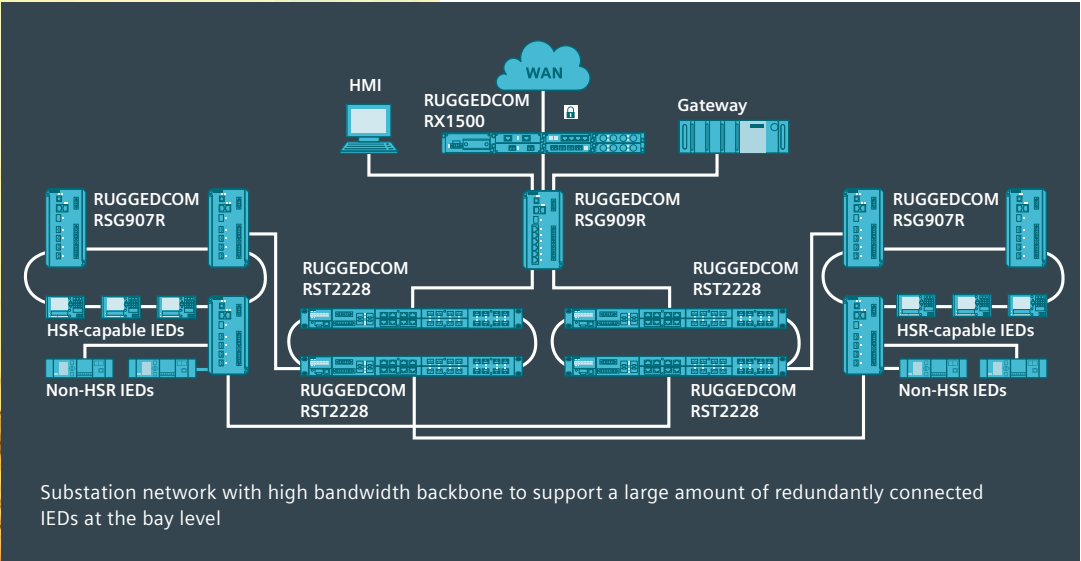
The RUGGEDCOM RST2228, a 19" rack switch, features high density ports with 10 GBit/s uplinks in response to evergrowing data rates.

RUGGEDCOM RSG907R and RSG909R, two full Gigabit switches in a compact design, offer both HSR and PRP functionality to mitigate the risk of communication disruptions and downtime.

Time to switch – RUGGEDCOM RST2228, RSG909R and RSG907R.

You benefit from:

- Reduction of operational and capital expenses
- Better measurement accuracy to monitor, control and protect valuable assets
- Higher system availability to prevent and reduce outages
- Higher flexibility thanks to standardization and interoperability
- Integration of functions into fewer devices
- Increased people safety



High bandwidth for high data throughput

Ethernet rack switch RUGGEDCOM RST2228

Electric power utilities face a growing need for flexible, future-proof and highly reliable communications providing higher bandwidth to manage ever increasing amounts of data from mission-critical applications, particularly at the substation level. In other words, the RUGGEDCOM RST2228 is a perfect fit.



Offering high port density with four 1/10 GBit/s uplinks and up to twenty-four 10/100/1000 Mbit/s interfaces to support IEEE 1588 clock synchronization, this rugged 19" rack switch significantly reduces the number of network devices needed. RUGGEDCOM RST2228 minimizes maintenance costs by combining precision timing and network communication data on one single device. Thanks to its modular design, it also helps to avoid unnecessary hardware purchases, further lowering operating expenses.

RUGGEDCOM RST2228 performs flawlessly in the harshest environments at temperatures ranging from -40°C to $+85^{\circ}\text{C}$. The device can be built to order and allows for in-field modifications with separately orderable media modules. The complete solution comes with all of the necessary approvals for various markets, including IEC 61850-3, IEEE 1613, NEMA TS-2, EN 50121-3-2, EN 50121-4 and IEC Ex.



Technical data

19" Layer 2 Ethernet rack switch

4 x 1/10 GBit/s uplinks

24 x 10/100/1000 Mbit/s field-modular interfaces

4-port field-modular modules with RJ45, FastConnect and SFP interfaces

IEEE 1588 transparent clock support

RUGGEDCOM CLP (removable storage module) support

Key benefits at a glance

- Increased bandwidth for reliably handling growing amounts of data
- High port density to connect more devices, thereby minimizing capital expenses
- Supports simple, cost-effective migration from copper to fiber-optic networks
- Reduced setup time in the field and fast, easy module exchange, if necessary



Redundant communication in a compact design

Compact Ethernet switches RUGGEDCOM RSG909R and RUGGEDCOM RSG907R

Given the size and complexity of today's network architectures, switches that support redundancy protocols such as PRP and HSR have become indispensable for mitigating the risk of communication disruptions, downtimes and, consequently, revenue loss. RUGGEDCOM RSG909R and RSG907R are well-equipped for the job.



RUGGEDCOM RSG909R

- 6 x 10/100/1000 Mbit/s RJ45 ports
- 3 x Gigabit SFP ports to support redundancy functions

RUGGEDCOM RSG907R

- 4 x 100 Mbit/s LC multimode fiber ports
- 3 x Gigabit SFP ports to support redundancy functions

Key benefits at a glance

- Support of seamless redundancy protocols such as HSR and PRP to ensure network availability
- Reduction of maintenance costs by combining precision timing and network communications data on one network
- Providing safe, reliable operations to minimize the risk of data and revenue loss



Combining an Ethernet switch with an HSR/PRP redundancy box (RedBox) in a convenient compact design, these devices ensure continuous secure, reliable operations, even during power failures, thereby greatly diminishing the risk of data and revenue loss. IEEE 1588 function support enables the RUGGEDCOM RSG909R and the RSG907R to combine precision timing and network communication data on one network, thereby reducing maintenance costs. They can also be used to couple an HSR with a PRP or an RSTP network to operate on both types of redundant networks at the same time.

Rugged rated to operate reliably in the harshest environmental conditions, the devices provide maintenance-free operation for years at ambient temperatures ranging between -40°C and 85°C . Both solutions come with comprehensive approvals for a variety of markets, including IEC 61850-3, IEEE 1613 and IEC Ex.



Technical data

Compact, full Gigabit Ethernet switches

HSR/PRP functionality according to IEC 62439-3

Power redundancy

IEEE 1588 function support

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