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## Retrofit for the future

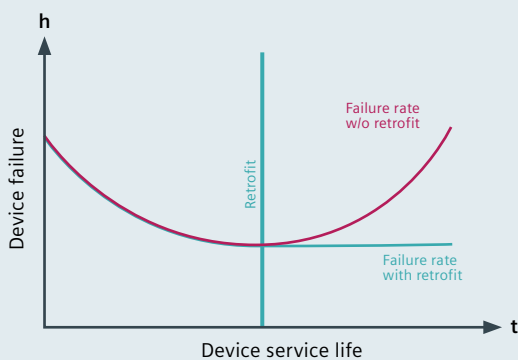
Customized retrofits for modernizing energy utilities and industries

[siemens.com/energy-retrofit](https://www.siemens.com/energy-retrofit)

# Optimally geared to the future

Energy utilities and industries both need a safe infrastructure. Switchgear in particular plays a vital role, either as an interface between different voltage levels or as a key element in energy infeed or energy generation systems.

As primary switchgear grow older, wear and tear affecting the materials will compromise their functional reliability. Unforeseeable outages that affect secondary components will also become more frequent. This can lead to high costs for repeated testing. With the right retrofitting plan in place, you can prevent this risk and enjoy the following benefits:



The economic viability of switchgear and components lies in a narrow range between the initial phase and failures caused by aging at the end phase of the lifecycle. Retrofitting extends this range and reduces lifecycle costs.

## Reliable availability

In addition to the aging process, the often unclear situation regarding spare part availability can pose a threat to reliable operation. We don't just provide the latest generation of secondary devices – we also keep all spare parts available on a long-term basis.

## Efficient cost reduction

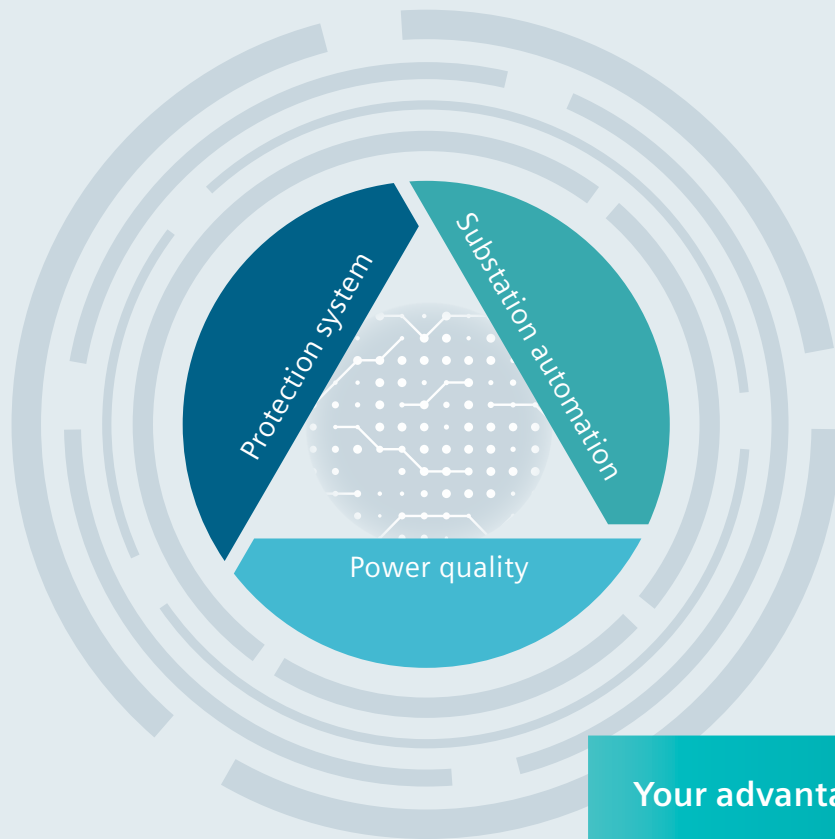
State-of-the-art digital protection, automation, and power-quality technologies allow operators to record and analyze previously unused information. This means that critical situations can be identified at an early stage, actions can be taken to resolve them, and overall operation can be optimized.

## End-to-end cybersecurity

A high level of availability can only be guaranteed when plant operation is protected. Our integration processes and technical solutions are based on international standards and ensure a future-proof, end-to-end solution that delivers optimal availability.



# Safety, efficiency, quality – combined factors for success



Retrofitting improves protection for your plant and optimizes its operating processes.

## Future-proof expandability

Full compatibility with standard IEC 61850 makes it easy to integrate third-party devices and ensures maximum future viability. And the application of IEC 61850 simplifies all engineering sequences, which ultimately saves you money.

As part of our retrofitting services, we assess your plant and draw up a customized upgrade plan that perfectly suits your budget and business requirements.

This includes a binding schedule so you can avoid network interruptions. Individual components can be retrofitted as an immediate measure, or a multi-year upgrade program can be established as part of a long-term service agreement.

## Your advantages at a glance

### As an energy utility:

- Fewer sources of error mean improved network availability
- Lower operating costs due to automation
- Improved safety thanks to effective cyber defense
- Improved energy transparency with power quality
- Reliable evidence with court-acceptable measurements

### As an industrial customer/energy consumer:

- Higher productivity owing to improved network availability
- Lower production costs resulting from efficient network automation
- Reduced energy costs through improved power management
- Enhanced safety ensured by effective cyber defense
- Improved energy transparency based on power quality measurement and analysis
- Reliable evidence with court-acceptable measurements

# A protection system you can rely on



For more than a century, innovative protection technology from Siemens has offered a reliable power supply and safe, efficient network operation. We understand the technologies – and we know how they'll connect you to the future.

## Avoid losses

Many switchgear still contain protection systems that are decades old and have reached the limits of their product lifecycle. In the event of a sudden failure, the cost of compensating the resulting losses can be substantial. These costs can quickly balloon to many times the cost of a retrofit.

## Improve reliability

Self-monitored data exchanges with control centers, rapid troubleshooting, and back-up protection functions ensure continued operation. Our devices make switchgear less complex, which reduces the risk of human error.

## Improve safety

High sensitivity in fault recognition combined with a short tripping time will give a huge boost to your plant's safety. Regardless of the protection functions you need, we cover all options with our SIPROTEC 5, SIPROTEC Compact, and Reyrolle devices.

## Simplify assembly

Our devices offer functions that previously required entire control panels in some cases. This means that you'll benefit from minimal space requirements, less wiring, and lower cabling costs. And you'll avoid the risk of electromagnetic interference thanks to the use of optical fiber.



SIPROTEC protection system

# Substation automation that thinks for itself

Our products and solutions are ideally suited for implementing new maintenance-friendly substation automation without major expense – even in very non-standardized systems.

## Add more value

SICAM substation automation has a totally consistent architecture and delivers a unique gain in flexibility. Our retrofit program improves your system's potential – both for single-user control on-site and in redundant multi-server, multi-user systems. The result is even more efficient automation, operation, observation, and archiving.

## Control access

No matter how open your substation automation needs to be for connected devices, it must be just as tightly closed to unauthorized access from the outside. Just as we do with all other retrofits, we realize this by meeting the latest cybersecurity standards.



SICAM substation automation



# Power quality that pays off

**Problems with network quality affect everyone: power producers with renewable or conventional power stations and the associated distribution systems as well as consumers like industrial and IT companies.**

## **Improve power quality**

Poor power quality impedes your production and reduces your competitiveness. In the worst case, it can lead to damage and malfunctions – which can't be allowed to happen. SICAM power quality solutions professionally record and measure all critical disturbances. Using this data, you'll ensure the availability and efficiency of your plant and machinery with minimal investment.

## **Document power quality**

Retrofitting is more than just swapping equipment: It involves measuring, recording, analyzing, and improving, and this continuous loop of actions improves your power quality and avoids unnecessary costs. Our retrofitting uses Class A measuring equipment and guarantees comparable measurements using an established measurement procedure in compliance with the IEC 61000-4-30 standard. With these characteristics, the SICAM Power Quality devices are also perfectly suited to perform court-acceptable power quality measurements.



SICAM power quality and measurement



# Customized modernization from a single source

Every retrofit is individual. That's why we don't provide off-the-rack solutions: Instead, we sit down with you and learn about your specific requirements. We then examine the characteristics of your current system and draw up a custom package that includes equipment, planning, and financing.

## Achieve your goals faster and at lower cost ...

Experience shows that this approach quickly produces solutions that are ready to put into operation and will also pay for itself sooner. Depending on the retrofit measures chosen, upgrading while the system is running is also possible.

## ... and more

Our work isn't done when we've upgraded your system. We also provide training on the new devices for your employees, and we'll stay to help you commission the system – and beyond, if needed. Whatever suits you best.

## Our services at a glance

- Plant-specific upgrade
- Reliable timeframe
- Short payback periods
- Employee training



**Publisher**  
**Siemens AG 2018**

Siemens AG  
Freyeslebenstraße 1  
91058 Erlangen  
Germany  
siemens.com/energy-retrofit

Article no. EMDG-B10069-00-7600  
Printed in Germany  
Dispo 06200  
EC08054 WS 07181.0

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