



SIEMENS

Ingenuity for life



SICAM Power Quality

Great benefits for minimal investment

[siemens.com/powerquality](https://www.siemens.com/powerquality)



Stability creates reliability: Why power quality matters

Many electronic devices and automation systems in industrial production plants are sensitive to voltage variations and dips in the power supply that are often caused by the unexpected connection of energy sources, such as renewable energy and large energy consumers.

The production systems themselves can also cause faults and feed them back into the distribution system. The risk? Plant shutdowns and production loss. The answer? Power quality. Power quality needs to be continuously measured and analyzed so that unexpected risks can be detected early on.

Recognize dangers on time: The key to optimal power quality

Good power quality has tremendous financial potential, because it helps prevent problems. The SICAM Power Quality portfolio offers you extensive options for optimizing power quality. With a small investment, you can considerably reduce the most significant risks to your plant's power quality.

Risks from renewable energies

The share of renewable energy sources is growing rapidly, as is the use of power electronics and inverters in the power grid. The result is increased high-frequency emissions (supraharmonics). These fluctuations – in the frequency range up to 150 kHz – affect the functioning of sensitive IT infrastructures, as well as automation and communication systems. Consumption load data from smart meters is transmitted in the same frequency range. Operating inverters and smart meters in the same system can result in incorrect power measurements.

Risks from large power consumers

Power quality is also a risk from in-house factors. Large power consumers like arc furnaces and welding systems cause voltage dips and variations. This reduces the efficiency of capacitors, transformers, and cables and shortens their electrical endurance. The risk of failure – and ultimately of a production outage – increases accordingly. The same applies to administrative buildings where system components that supply power to the IT infrastructure can compromise the quality of supply.



Power tip:

With solid, reliable knowledge about the cause of a disruption, you can take targeted action and optimize your processes, which means greater reliability and business success for your company.

Detect every fault: Take power quality to a new level

Key to a higher-quality power supply is information about local network conditions. It's important to take advantage of all available sources that are connected to the system. Solutions from the SICAM Power Quality portfolio allow you to detect any power quality fault, and thus take power quality to a new level.

Measure, record, analyze

SICAM Power Quality comprises a complete portfolio for power monitoring, power quality recording, and fault recording. SICAM power quality recorders measure, record, and analyze current and voltage. Faults in your processes aren't just visible, but explainable.

Power quality over the long term

To reliably evaluate power quality, you need precisely recorded operational values. But you don't get genuine transparency from snapshots. What's important is to record values over a longer period of time. SICAM power quality recorders use this data to generate informative mean values that you'll use to optimize power quality over the long term.



SICAM P855: The economic entry device

The SICAM P855 Class S power quality recorder provides an economical introduction to SICAM Power Quality.

Multifunctional operation

The Class S power quality recorder offers basic, seamless recording, display, and transmission of electrical variables, as well as voltage events and harmonics. Measured variables and events are recorded and processed according to IEC 61000-4-30. The measured variables can be output to a PC or control center via communication interfaces or shown on a display.

Standards-compliant evaluation

SICAM P855 provides a combined recording and evaluation function. Measured values are documented at parametrizable time intervals using various recorders like power quality and fault recorders. Long-term data and events are evaluated directly in the device according to power quality standards like EN 50160 and made available as a report.



Application in industry

SICAM P855 is ideal for power quality survey measurements in industrial plants and buildings or in power distribution systems.

SICAM Q100: The precise, versatile solution

The SICAM Q100 Class A power quality recorder records and logs data in compliance with legal requirements. SICAM Q100 even identifies whether a fault originates with the power company or the power consumer.

Analyze sources of error

The SICAM Q100 Class A power quality recorder isn't just highly accurate, it also records and logs interharmonics and transients. In addition, SICAM Q100 identifies where the fault originates – with the power company or the power consumer. That makes this device the first choice for monitoring power quality at each connection or transfer point. SICAM Q100 is an all-in-one solution. In addition to power quality features, it offers special algorithms and functions for energy management applications and is also optimal for widely distributed processes with multiple measuring points.

Visualize data

The acquisition, processing, and accuracy of measured variables and events comply with the IEC 61000-4-30 Class A power quality measurement standard. The measured variables are forwarded via communication interfaces to a PC or control system or shown on a display. Long-term data and events are evaluated directly in the device according to power quality standards like EN 50160 and made available as a report.



Application in industry

The power quality recorder is able to evaluate long-term data and events directly in the device and present them as a report according to power quality standards, such as EN 50160. This makes SICAM Q100 ideal for power quality compliance measurements that can be used in court.

SICAM Q200: The highly sensitive, all-around solution

This multifunctional measuring device reliably tracks even higher-frequency transients and is the first choice for sensitive production areas.

Record high-frequency harmonics

The larger, multifunctional SICAM Q200 Class A power quality recorder is used to record, visualize, analyze, and transmit measured electrical variables, such as current, voltage, frequency, power, and harmonics. It not only covers all the characteristics of the two devices described above, it also records higher-frequency disturbances (supraharmonics) in the 2 kHz to 150 kHz range.

Manage widely distributed processes

With a sampling rate of 1 MHz, SICAM Q200 can also record extremely fast transients up to 6 kV with a time resolution of 1 μ s. Additionally, SICAM Q200 offers algorithms and functions for energy management applications.

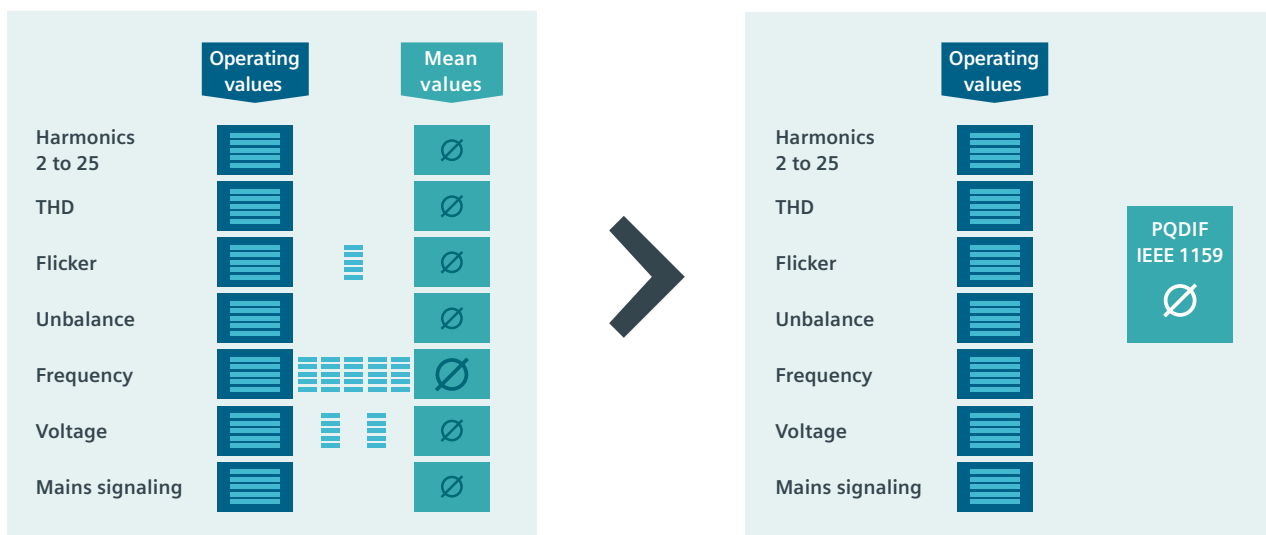


Application in industry

Thanks to its superior characteristics, SICAM Q200 can also be used in sensitive production environments, such as chip manufacturing plants and data centers.

SICAM devices: Predictable success

Power lines are constantly experiencing voltage-related disturbances, such as voltage dips, transients, and harmonics. SICAM power quality recorders continuously record these sources of error and save the individually acquired operational values separately.



Determine values precisely

SICAM power quality recorders use these operational values to calculate mean values – for example, a mean frequency value every ten seconds, a mean voltage value every ten minutes, and a mean measured flicker value every two hours. The mean values are saved and transferred in a PQDIF file according to IEEE 1159.

Transfer to the cloud

To further evaluate power quality, the devices send this file via IEC 61850 to a higher-level monitoring or evaluation system, such as SICAM PQS. The integrated OPC UA PubSub communication protocol is an up-to-date option. It lets you transfer all the measured operational values to a cloud-based evaluation application – for Power Quality Information 4.0.

PQ Advisor Compact: The knowledgeable advisor

You don't need to be an expert to be fully informed about your power quality. The PQ Advisor Compact is the advisor at your side offering sound knowledge.

Gather information

The easiest way to monitor your power quality is to connect SICAM power quality recorders to the PQ Advisor Compact software. You'll receive valuable information on how and when power quality has been disturbed and where the disturbance originated – externally or internally.

Monitor power quality parameters

The software, which requires no configuration, automatically looks for SICAM power quality recorders in your local network and monitors all relevant operational values. The files containing the measured operational values from the connected devices are automatically downloaded and saved locally in the PQ Advisor Compact.

PQ Advisor Compact.

Your benefits:

- Use the software with no expert knowledge.
- Obtain valuable analyses of fluctuations in voltage, frequency, and harmonics in an instant.
- Detect voltage events like unbalances and flicker – immediately.
- Learn the cause and direction of a disturbance.
- Evaluate your power quality like an expert, thanks to the graphic reprocessing of data via a traffic light.
- Continue to use your existing IT infrastructure / Windows.

Power tip:

With the PQ Advisor Compact on your side, you have many of the power quality problems under control. And all of that with lower investment. We're here for you with expertise that pays off.



SICAM PQS and SICAM PQ Analyzer: The partners for experts

SICAM PQS and SICAM PQ Analyzer are your keys to a detailed and continuous recording and evaluation of your power quality, including comprehensive analyses for experts.

Combine expertise

Sensitive and critical applications require detailed knowledge of power quality. In these cases, we recommend SICAM PQS and SICAM PQ Analyzer – a combination that guarantees detailed and continuous evaluation of power quality. Using additional applications, you can precisely tailor SICAM PQS and SICAM PQ Analyzer to your own requirements.

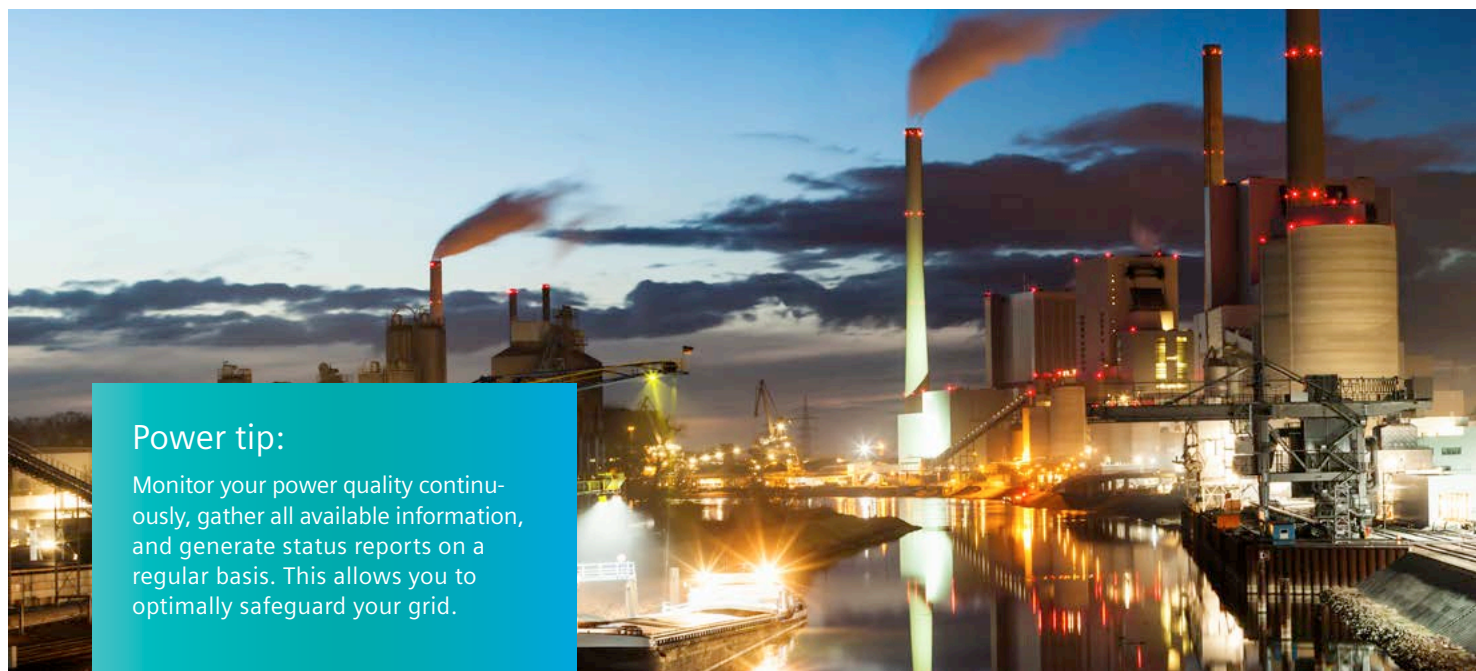
SICAM PQS gathers all the information

The ingenious SICAM PQS software enables the central recording and archiving of all power quality information from the field level for a large number of devices from different manufacturers. The system subsequently evaluates this information on the basis of the grid code as per EN 50160.

SICAM PQS also offers you the option to define your own grid codes for applications with specific power quality requirements. Comparing their current status to grid code limits makes individual disturbances visible. All the results for each measuring point can be visualized in reports the system prepares at parametrizable intervals after the evaluation.

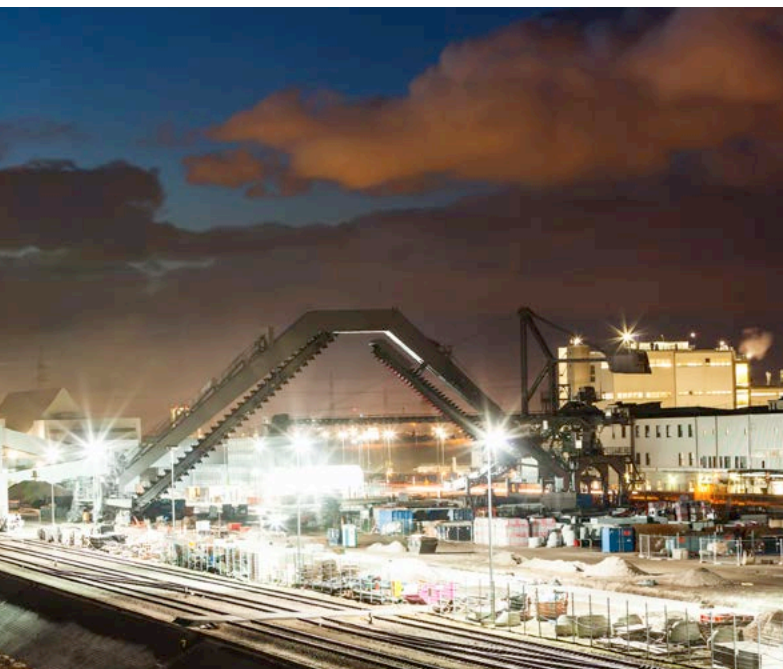
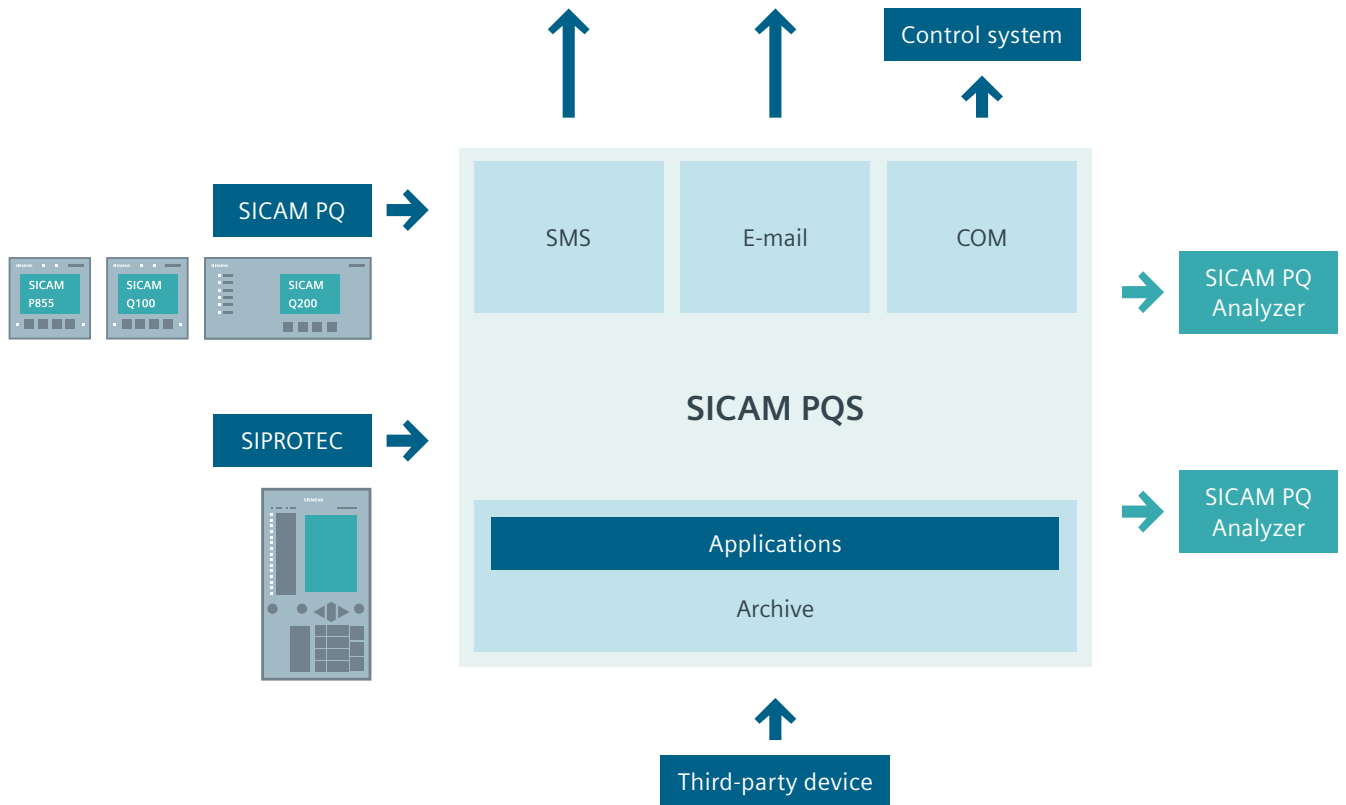
SICAM PQ Analyzer guarantees quality

The compatible SICAM PQ Analyzer software makes it much easier for you to provide quality verification and discover weak points. You'll benefit from a variety of options for evaluating the measured and archived PQ data and fault records.



Power tip:

Monitor your power quality continuously, gather all available information, and generate status reports on a regular basis. This allows you to optimally safeguard your grid.



SICAM PQS and SICAM PQ Analyzer Your benefits:

- Include up to 250 devices from different manufacturers from the field level in your PQ evaluations.
- Evaluate standard grid codes and user-defined grid codes, including reporting.
- Receive information on fault records, voltage-event detection, and power quality violations instantly via text message or e-mail.

SICAM in the cloud: The future is built in

In the era of digitalization, zero downtime is the expectation. This applies above all to power supply. SICAM Power Quality is naturally Power Quality 4.0.

Connect to the cloud

SICAM devices can be connected to the Internet of Things (IoT), which enables all the components in a power grid to provide power quality-related data on a cloud-based platform. Apps ensure this information is consolidated, linked, evaluated, and visualized for application-specific purposes.

Monitor with PQ Advisor Premium

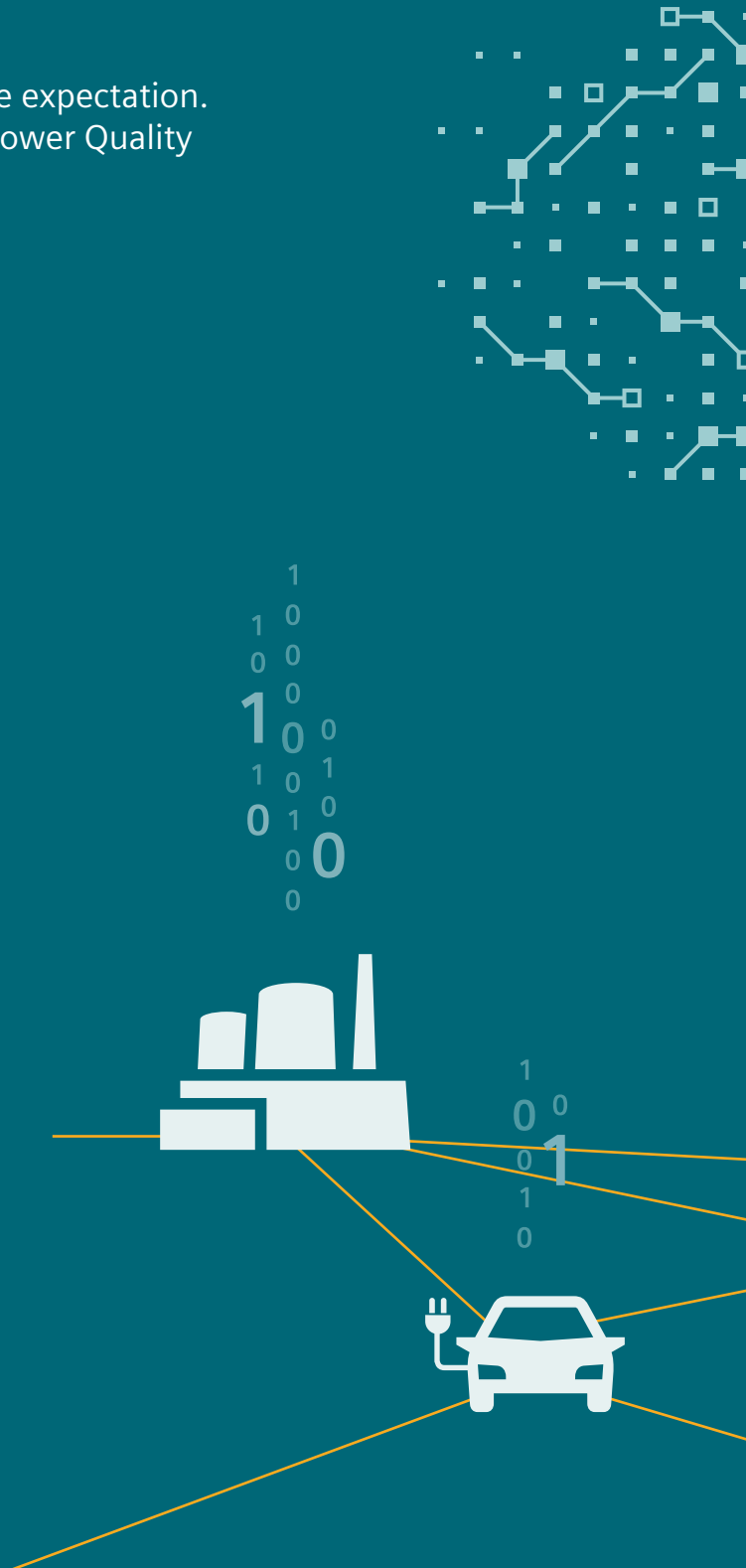
The way to the cloud is via PQ Advisor Premium, an application in the Siemens Grid Diagnostic Suite – powered by MindSphere, the IoT operating system from Siemens. PQ Advisor Premium is a powerful power quality analysis application that can be used to trace anomalies and trends in the grid at any time and from any location.

What's MindSphere from Siemens?

MindSphere is our cloud-based, open IoT operating system that connects your products, plants, systems, and machines and allows you to harness the wealth of data generated by the IoT by means of comprehensive analyses – for quickly developing smart IoT solutions.

Power tip:

Use the standardized OPC UA PubSub protocol to easily and directly connect SICAM power quality recorders to MindSphere and other platforms. All the relevant data is encrypted and transferred to the cloud via OPC UA PubSub, where it's made available to MindSphere applications.



MindSphere



SICAM Power Quality: Reliability all along the entire energy chain

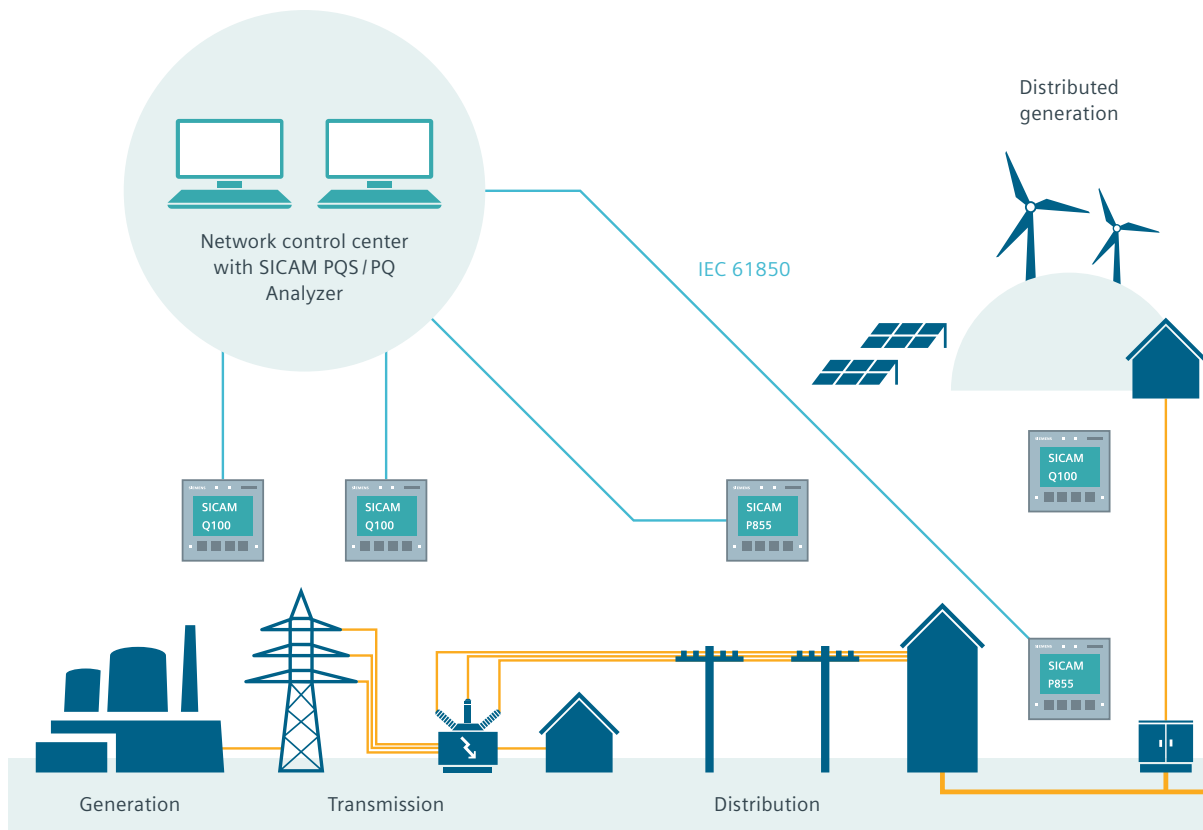
SICAM Power Quality monitors power quality along the entire energy chain. This means you'll benefit from comprehensive reliability in generation and distribution – always.

Use centrally or decentrally

SICAM Power Quality offers you the opportunity to optimize power quality along the entire energy chain – from power generation and transmission to power distribution – regardless of whether the power is generated centrally in large power plants or decentrally in photovoltaic systems or wind energy plants.

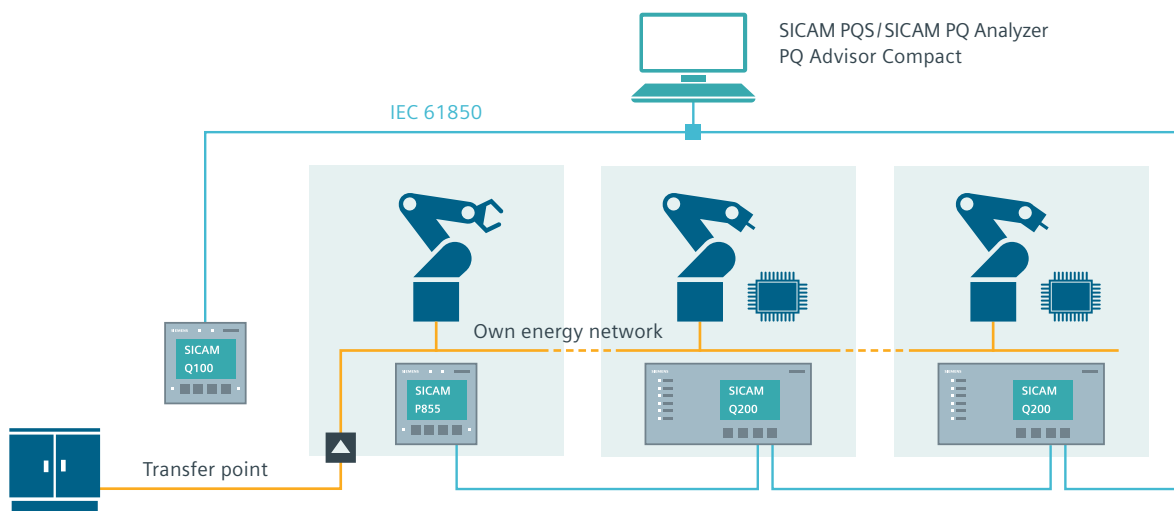
Equipped for all requirements

The SICAM Power Quality portfolio is ready for all requirements and all circumstances. Regardless of whether you're active on the market as a power producer or distribution grid operator, you'll benefit from greater availability, reliability, and quality of the power supply and from increased data transparency. Naturally, the SICAM Power Quality portfolio complies with all international power quality standards.



Power quality as a competitive advantage: Reliability in industrial processes

In industrial processes, it's useful to monitor the shared point of connection (transfer point) between the customer and the electricity-supply system separately. SICAM Power Quality offers solutions for every area of application.



Monitor according to contract

The SICAM Q100 power quality recorder is the best choice for monitoring the infeed of energy according to contract. Both SICAM Q100 and SICAM Q200 can detect the direction of the fault, and it's then possible to obtain specific information on the origin of errors.

Targeted and centralized monitoring

You can monitor demand-side power quality using devices like SICAM P855. For sensitive processes, such as chip manufacturing, it's better to use SICAM Q200. With a sampling rate of 1 MHz, SICAM Q200 can also record extremely fast transients up to 6 kV. SICAM Q200 is also ideal for widely distributed processes with multiple measuring points. For central power quality monitoring within your own network, SICAM power quality recorders send the measured power quality information to a higher-level control center via IEC 61850.

Why you should choose SICAM Power Quality:

- Ensure seamless monitoring around the clock, 365 days a year.
- Count on the maximum availability and reliability of your electricity-supply system.
- Secure your investment through an integrated solution.
- Rely on maximum security, thanks to state-of-the-art cybersecurity technology.

**Published by
Siemens AG 2019**

Smart Infrastructure
Digital Grid
Humboldtstrasse 59
90459 Nuremberg, Germany

For more information,
please contact our
Customer Support Center.
Phone: +49 180 524 84 37
Fax: +49 180 524 24 71
(Charges depending on the provider)
E-mail: support.energy@siemens.com

Article No. SIDG-B10009-00-7600
Printed in Germany
Dispo 06200
HL 19044487 WS 07191.0

Subject to changes and errors. The information given in this document only contains general descriptions and / or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

