



The power clock for smart grid timing

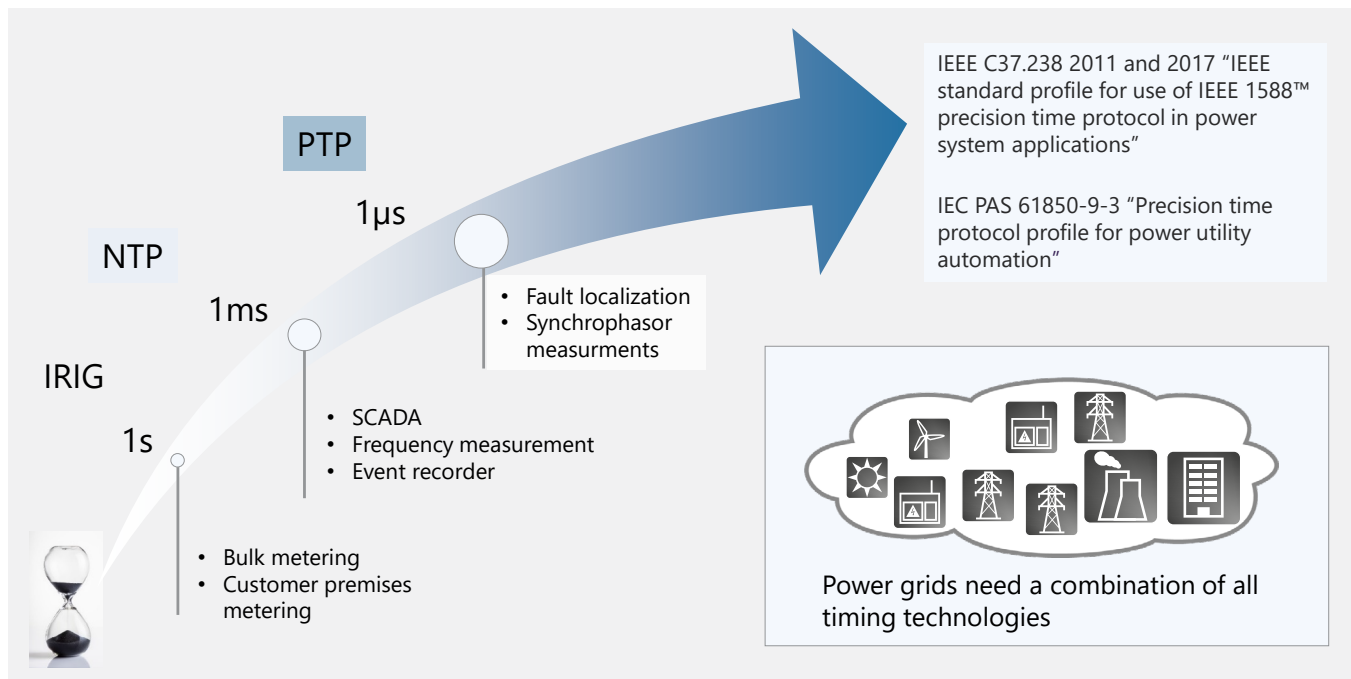
OSA 5405-P substation grandmaster

Highlights

- Combining legacy synchronization technologies with accurate and reliable new technologies for seamless timing innovation
- Making power grids smart by introducing compact and cost-efficient multi-technology synchronization devices at the edge of the power network
- Preparing for IEC 61850 substation equipment and protection relay technologies with accurate and robust PTP timing
- Staying in control with an integrated graphical management system for assuring data transport and timing delivery

Change is the new normal with power utilities. With distributed power generation, previously unidirectional power distribution networks are transforming into active grids. This creates a need for more sophisticated monitoring, control, and protection technology. Legacy timing solutions will stay, but more accurate, packet-based timing technologies are essential for a future-proof, digital smart grid network.

The power clock for smart grid timing



Smart grids need better time

As the power grid becomes smart, it has to handle a lot of information in a reliable and automated way. Data from sensors, remote terminals, protection relays and control systems are monitored and processed to continuously optimize operations and identify any problem as early as possible, initiating counteraction even before services are affected. This objective can only be reached if all processes are tightly synchronized and critical real-time data is precisely timestamped. While legacy technologies frequently use GNSS-delivered time in combination with local time distribution technologies such as PPS/ToD and IRIG-B, a more reliable and accurate solution is now mandatory.

An intelligent timing device for smarter grids

Precise and robust timing is key to secure and reliable operation of critical infrastructures. Legacy synchronization networks need to be complemented and eventually substituted with a timing technology that provides better accuracy and higher availability. A multi-technology synchronization solution for the edge of the power network is an essential component on the journey to a modern and automated grid. It needs to combine legacy interfaces, NTP servers and GNSS-delivered timing with a highly accurate PTP grandmaster and precise boundary clock capabilities. Power utilities need to carefully evolve their existing synchronization, improving timing quality without creating any risk for legacy solutions.

Preparing the power grid for substation automation (IEC 61850)

GNSS-delivered time is widely applied in substations today. This method, however, suffers from various vulnerabilities and operational shortcomings. Our solution removes all of those risks by augmenting satellite-delivered time with network-based synchronization. Ultimately, a redundant delivery of accurate time over the network will become the master delivery mechanism, while GNSS receivers will support accurate real-time monitoring of synchronization quality. The move to network-delivered timing also impacts operations and so an integrated management solution for the packet and synchronization network is needed to provide control and transparency.

Our OSA 5405-P substation grandmaster makes the difference

Our OSA 5405-P is specifically designed to bring more accurate and more reliable timing to power utilities. It builds on our proven and widely applied ultra-compact OSA 5405 multi-technology synchronization solution. Specifically designed for power utilities, this variant is enhanced with IRIP-B interfaces and able to support multiple PTP profiles such as the Power Profile and Telecom Profile for sophisticated PTP gateway applications. The device can be mounted on a wall, in a rack or DIN rail, significantly simplifying installation and reducing operational cost. With satellite- and network-based timing, our OSA 5405-P delivers robust and accurate synchronization. What's more, this versatile multi-technology device provides an NTP server.

OSA 5405-P substation grandmaster

Our OSA 5405-P substation grandmaster is specifically designed for the energy edge

- With IRIG-B and BITS interfaces as well as an integrated NTP server and PTP grandmaster, this device can handle any sync challenge
- Designed for installations at energy sites with demanding electromagnetic requirements
- Ensemble Controller can uniquely manage and control both the transport and the synchronization networks
- Syncjack™ monitoring and assurance technology provides real-time information about timing quality

Synchronization assurance is essential to critical infrastructures

The delivery of accurate timing is a key requirement for modernizing power grids. The quality of the synchronization needs to be monitored at all times – and this is a tricky task. Without accurate onsite timing, there’s no way to measure the quality of delivered time. Syncjack™ is our widely applied solution to this. By processing synchronization input from different sources in combination with high-quality oscillators, a highly precise assessment of sync quality can be made. What’s more, our sophisticated Ensemble Controller and Ensemble Sync Director provide easy and transparent access to any parameter of the synchronization network.

