

BEYOND AMI:

Transitioning to Next Generation IoT Infrastructure at TEPCO Power Grid

Creating the largest AMI/IoT platform
in the world



Landis+Gyr



Japan's TEPCO Power Grid (TEPCO PG) first selected Landis+Gyr's connected platform to begin their grid modernization efforts and Advanced Metering Infrastructure (AMI) deployment in 2013. Since then, Landis+Gyr has worked closely with TEPCO PG to connect and manage nearly 30 million endpoints.

In 2022, Landis+Gyr took on a project to implement a new TEPCO PG Joint Meter Reading (JMR) initiative which was subsequently expanded and officially named "Route IoT," with the goal of transforming the AMI implementation into an IoT infrastructure, to connect:

- Gas meters
- Water meters
- EV chargers
- Solar power (PV) systems
- Batteries
- Sub-meters
- Electrical panels
- Other devices, including battery-powered equipment

Through this initiative, Landis+Gyr worked with TEPCO PG to establish a new standard for integrating devices, laying the foundation for a connected energy infrastructure, making major system upgrades to the AMI system, and strengthening our partnership for next generation smart metering.

The project presented specific challenges, which included:

- Integrating new functionality into an existing mega-scale AMI implementation with minimum service disruption
- Updating aging and inflexible IT infrastructure while mitigating increased security threats
- Achieving multi-commodity readiness without field trips and/or meter replacements.

TEPCO PG and Landis+Gyr have collaborated to successfully address these challenges while making major upgrades to the system, including full migration onto a new virtualized IT infrastructure without disrupting services to numerous retail utilities. The upgrades allow TEPCO PG to promote multi-commodity metering, using their smart meters as communication hubs to connect devices such as gas and water meters into the AMI.

AT-A-GLANCE



30+ million

smart meters deployed over 7 years



1.4+ billion

records collected daily



99.95% success

for meter reads over 48 hours



Every 30 mins

all meter reads sent to HES

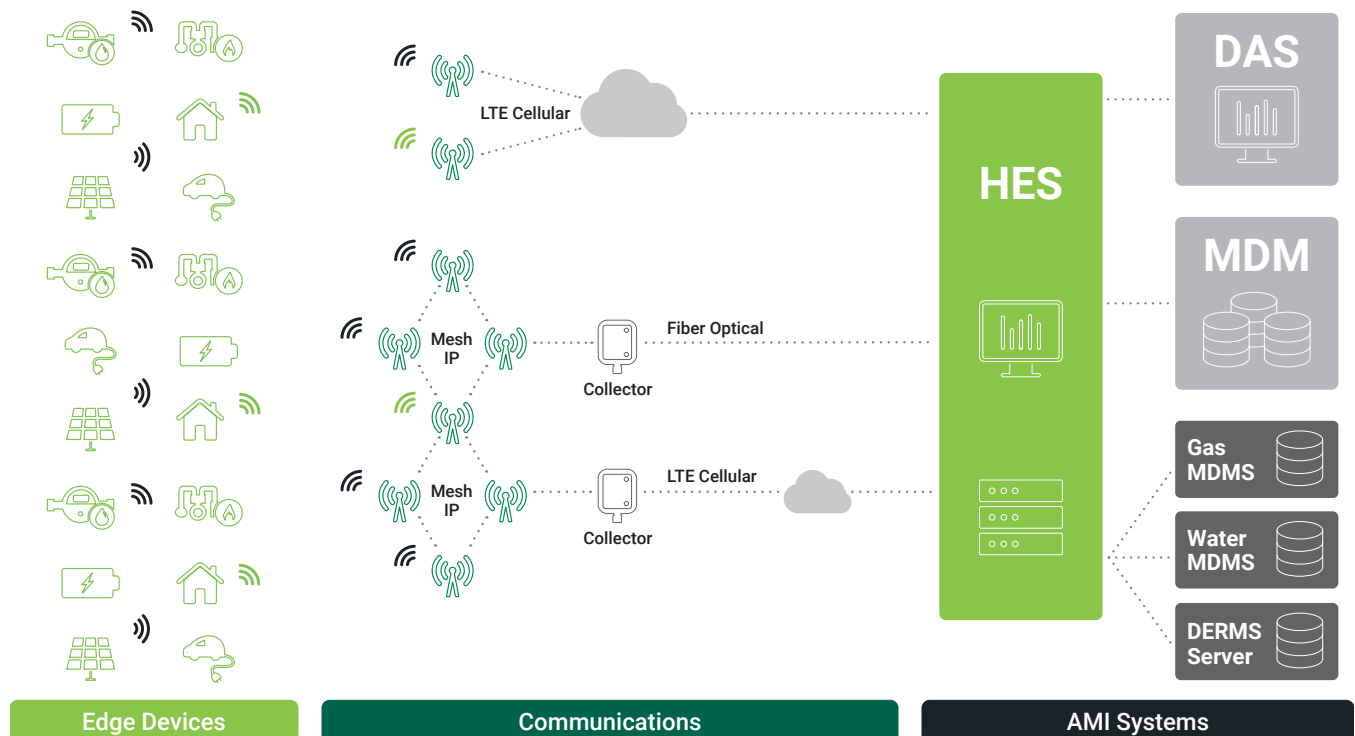


Secure Asset and DER Management Across the Distribution Network

Making electric T&D companies and smart meters work as a communication hub for multi-commodity metering and DERS

A key vision of Landis+Gyr is to enable utilities to read and manage not only their own meters, but also other assets, including Distributed Energy Resources (DERs) across their distribution network. Additionally, we aim to allow DER service providers and asset owners to control such assets

through AMI while maintaining security and privacy. By leveraging standards-based technologies such as Wi-SUN and cellular, device and service providers can participate in the ecosystem with minimum investment.



Investment Value Outcomes

The transformation of the AMI platform into a comprehensive IoT platform prepares TEPCO PG to become DERMS-ready, allowing over 10 million in-meter communication modules to be repurposed as needed to meet new IoT use cases without service disruptions. For example:



Accurately forecast energy demands.

Energy retailers receive meter readings every 30 minutes to improve forecasting.



Ensure readiness to address future security risks.

The transition to a virtualized IT infrastructure with modernized monitoring, along with advanced security measures for new IoT devices, provides enhanced security.



Achieve ongoing interoperability.

Wi-SUN Enhanced HAN-compliant IoT device connectivity at commercial scale ensures interoperability.

Utilizing the ability to perform remote firmware updates on existing meters without replacing them facilitated migration of the system while maintaining SLAs. Support for incremental upgrades of the head end system eliminated the need for a complete system overhaul. As a result, the entire IT infrastructure was able to be replaced and modernized with no disruption to services, while maintaining a 99.95% data collection rate throughout. This capability provides TEPCO with investment protection while enabling continuous improvement.

Looking to the Future

TEPCO PG and Landis+Gyr have signed an agreement making Landis+Gyr a prime partner to work on the next generation AMI system. The companies will collaborate closely to transition Field Area Network (FAN) technology from Mesh and cellular-based, to a Wi-SUN and cellular standards-based open technology. The objective of the collaboration is to bring more bandwidth and flexibility to the system, unleashing the full capability of Wi-SUN and transforming the platform into a true end-to-end solution. This approach lowers costs, encourages innovation, and expands the ecosystem to accelerate the path toward a smart energy future, while maintaining the highest service levels for the largest AMI/IoT platform in the world.

What is Wi-SUN?

Wi-SUN is an industry alliance promoting open standards for smart utility networks, smart cities, and related IoT networks. The underlying standards of the Wi-SUN Home Area Network (HAN) technology provide the foundation for Japan's utility IoT network, capable of connecting more than 80 million smart meters to consumer devices.

By building on the Wi-SUN standards-based platform, Landis+Gyr's project at TEPCO PG ensures interoperability and protects the utility's smart grid investments. This ensures that devices and technologies from multiple suppliers can be connected now and in the future – supporting the solution as it evolves.

Landis+Gyr is a leading global provider of integrated energy management solutions. We measure and analyze energy utilization to generate empowering analytics for smart grid and infrastructure management, enabling utilities and consumers to reduce energy consumption. Our innovative and proven portfolio of software, services and intelligent sensor technology is a key driver to decarbonize the grid. Having enabled 9 million tons of CO₂ savings in FY 2024 through our product offerings, Landis+Gyr manages energy better – since 1896. With sales of USD 1.7 billion in FY 2024, Landis+Gyr employs around 6,300 talented people across five continents. For more information, please visit our website www.landisgyr.com.