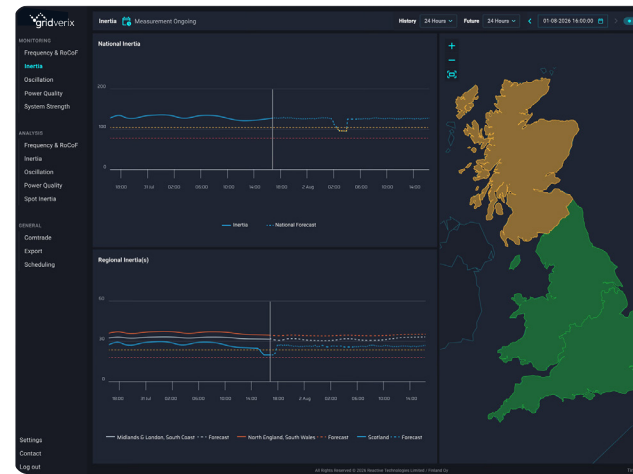


GridVerix[®] Service Guide

About RTL

Reactive Technologies (RTL) is a global Grid-Enhancing Technologies (GETs) company at the forefront of addressing the challenges of the energy transition and load growth by measuring power grid inertia and system strength in real-time.

GridVerix®, formerly known as GridMetrix®, is our proven, first-of-its-kind platform, providing real-time, high-performance power network measurements and data-driven insights into grid stability and reliability. This enables grid operators and utilities worldwide to plan and operate with greater insight, precision and resilience in a rapidly evolving energy landscape.



Trusted by...



Introducing GridVerix®

Built on cloud-computing and advanced data engineering, grounded in our deep expertise in power systems, telecommunications, and digital signal processing technologies, GridVerix delivers high-resolution, real-time grid insights that help utilities better understand and manage the dynamic behaviour of their power systems.

Key capabilities



Direct inertia measurement

GridVerix replaces model-based inertia estimates with patented real-time technology for accurate, direct measurement.



System strength measurement

GridVerix delivers real-time insights into system strength including short circuit strength, voltage profiles, and flicker, helping operators manage grid reliability.



High-resolution oscillation monitoring

Our Grid Edge Measurement Devices (XMUs) sample up to 48,000 frequency measurements per second, delivering the granularity required to detect even the smallest and fastest fluctuations.

Benefits



Increased situational awareness

Pre and post-fault situation awareness enabling safe, smooth, reliable operations.



Enabling the energy transition

Manage the integration of DERs and IBRs* and reduces renewable curtailments.



Lower reserve and balancing costs

Optimize reserve planning, enabling grid operators to reduce ancillary service requirements and balancing costs.



Optimized asset management & planning

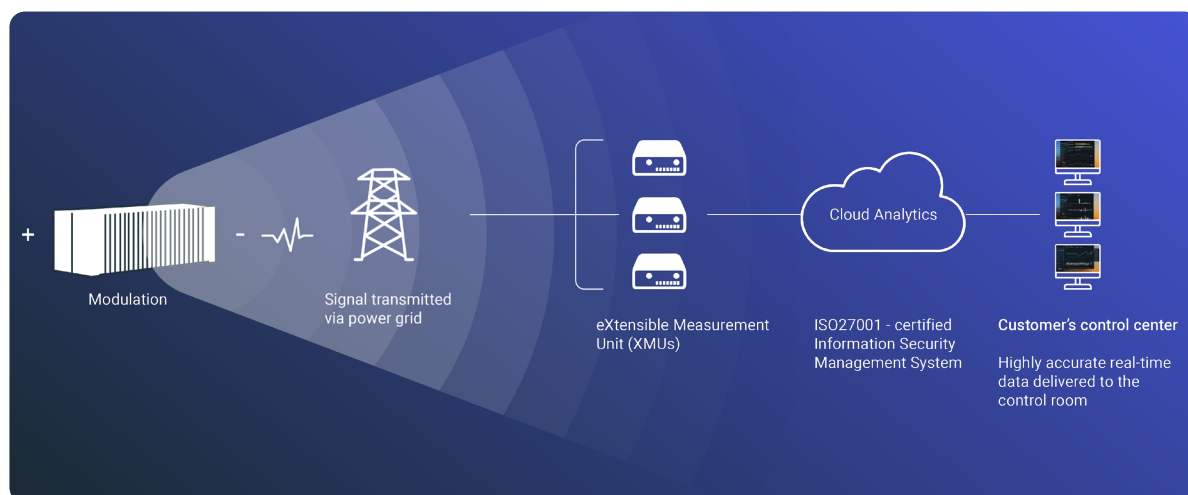
Enable network investment, and supports long-term grid-forming asset planning.

*DERs: Distributed Energy Resources

*IBRs: Inverter-Based Resources

How it Works

GridVerix® consists of cloud applications and grid edge measurement devices (XMUs) installed in strategically selected locations. GridVerix securely manages data from Reactive's Grid Edge Measurement Devices (XMUs) which measure frequency at up to 48,000 times per second per device. For active inertia measurement, a modulator is installed on the grid. The custom-built modulator sends small power pulses to the grid to slightly alter the frequency of the power system. XMUs distributed across the grid observe and capture the minute changes in system frequency created by these pulses. The resulting measurements are transmitted to the GridVerix data platform for processing and visualization, supporting customers' grid planning and operational needs.



Example of GridVerix architecture for active inertia measurement

Cloud-based Data Processing Platform

GridVerix cloud applications require no customization, delivering visualized data through a secure Internet-based UI directly to the control room.

The platform allows users to access more granular frequency streams, enabling you to monitor grid frequency at various levels in real-time. This enhanced granularity empowers the user to identify any frequency deviations promptly and respond swiftly to maintain a stable power supply for consumers.

Grid Edge Measurement Devices - XMUs

XMUs are proven scalable grid-edge devices designed to enhance grid visibility for utilities and grid operators.

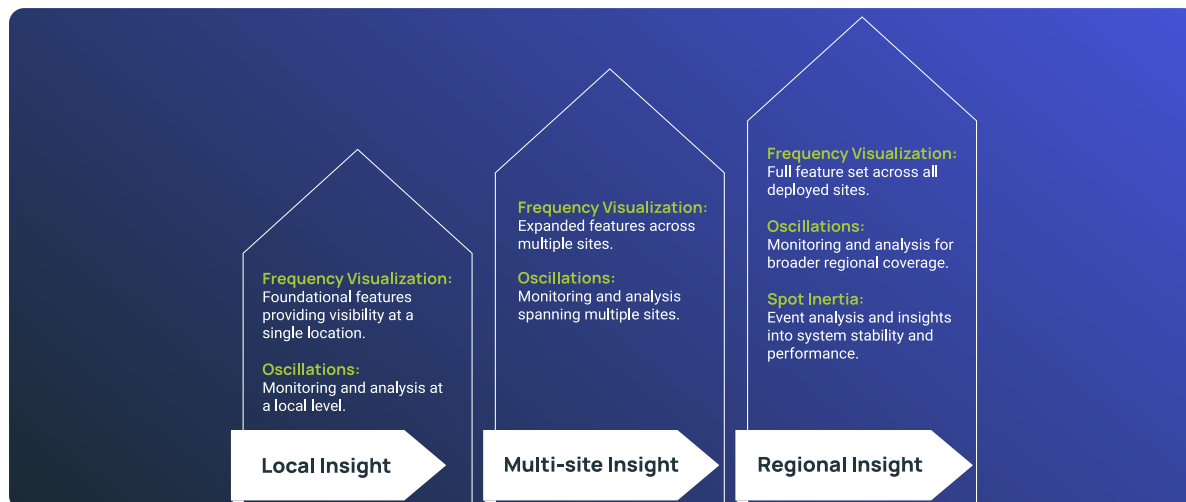
XMUs securely and continuously capture power system parameters including frequency, voltage magnitude and phase angle. They then stream this high-resolution raw data to the GridVerix platform for advanced data processing and real-time analysis.

XMUs feature a compact footprint and are designed for straightforward, plug-and-play installation, minimizing on-site engineering effort and accelerating deployment. With just a standard wall socket and an internet connection, the device can begin delivering high-speed frequency measurements from the grid without the need for complex setup or dedicated infrastructure.

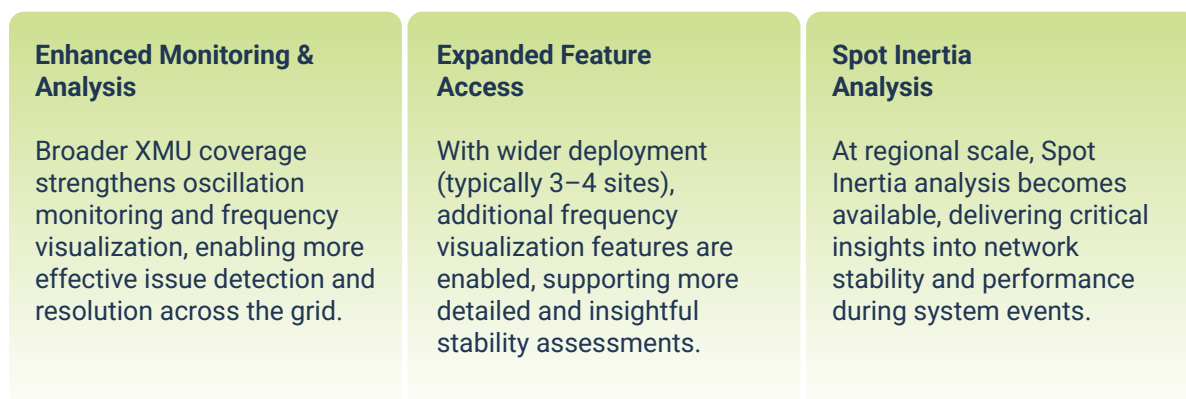


Service Levels by Regional XMU Coverage

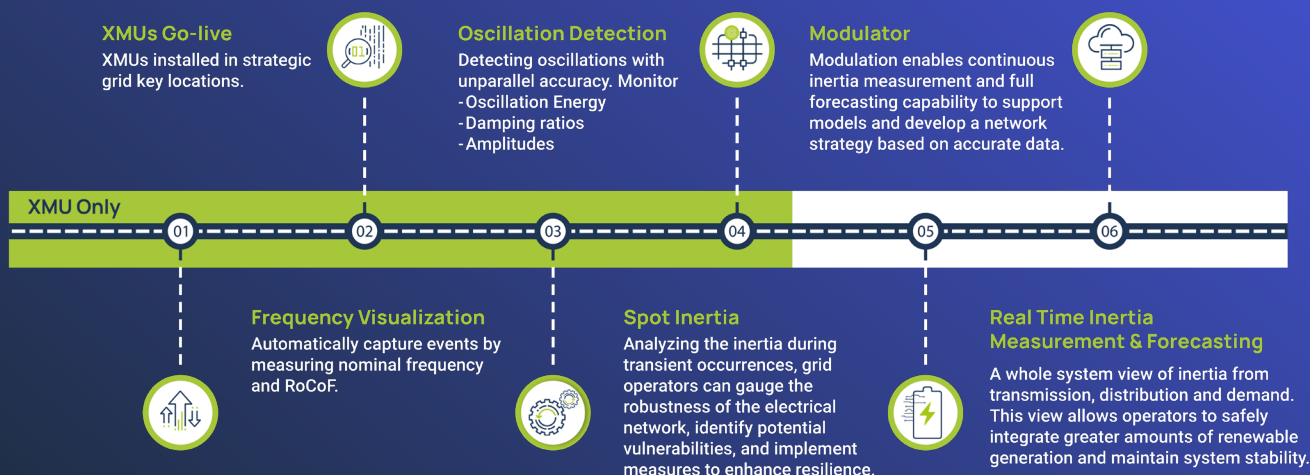
GridVerix® services are designed to scale. With each additional XMU deployed, regional visibility increases, from local insights to regional system-wide visibility, unlocking more advanced service levels. The summary below shows how value expands as deployment grows.



Service benefits scale with XMU deployment



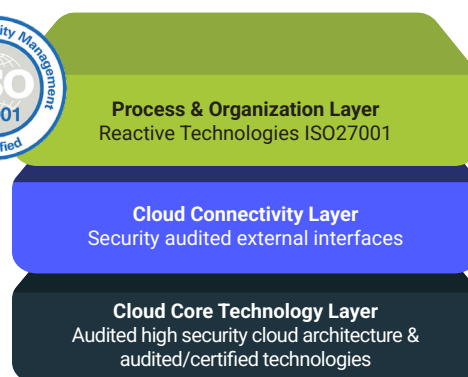
Pathway to Inertia Measurement



Cyber Security

Ensuring cyber security is of the utmost importance to RTL and our customers. RTL maintains ISO 27001 standard cyber security for our ISMS, significantly minimizing the risk of data security breaches and ensuring the provision of a reliable service.

From the field device through to the GridVerix® platform and to the control room, cyber security is ensured on every layer of the system, with all XMU-streamed data protected by end-to-end encryption. GridVerix is also regularly penetration-tested by independent experts, giving operators confidence that critical grid data remains secure, resilient, and uncompromised at all times.



Project Development



Success Story

Award-winning deployment of the world's first inertia measurement technology in collaboration with NESO, Great Britain

Launched officially in 2021, National Energy System Operator (NESO) deployed RTL's GridVerix® inertia measurement service across Great Britain to achieve for the first time, a real-time power grid stability insight and support higher proportions of renewable energy safely running on GB's national power grid.

The implementation of RTL's GridVerix technology was proven to mitigate renewable curtailment, significantly cut greenhouse gas emissions, and strengthen grid stability. The results highlight a tremendous potential for global impact in reducing CO2 emissions across power grids.

~30%

Extra grid capacity for renewables integration unlocked

£14.4M

Cost saving for customers per year on managing inertia

~18M

Tonnes of CO2 saved annually in GB alone

~5.5%

Of total GB CO2 emissions eliminated annually



“ The positive experience of our collaboration has been transformative, showcasing the power of direct measurement innovation in advancing the energy transition. We take pride in pioneering this Net Zero enabling technology with RTL, which now offers a replicable model that can materially contribute to clean energy systems worldwide. ”

Julian Leslie
Strategic Energy Planning Director
and Chief Engineer at NESO

**For more information
on our service offering,
Get in touch.**

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