

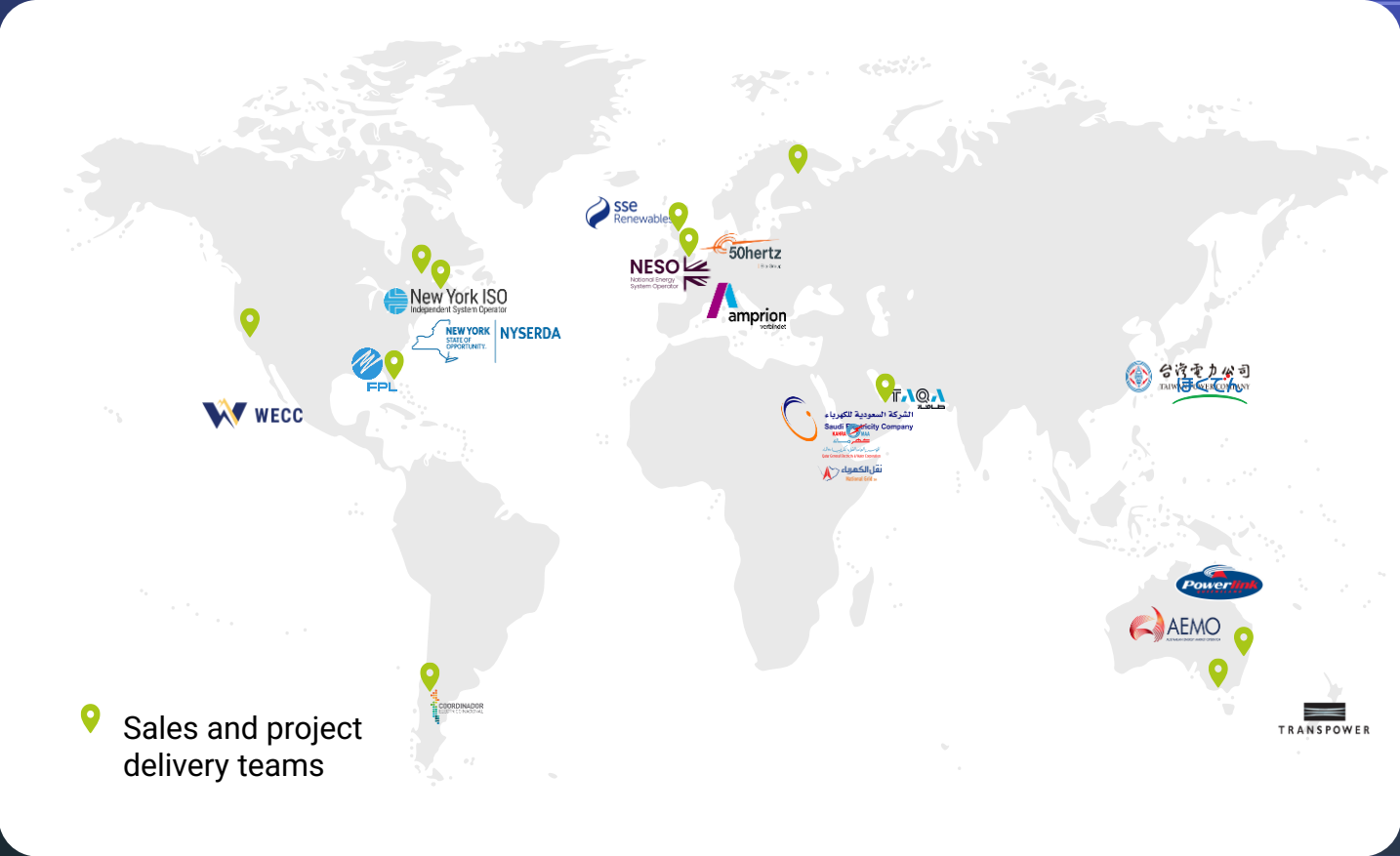


NASPI Working Meeting and Vendor Show 2026

A cloud-based grid monitoring tool in the control and planning rooms? It already exists - design and global success stories

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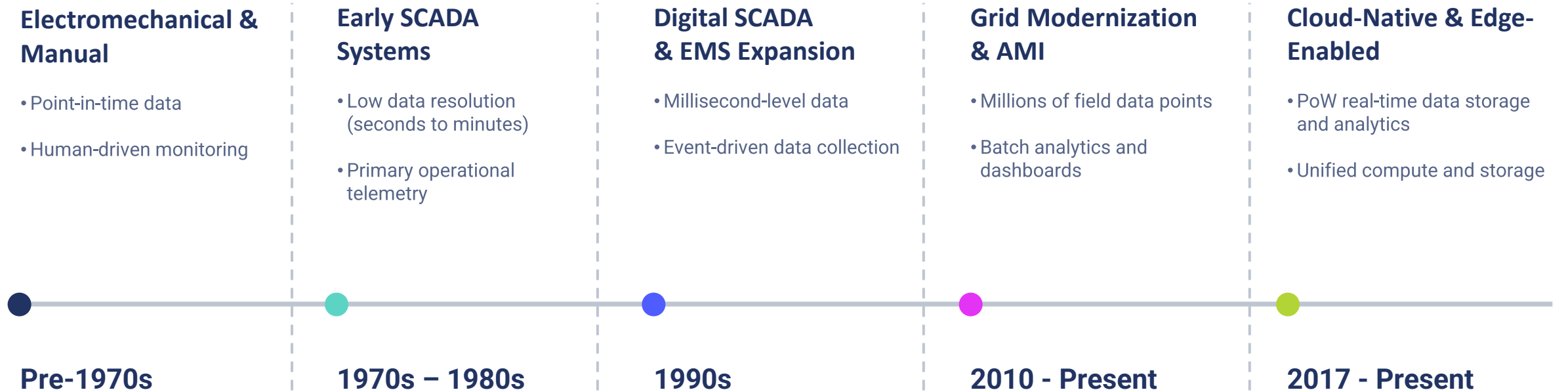
By delivering high-performance measurement, RTL enables **a more efficient** and reliable power system.

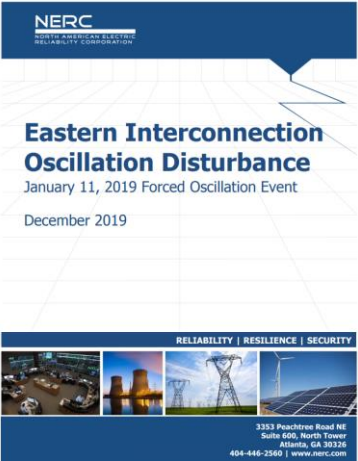


Trusted by...



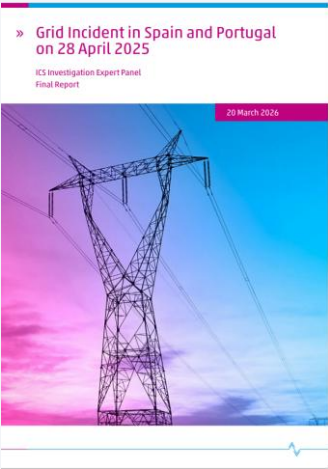
Evolution of Data Collection and Monitoring Systems





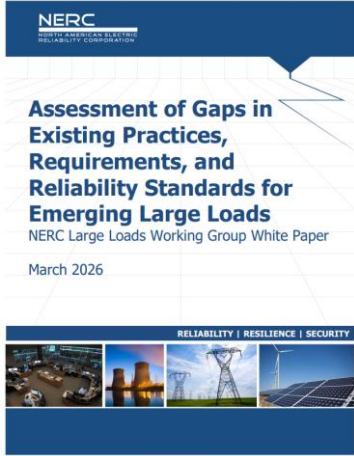
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RCs should consider jointly developing interconnection-wide oscillation detection and source location applications using interconnection-wide PMU and SCADA data.

NERC / INDUSTRY GUIDANCE



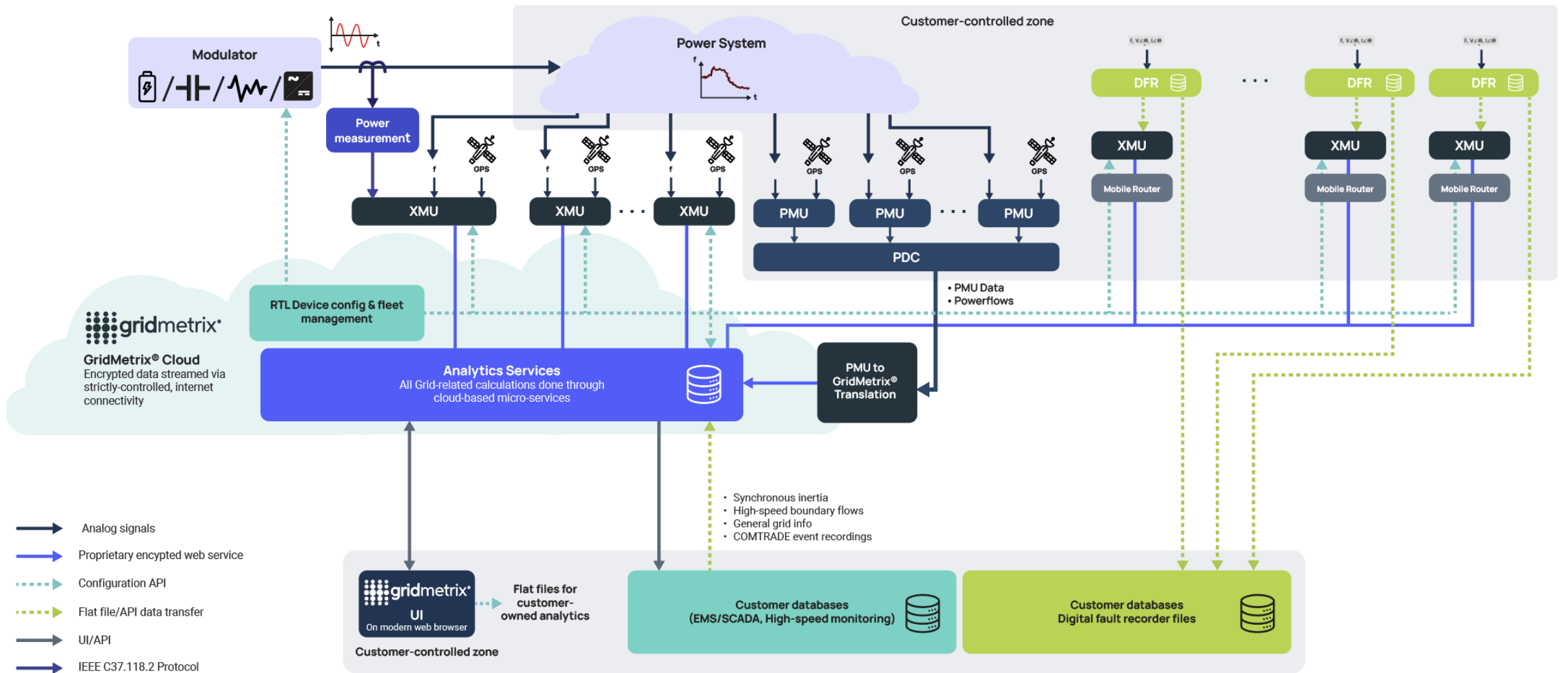
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Implement automatic detection systems and effective early-warning tools to identify oscillations in a timely manner (including both inter-area and forced oscillations), locate their source.

ICS / INVESTIGATION EXPERT PANEL REPORT



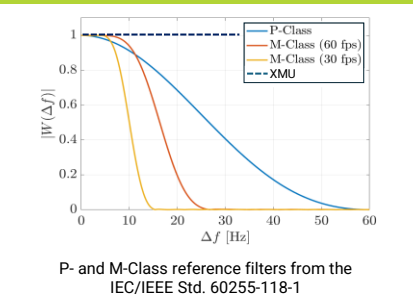
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High-resolution data from DFRs, DDRs, and PMUs is crucial for monitoring and analyzing large loads during voltage disturbances and load-loss events.

NERC / WHITE PAPER

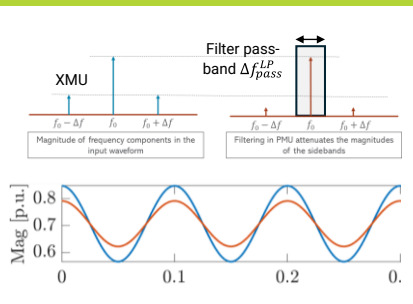


High-frequency oscillations visibility is key in High PE-dominated grids

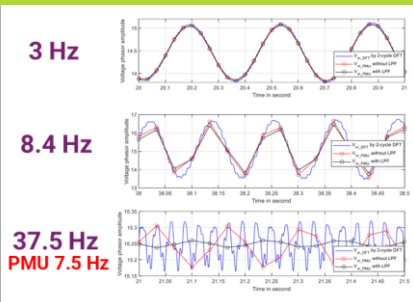
Low-pass filtering



Amplitude Attenuation



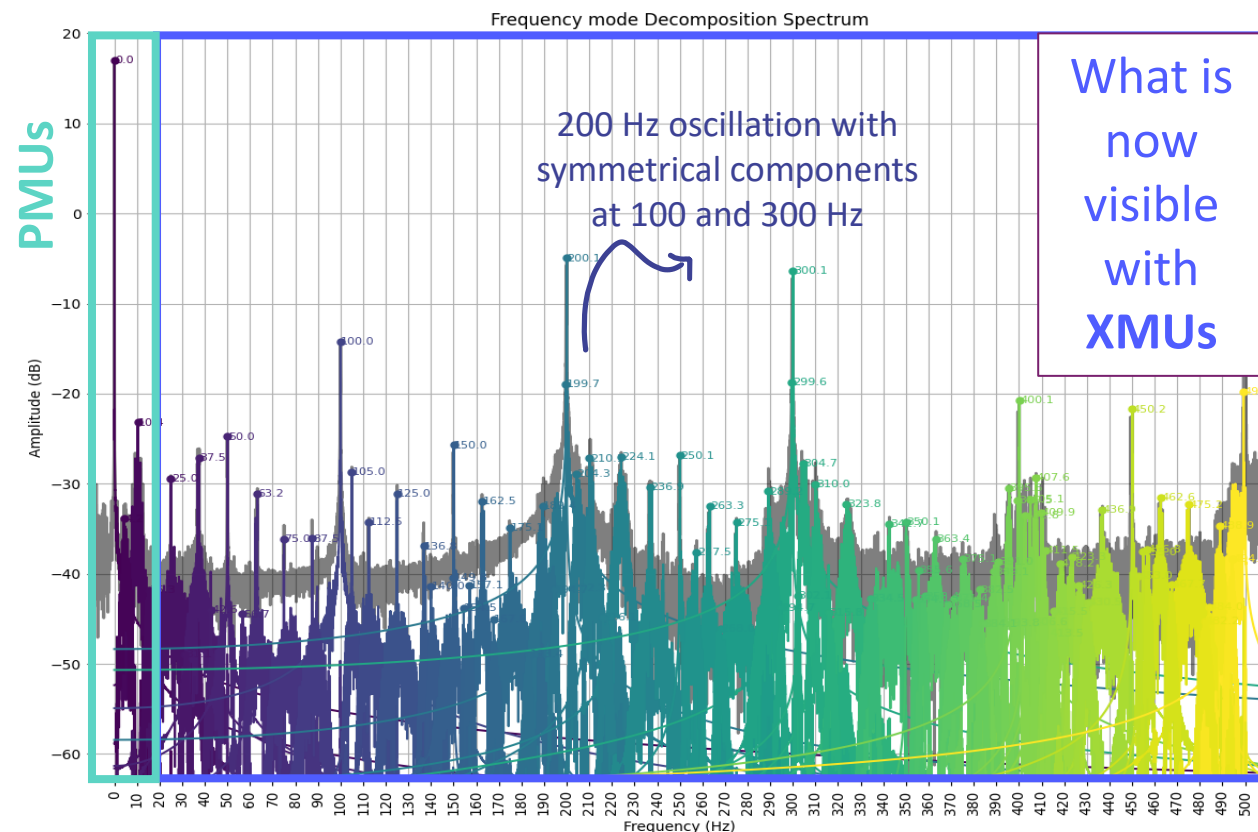
Aliasing (PMU 30fps)



2026 Chatterjee, Kaustav. *Measurement Adequacy for Monitoring Data Center Oscillations*.

2026 Ou, Bowen. *Applicability and Limitation Analysis of PMU Data and Phasor Concept for Low- and High-Frequency Oscillations*.

(*) XMU response was superposed



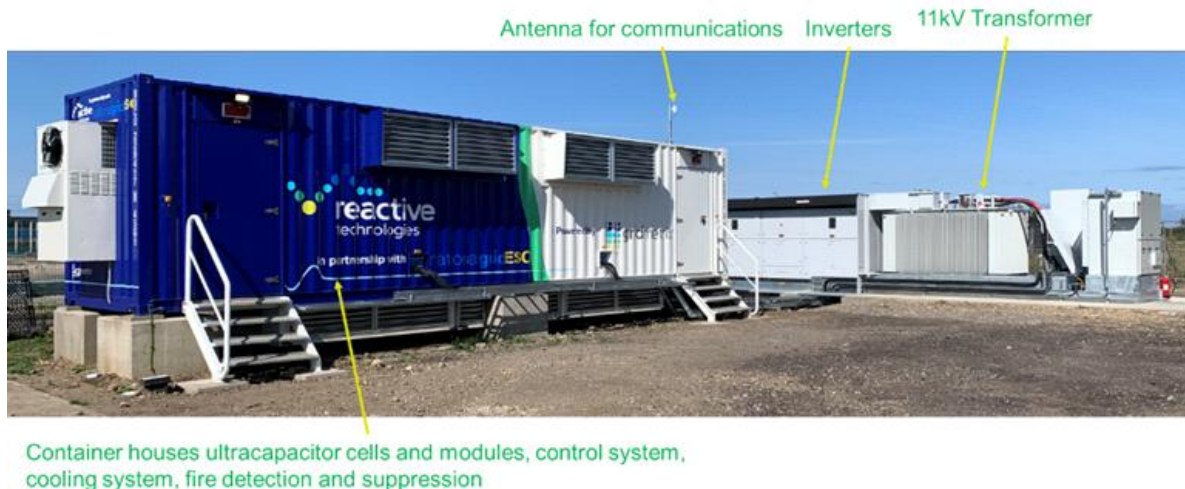
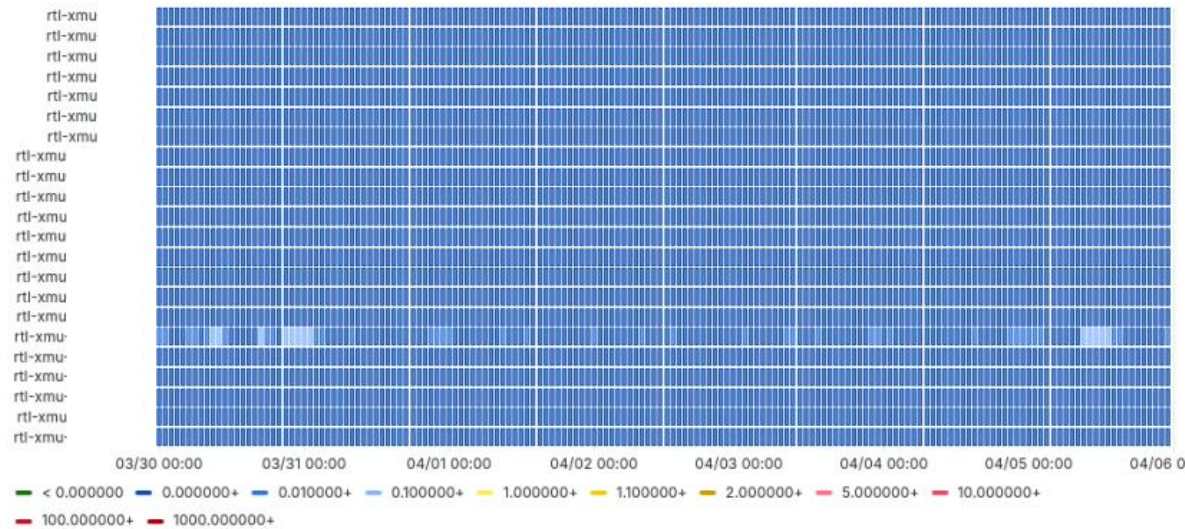
Low-frequency oscillations (0.1–1 Hz)

- Align with bulk-power electromechanical modes
- Can cause forced excitation of poorly damped system modes
- May lead to line power oscillations, relay misoperations, or system instability

High-frequency oscillations (5–55 Hz)

- Originating from intra-cycle GPU activity
- Can couple into generator torsional modes
- May cause shaft torque pulsations, fatigue, and reduced machine lifetime

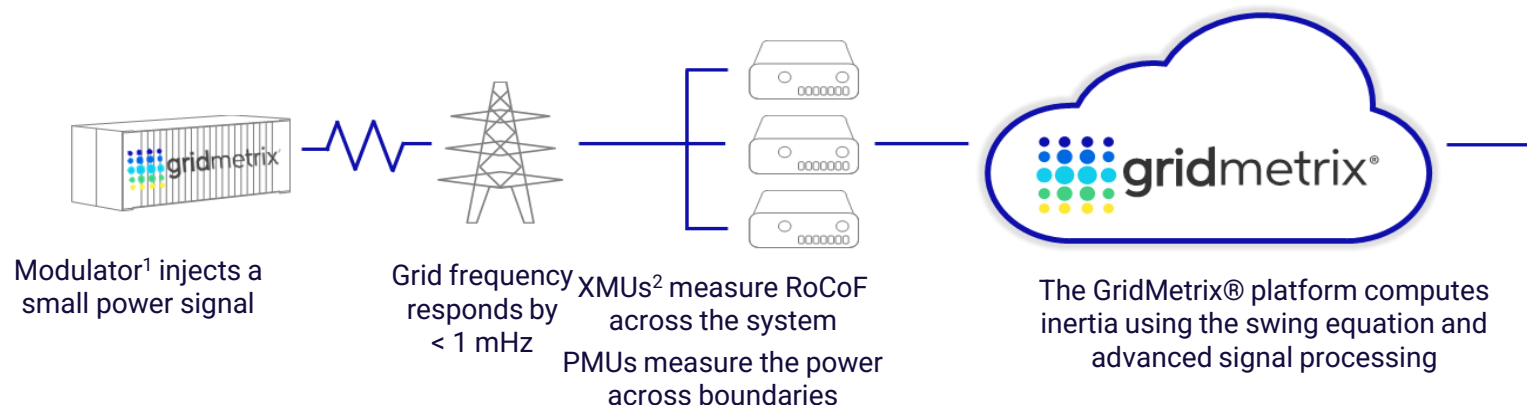
XMU and Modulator performance monitoring



Modulation availability %



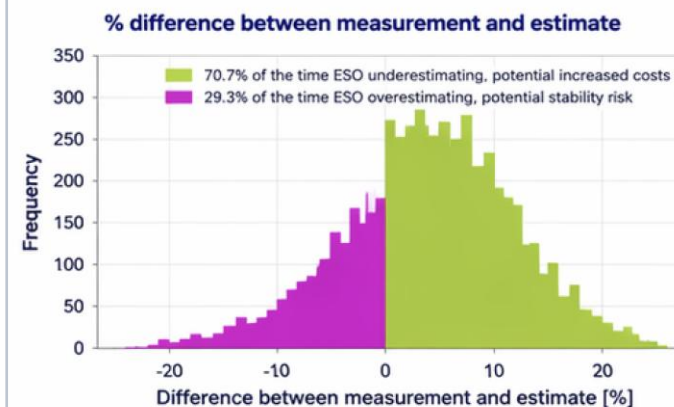
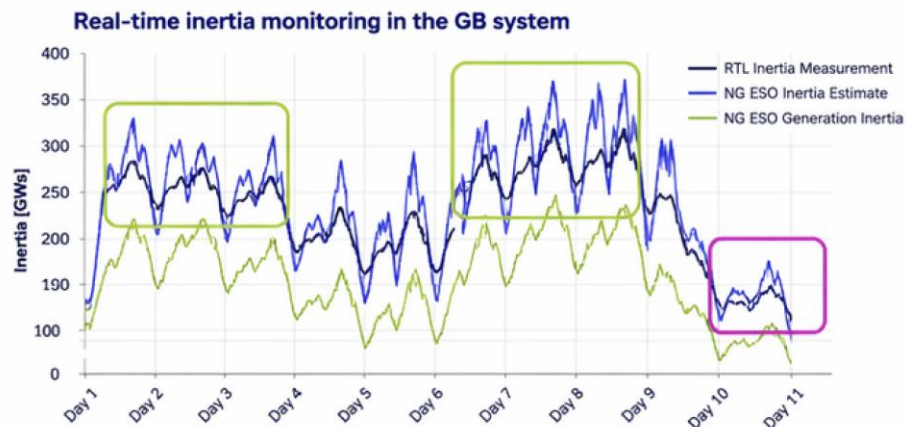
Active Inertia Measurement Methodology



Hidden distribution grid inertia can account for **10-30% (~32GW)** of total system inertia.

Most often, inertia is **underestimated**, showing potential for less balancing spend and RES curtailment.

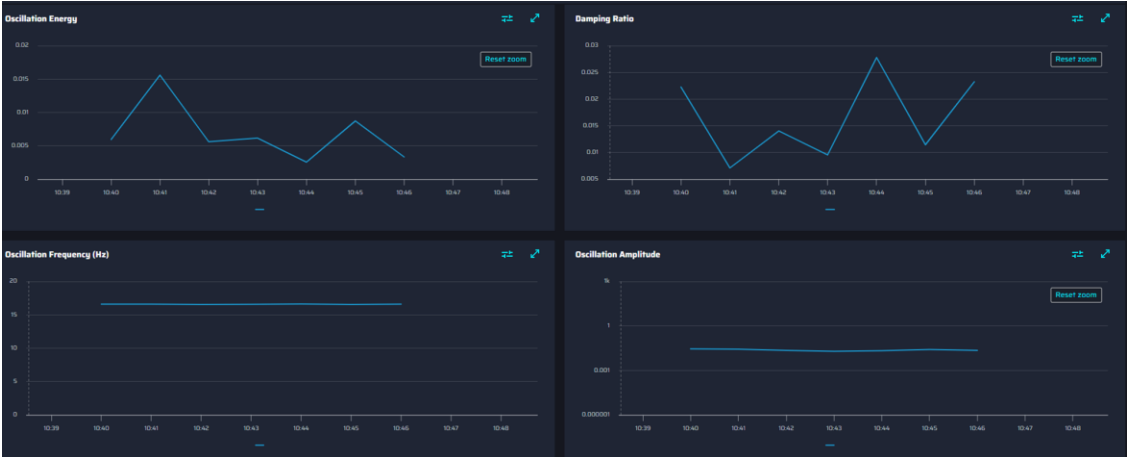
At times, inertia is **overestimated**, bearing higher security risk to system stability.



¹ Modulator: an asset such as a battery, ultracapacitor or load bank capable of generating a power signal

² XMU: eXtensible Measurement Unit, Reactive Technologies' GPS synchronized accurate measurement unit.

Oscillation Monitoring – SSO and HF



XMU	1	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Grand Total
Location 1			7	29	8	9	3	4	54	41	29	81	268	1181	262	88	92	72	10	3			2241
Location 2	2		17	93					2				1	50	5		1	1					183
Location 3				20		26		1	52		1	2	1	2077	7		8	118					2314
Location 4	1					1			5		8	2	1	121	2	7	10	11					170
Location 5	1	1								15	87		1										105
Location 6	1							4	10	3	10		45	346	151	240	281	24	3	709	3	1	1831
Location 7								1	3				27	175	2		15	17	4				244
Grand Total	5	1	24	142	8	36	3	10	126	61	135	85	355	3950	429	335	407	243	17	712	3	1	7088

