



IS THERE AN ENERGY CRISIS LOOMING?

Introduction

The demand for energy continues to grow at an exponential rate. You only have to look around, we are all connected, from communications to online banking and the surge in AI tools. Daily life is now entwined with digital tools, from new AI tools like Grok and ChatGPT, to communications, online banking, and e-commerce. Our digital dependency fuels the surge in demand for data centres, resulting in energy consumption growing at a rate we have never experienced before.



What is the energy crisis that we are facing?

A recent publication from the US Department of Energy has highlighted that there is a crisis on the horizon due to unprecedented growth in data centres and AI. However, this is not an issue only affecting the U.S.; it's a global issue with energy grids stretched beyond capacity.

What impact will this have on energy in the future?

Rising Risk of Blackouts:

The U.S. Department of Energy warns of up to 800 hours of outages per year by 2030, which equates to a full month of blackouts, if our energy infrastructure fails to adapt.

Transformer Supply Bottlenecks:

For some time now, transformers have been a major supply chain challenge with many utilities reporting lengthy timelines of up to three years. Rising demand is putting greater strain on transformers and driving the need to replace aging units, many of which are now over 40 years old and approaching the end of their lifecycle.

Unprecedented Demand from AI and Electrification:

The most important things to today's civilisation, from social communication, to commerce, banking, electric vehicles and adoption of AI communication, are all consuming significant levels of energy. Demand in the U.S. is predicted to increase by 15% in the next 4 years alone.

Subsequent consequences of failure:

A single large-scale transformer failure can have a huge consequential impact. We only have to remember back to the Heathrow airport incident to see the major financial but also social impact of transformer failure. More recently, in Spain, we have seen the extreme seriousness of failure with a whole nation effectively coming to a standstill. The consequences are not just financial they are also putting safety, public reputation as well as national and global energy security at risk.

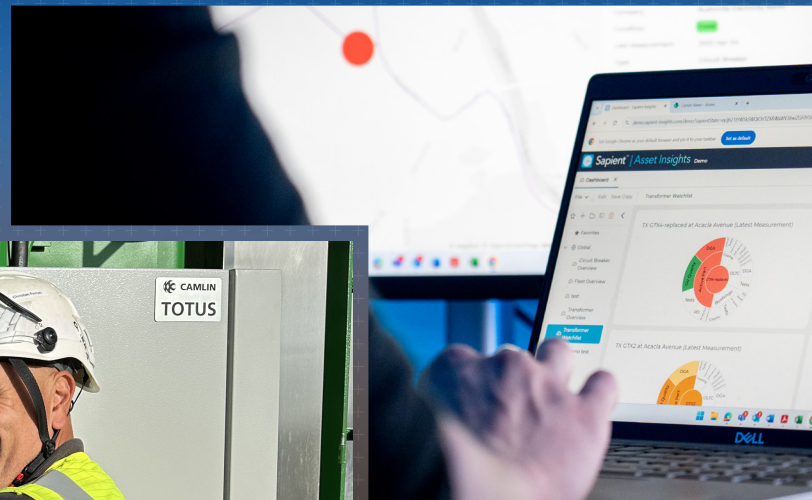


What can we do? Utilities need a Transformer Monitoring Strategy

For many utilities, the major challenge is not from a technical standpoint but rather addressing the widespread strategic risk. Transformer failures are no longer isolated incidents; they are now becoming a major threat that could destabilize the entire grid.

Here's where a robust transformer monitoring strategy, supported by Camlin Energy becomes essential:

- 1. Prevent Catastrophic Failures:** Aging transformers are prone to failure, which can trigger widespread outages. Many failures are easily preventable with advanced knowledge. Real-time monitoring can detect early signs of issues (e.g., insulation degradation, overheating), enabling proactive maintenance to prevent costly disruptions.
- 2. Mitigate Supply Chain Risks:** With replacement lead times stretching years, utilities cannot afford unexpected failures. Monitoring systems help extend transformer lifespan through timely interventions, reducing reliance on scarce replacements.
- 3. Manage Surging Demand:** The rapid growth in energy consumption, especially from AI and electrification, puts transformers under unprecedented stress. Monitoring ensures optimal performance under high loads, preventing over-load-related failures.
- 4. Enhance Grid Resilience:** Advanced monitoring provides data-driven insights into transformer health, enabling utilities to prioritize upgrades, optimize maintenance schedules, and strengthen grid reliability against extreme weather or demand spikes.
- 5. Economic and Security Benefits:** By preventing outages, utilities avoid billions in economic losses and safeguard critical infrastructure, aligning with national security priorities outlined in the DOE's report.
- 6. Regulatory and Stakeholder Pressure:** As regulators and customers demand greater reliability and sustainability, a proactive monitoring strategy demonstrates leadership in modernizing the grid and meeting Environmental, Social, Governance goals.



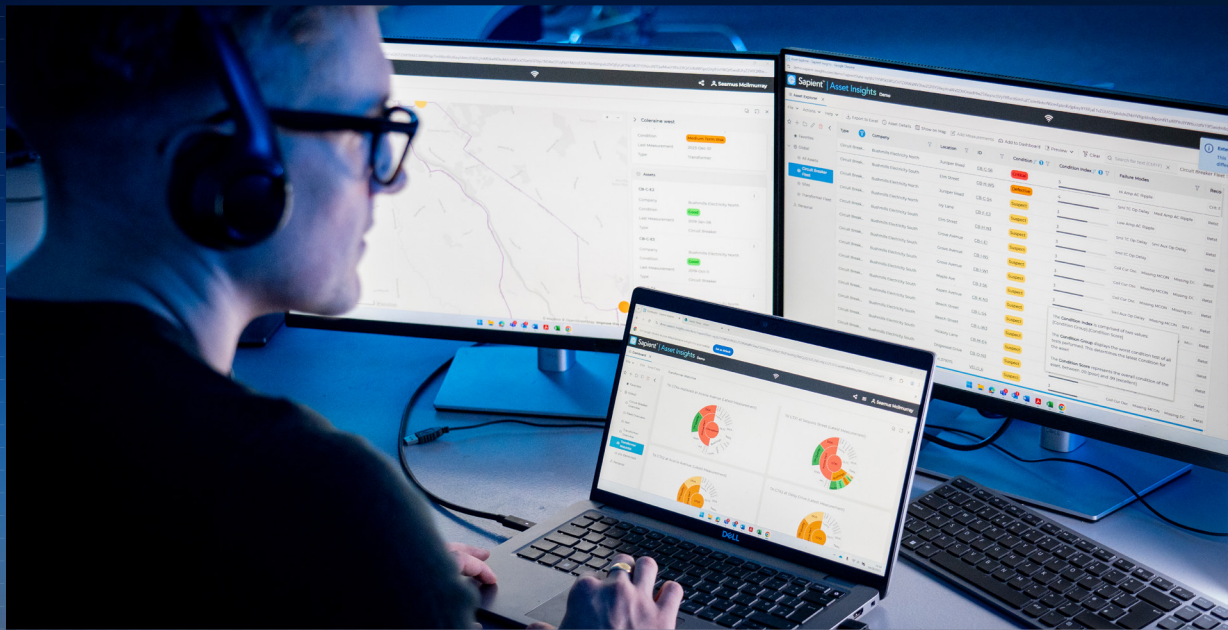
Conclusion

Utilities must adopt transformer monitoring strategies to address the threats posed by aging infrastructure, supply chain bottlenecks, and surging demand. Asset monitoring can offer a solution that enhances grid reliability, reduces risks, and enhances operational performance in an increasingly electrified world. Investing in these solutions now is not just a technical necessity but a strategic move to ensure and future-proof the future energy networks.

This is where Camlin Energy comes in!

We specialize in asset monitoring with experience spanning almost 40 years. Camlin Energy delivers solutions that empower utilities to act with insight, not hindsight. From real-time diagnostics to predictive analytics, our technologies are designed to help utilities detect issues early, prioritize resources, and extend transformer life, ensuring asset and network reliability and resiliency.

We understand energy reliability is non-negotiable; in fact, it is mission-critical! Camlin Energy continues to work in partnership with utilities, not just to keep pace, but to proactively take the lead and control of their infrastructure, making smarter data-driven decisions.



Click below to learn more:

[Asset Monitoring Sensors](#)

[Sapient Asset Insights](#)

[Asset Lifecycle Services](#)

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