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Assure. Secure. Innovate.

Total Quality for energy and utilities

Assuring energy systems that never stand still

The rise of interconnected energy systems

Digital products and systems across the energy and utilities sector are becoming more complex, more interconnected, and more deeply embedded into critical national and commercial operations.

Software-defined infrastructure, smart meters, grid-connected devices, data platforms and third-party services now shape everything from billing accuracy to grid stability. At the same time, regulation is becoming more stringent and oversight more active, with bodies such as Ofgem playing a central role in shaping market reform, compliance requirements and delivery timelines.

All too often, however, the assurance functions aimed at making sure systems work safely, securely and as intended remain stubbornly disconnected, even as risks multiply and converge.

Assurance isn't keeping pace

Most organisations still manage quality engineering, cyber security, and conformance and compliance as separate disciplines.

This approach made sense when systems were simpler and failures stayed local. It no longer does.

In energy and utilities environments, issues rarely sit neatly within one domain. They emerge at the intersections – between meters and platforms, between grid behaviour and software logic, and between regulatory change and live operation.

As a result, internal issues too easily become external crises, ranging from operational disruption and delayed programmes to Ofgem scrutiny, regulatory exposure and reputational damage.

When gaps become risks

Across energy and utilities, assurance gaps have operational impacts:

- **Components conform but systems can fail under real-world, at-scale operations**
- **Compliance is proven at a point in time, then eroded by subsequent change**
- **Security changes destabilise delivery when applied late**
- **Testing validates design intent, not operational reality**

These gaps widen as energy systems become more interconnected and ecosystems more complex.

Introducing Total Quality

Your single assurance model across the energy lifecycle

Total Quality connects quality engineering, cyber security, and conformance and compliance into one continuous workflow across the full lifecycle. It replaces handovers with shared requirements, shared evidence and shared decisions. Each discipline retains autonomy, but responsibility for outcomes is shared across the system rather than handed off between teams. The entire system is treated as one environment where performance, standards and security shape development from the start and continue through live operation.

This matters in energy and utilities because failure rarely occurs at a single component. It emerges in the spaces between them. Energy environments are always-on, regulated and highly interconnected. When assurance is fragmented, no one owns what happens in between.

A single system of assurance treats the energy ecosystem as one system rather than a collection of components. It makes interactions between quality, security and compliance visible earlier, reduces late discovery of issues that delay launches or destabilise live systems, and supports continuous readiness as systems evolve.

Assurance shifts left to the earliest design decisions, where issues are easier to resolve. It also shifts right into live operation – including how systems are operated, maintained and used in practice – using insight from incidents, monitoring and change to strengthen systems over time.

An integrated system of assurance means:

Earlier insight, faster delivery. Unified testing and security validation surface issues sooner, reducing rework and accelerating release cycles.

Compliance by design. Standards and regulatory requirements are embedded from the start, supporting continuous readiness as requirements evolve.

Real-world validation. Systems are tested in environments that reflect how they are actually used – across meters, grid-connected devices, platforms and third-party services. Issues are exposed that only emerge under real-world operating conditions.

Continuous improvement. Post-launch insight feeds directly back into testing, governance and change.

Smarter governance and accountability. Integrated data and shared metrics give leaders clearer visibility into performance, risk and compliance maturity.

Delivering value with Total Quality

- **Regulatory and market change**

  Market-wide reforms driven by Ofgem, such as Market-Wide Half-Hourly Settlement, require precise coordination across meters, data platforms, pricing engines and settlement systems. Total Quality reduces late surprises and supports predictable regulatory delivery.

- **Scaling digital energy services**

  EV charging, dynamic pricing and smart energy services depend on tightly coupled ecosystems. Total Quality supports scale without destabilising live operations.

- **Operating and upgrading national infrastructure**

  Distributed estates and legacy tooling increase operational risk. Total Quality improves repeatability, resilience and confidence during change.

- **Incident response and recovery**

  Integrated assurance shortens diagnosis time and reduces unintended consequences during remediation.

Assurance in action across energy

Smart metering: accelerating assurance at scale

A leading UK energy company cut smart meter testing time from weeks to days by replacing a largely manual legacy tool with an automated testing platform. The solution connects directly to the UK's DCC network and supports automated interoperability testing across gas and electricity meters, comms hubs and in-home devices, with multiple test cycles running in parallel. It also reduced dependency on a small group of experts by embedding legacy knowledge directly into the automation solution.

Read the case study

Digital energy products: scaling with confidence

This UK energy provider launched new smart-energy product features to nearly 300,000 end customers, supported by end-to-end integration and system testing and automated regression and scenario testing frameworks providing 24/7 continuous testing. The approach reduced the time elapsed in testing by 50% and reduced testing effort by more than 90%, with an 80% reduction in testing cost and effort to develop new product features.

Read the case study

Market-wide half-hourly settlement

To meet Ofgem's Market-Wide Half-Hourly Settlement requirements, a UK energy supplier implemented functional and non-functional testing across complex interconnected systems, including APIs, interfaces and data flows. End-to-end integration and system assurance supported regulatory compliance, with future plans including automation to reduce ongoing testing costs and support rapid releases of MHHS changes.

Read the case study

Vehicle-to-grid certification

Resillion supported a UK energy provider through the full G99 testing and certification journey for a vehicle-to-grid solution, including test planning and lab setup. The work brought together compliance testing, cyber security insight and system-level assurance to validate an EV-plus-charger-plus-software system in a space with no established route to overall approval.

A single model for success

A single system of assurance allows energy and utilities organisations to move faster with confidence – reducing delivery risk, maintaining regulatory trust, and supporting innovation across increasingly complex ecosystems. As energy systems become more interconnected and more exposed, Total Quality offers a more predictable and resilient way forward.

"Energy infrastructure now operates within interconnected ecosystems of platforms, devices and software. Ensuring resilience calls for an equally connected approach."

Yaron Kottler
CEO & Chairman, Resillion

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