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CASE STUDY | ENERGY

The Trusted Data Backbone for the UK's Net Zero Energy Market

Critical Software's secure Head End System safeguards LCCC's low-carbon settlements.

The Challenge

The Low Carbon Contracts Company (LCCC) sits at the financial heart of the UK's Net Zero transition. Owned by DESNZ, it is the government-backed counterparty for Contracts for Difference (CfD), the Capacity Market, hydrogen agreements, and carbon-capture mechanisms.

Every scheme depends on trusted data. Yet that landscape was fragmented — different sources, formats, frequencies, and rules, with no single system to unify them to an audit-ready standard. LCCC needed a scheme-agnostic Head End System to collect and verify energy data without lock-in to any meter, SCADA, or cloud vendor — scalable enough to absorb schemes that didn't yet exist.

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The Solution

Critical Software — with 25+ years in mission-critical software and five Smart DCC Partnership Awards, was selected to build the Lot 1 Head End System: a modular, cloud-agnostic architecture of secure, API-linked services.

- Data Collection: automated DLMS/COSEM collection over TCP, with SCADA-agnostic Edge APIs.
- Scheme Processing Engine: smart contracts defining collection frequency, validation, and calculation rules per scheme.
- Cloud-agnostic Lakehouse: centralized storage for raw, validated, and processed data.
- Automated verification: ML-based anomaly detection and alerting.
- Secure by Design: IAM, encryption, and a Secure Development Lifecycle aligned to ISO 27001, Cyber Essentials Plus, and CMMI Level 5.
- Configurability: new schemes onboard through configuration, not custom builds.

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The Results

LCCC gained a single, trusted, auditable data backbone in place of fragmented sources and manual processes. Automated DLMS/COSEM and API collection replaced error-prone handling, while ML-assisted verification confirms settlement rests on validated data. The result is one Head End System spanning CfD, the Capacity Market, hydrogen, and carbon-capture mechanisms, with device-agnostic data collection via DLMS/COSEM and open APIs. ML-based validation, alerting, and automatic re-collection safeguard data integrity, within a secure, ISO 27001-certified cloud environment that's audit-ready for Net Zero reporting.

A Story of Success

Critical Software turned a fragmented data landscape into a single, secure, scheme-agnostic Net Zero settlement platform LCCC can audit, extend, and depend on.

To find out more about our work
please get in touch: info@criticalsoftware.com

