



The Hidden Costs of Traditional Control & Automation Systems - and, how to avoid them

**An expert guide for Facilities Managers,
Electrical Engineers & System Integrators**

Accelerating Energy Efficiency in Buildings



Managing energy efficiently is crucial not only for the sustainability of our energy ecosystem but also for managing operating costs, ensuring grid stability, and optimising energy use in commercial and industrial buildings. Choosing between traditional control and automation systems and cutting-edge wireless IoT solutions, such as those provided by EpiSensor, can have significant impacts on the cost, complexity, and effectiveness of your energy management programme.

According to the **International Energy Agency (IEA)** buildings account for “26% of global energy-related emissions”, making the built environment one of the largest contributors of carbon emissions globally. The IEA also state that: “This decade is crucial for implementing the measures required to achieve the targets of all new buildings and 20% of the existing building stock being zero-carbon-ready by 2030”, making it **more important than ever to choose specialist IoT infrastructure that can be deployed rapidly, scaled quickly, and integrates easily with existing software**, speeding up data visualisation and decision-making.

In the pages that follow, we examine the differences between traditional control and automation systems and EpiSensor’s wireless IoT solutions against a backdrop of business critical criteria accumulated over 15 years in business.



20%

existing building stock to
be zero-carbon ready by
2030 (target set by IEA)

Traditional Systems vs EpiSensor's IoT Solutions



Traditional Systems



Wireless IoT Solution

High - requires specialist expertise to configure meters

Complexity

Low – plug and play, electrical installation only

High - given the communications wiring and need for equipment shutdowns

Disruption

Low – through wireless communications and non-invasive, split-core CTs / Rogowski coils included

High Cost - wired communications & panels have to be cut to install traditional meters - enclosures & accessories usually come at additional costs

Installation

Low Cost – No communications wiring required, enclosures are water/dust proof and double-insulated as standard, designed for retrofit, all accessories included

Additional Cost - not included by default & they require additional calibration to achieve high system-level accuracy (i.e. additional cost, time, and expertise investment)

Current Transformers

Included – CTs are pre-installed and pre-calibrated to a very high accuracy class (Class 0.5S system-level accuracy), saving time and money

Connecting traditional CTs can pose a **safety risk**

Safety

System includes out-of-the-box **protected and pre-connected CTs**. No need to run communications wiring into high voltage environments

Plain insecure data on communications wiring, difficult / impossible to update remotely

Security

Fully encrypted, Over-The-Air software updates included as standard

Traditional Systems vs EpiSensor's IoT Solutions



Traditional Systems



Wireless IoT Solution

Limited, often only measures kWh, licence fees based on 'tags'

Data

Extensive – monitor up to 50 electrical parameters, no additional licensing costs

Often no local data logging capability if the 'master' goes offline

Reliability

High – years of non-volatile, time-stamped data logging at each meter/sensor device

Electricity monitoring only

Extensibility

Easy - the same wireless system can monitor gas, water, oil, temperature, steam, heat, etc. Unified by our Gateway enabled with advanced Edge environment.

Often proprietary communications standards, designed for lock-in to service contracts, no web native communications

Interoperability

Support many traditional (e.g. Modbus, OPC, BACnet) and web-style (MQTT, HTTP) communications standards, open data formats

Local/Onsite

Support

Global remote support and system upgrades

Impacts to project implementation



Speed and Cost of Installation

Traditional control and automation systems often impact existing infrastructure. This includes invasive electrical work and complex wiring configurations, which not only increase labour and material costs but also potentially leads to significant downtime, affecting end-user productivity and increasing project spend.

On the other hand, EpiSensor's wireless IoT systems are designed for ease of installation and commissioning. The systems enable quick deployment of wireless sensors that can be easily integrated and managed through a simple web interface, dramatically simplifying the installation process and reducing associated costs.

Onsite Calibration of CTs

Traditional systems typically do not include Current Transformers (CTs) as a standard feature - they come at an additional cost. CTs therefore need to be calibrated onsite, which can incur additional setup costs, increase installation time, and reduce system accuracy. Installing CTs on-site can also pose electrical hazards during setup due to exposed connections.

In contrast, EpiSensor's devices come pre-installed and calibrated with current transformers (CTs) as standard, which are included in our pricing, thereby reducing deployment timeframes and costs. EpiSensor's high system-level accuracy ensures that even minor percentage reductions in energy usage are accurately measured and managed. Furthermore, by providing pre-connected CTs, EpiSensor helps reduce safety risks during installation.

Expertise and Resource Allocation

Deploying traditional automation and control systems typically requires specialist expertise for installation and configuration, which can inflate initial costs and extend deployment timelines.

EpiSensor's technology can be installed by any qualified electrician without the need for specialist knowledge, significantly reducing the complexity and cost of resources throughout the lifecycle of the project.

CAPULA

"EpiSensor gives us confidence that we can scale our business and take our Energy Monitoring Solutions worldwide".



David Robinson, Global Strategic Business Development
Capula

Impacts to project implementation



System Security

Traditional systems often lack robust data encryption and remote software update capabilities, increasing vulnerability to cyber threats.

EpiSensor addresses these security concerns with fully encrypted data transmission and over-the-air updates, ensuring system resilience against cyber threats—a feature that has helped partners secure contracts with leading global technology companies.

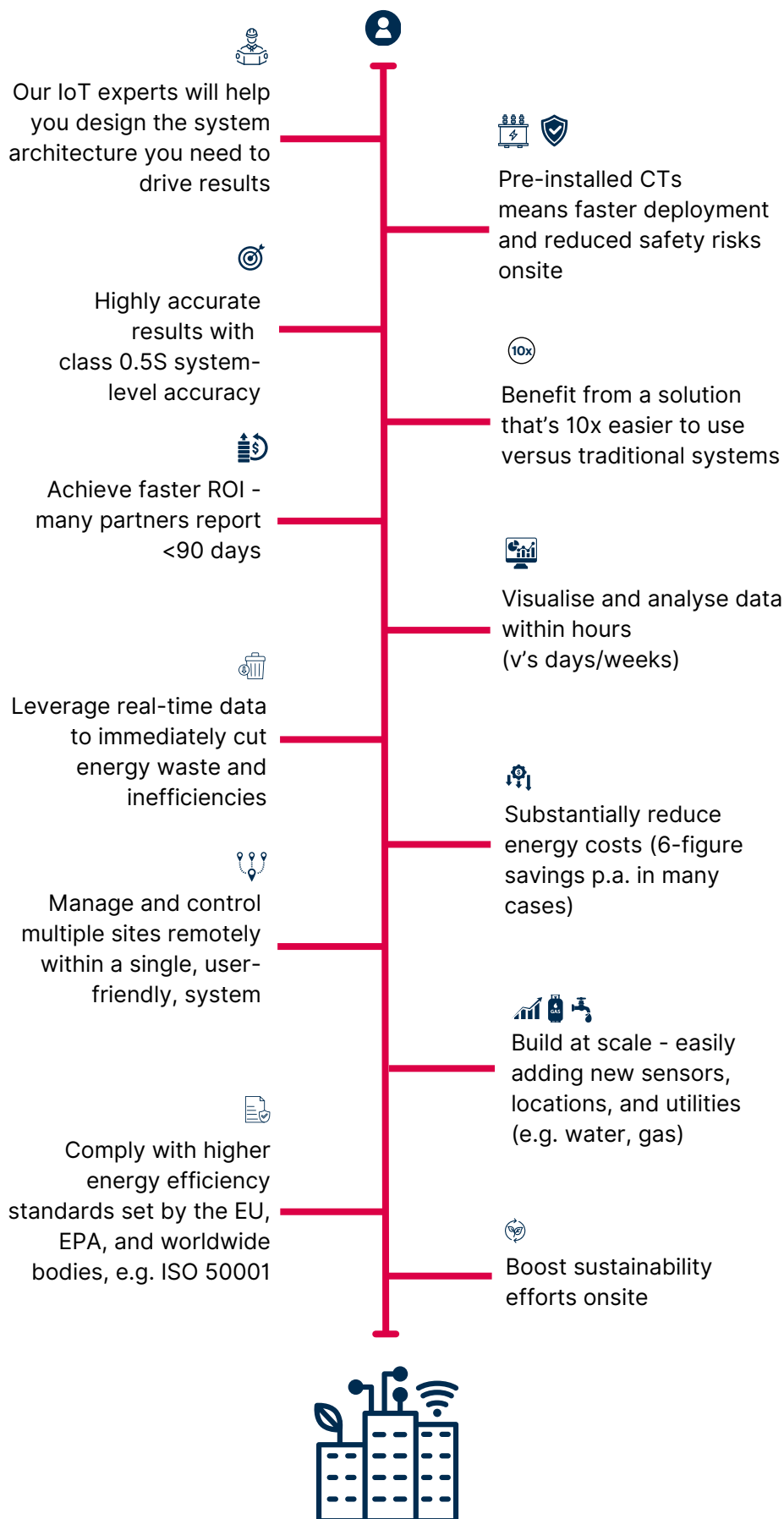
Data Extensibility and Support

Traditional automation and control systems are typically limited to monitoring electricity, necessitating additional systems for other utilities.

EpiSensor's systems can monitor various utilities like gas, water, oil, heat, and temperature, all through a single wireless system. This capability increases system efficiency and simplifies the integration with existing building management systems (BMS). Moreover, while traditional systems often require local or onsite support, EpiSensor provides a flexible and cost-effective global remote monitoring and upgrade solution.



Why partners choose EpiSensor Technology



Make smart buildings, **smarter**, with EpiSensor



A simplified approach to Energy Management



In conclusion, while traditional automation and control systems have their merits, the complexity of installation, lack of integrated CTs, and limited remote management capabilities introduce a range of hidden costs that can rapidly deplete energy programme margins and affect project viability.

EpiSensor's advanced, wireless solutions offer a compelling alternative, **reducing complexity, cost, and disruption while enhancing safety, security, and extensibility.** These benefits make EpiSensor's solutions an ideal choice for modern energy management programmes seeking efficiency and scalability.

For more information or to see our rapid-install systems in action, connect with one of our experts at a time that suits you.

LET'S GET STARTED





Empowering partners to deliver **world-class energy services fast**

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CoolPlanet

VEOLIA

SIEMENS

CAPULA



ENERGYCAP

M-FOUR

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