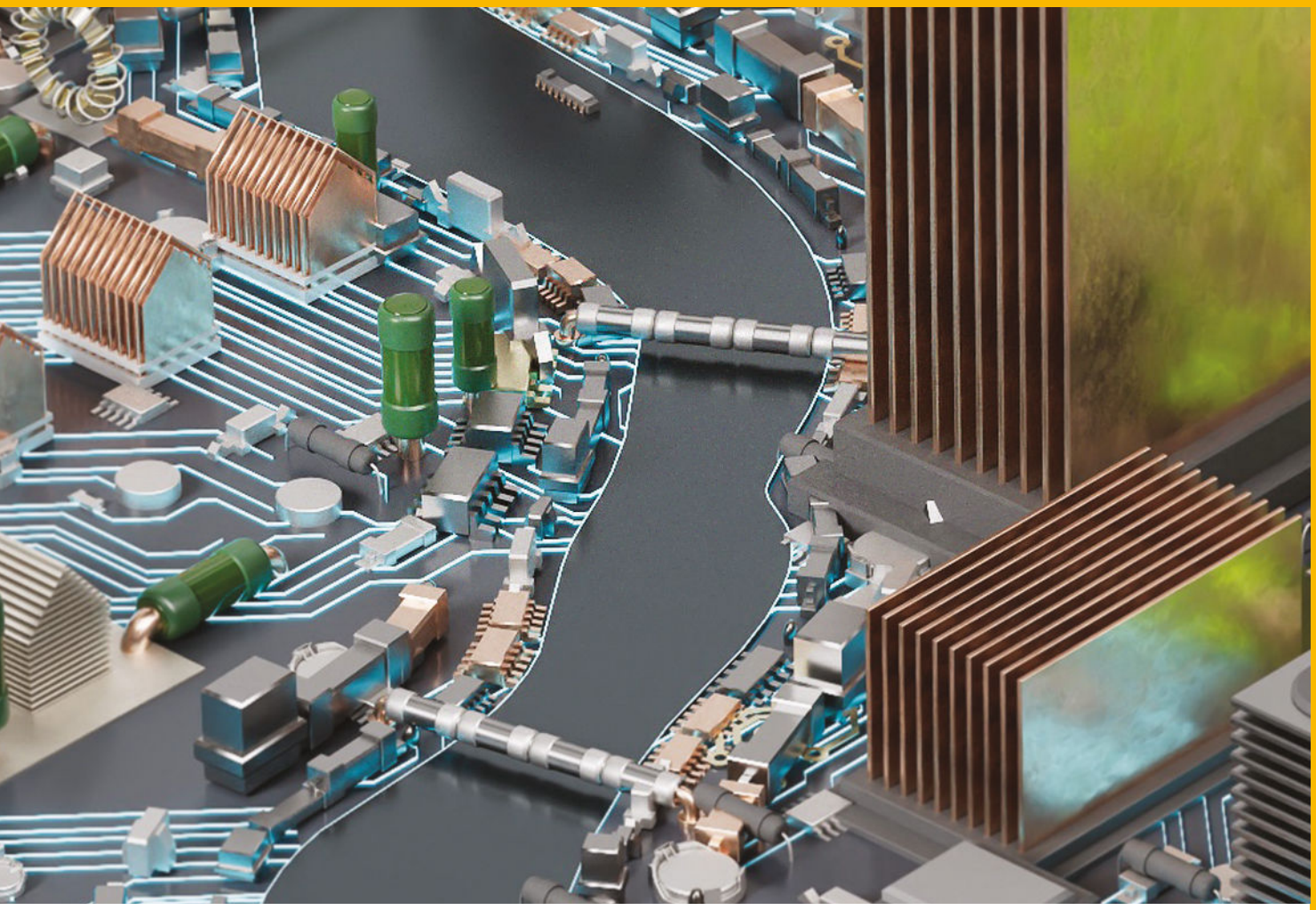

VisNet Hub®

Safeguarding wastewater operations with smarter electrical monitoring.

Resilient wastewater networks.
Reliable pumping operations.
Ready for tomorrow's regulatory challenges.

V1 / UK / 01.10.25
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VisNet®
From EA Technology

Safeguarding wastewater operations

Preventing Pollution Incidents Through Electrical Resilience

Water utilities are entering a pivotal moment where resilience, compliance, and trust are under the spotlight like never before. The sector is being tested not only by regulators and public opinion but also by the very infrastructure it relies on to deliver essential services.

A shifting regulatory framework and the mounting consequences of even minor operational failures leading to fines, mean that utilities are rethinking how they manage risk.

In this climate, electrical visibility and foresight are no longer optional—they are critical to maintaining performance, protecting the environment, and safeguarding reputation.

From Pressure to Progress with VisNet

Water utilities today face unprecedented pressure to tackle pollution events. Public scrutiny is high, and regulators are applying greater pressure.

Ofwat and the Environment Agency are intensifying oversight and enforcement, with fines running into hundreds of thousands of pounds.

This means that even a brief electrical fault at a pumping station can quickly escalate into a serious pollution incident—with lasting financial, environmental, and reputational consequences.

Utilities are strengthening their approach to electrical blips on three fronts:

- **Operational response** – Addressing imminent issues (whether grid or equipment related) to prevent a spillage or at least reduce its impact.
- **Maintenance & planning** – Implementing medium- to long-term interventions that mitigate emerging risks and improve system resilience.
- **Incident reporting** – Going beyond reactive reporting to provide clear root-cause insights. The aim is not finger-pointing but learning: identifying whether issues stem from the grid or equipment, showing regulators what problems are being uncovered, and demonstrating how proactive interventions will reduce future events.

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Why it matters now

The challenge facing water companies is that they must show they are not only addressing problems but actively preventing them. With the power to unveil the causes behind ‘electrical blips’ water companies can proactively manage previously unknown problems and often predict and prevent issues before they occur, all through the award-winning technology provided by the VisNet Hub.

Through trusted monitoring, the risk of regulatory penalties, shareholder backlash, and erosion of public confidence starts to diminish.

Hub

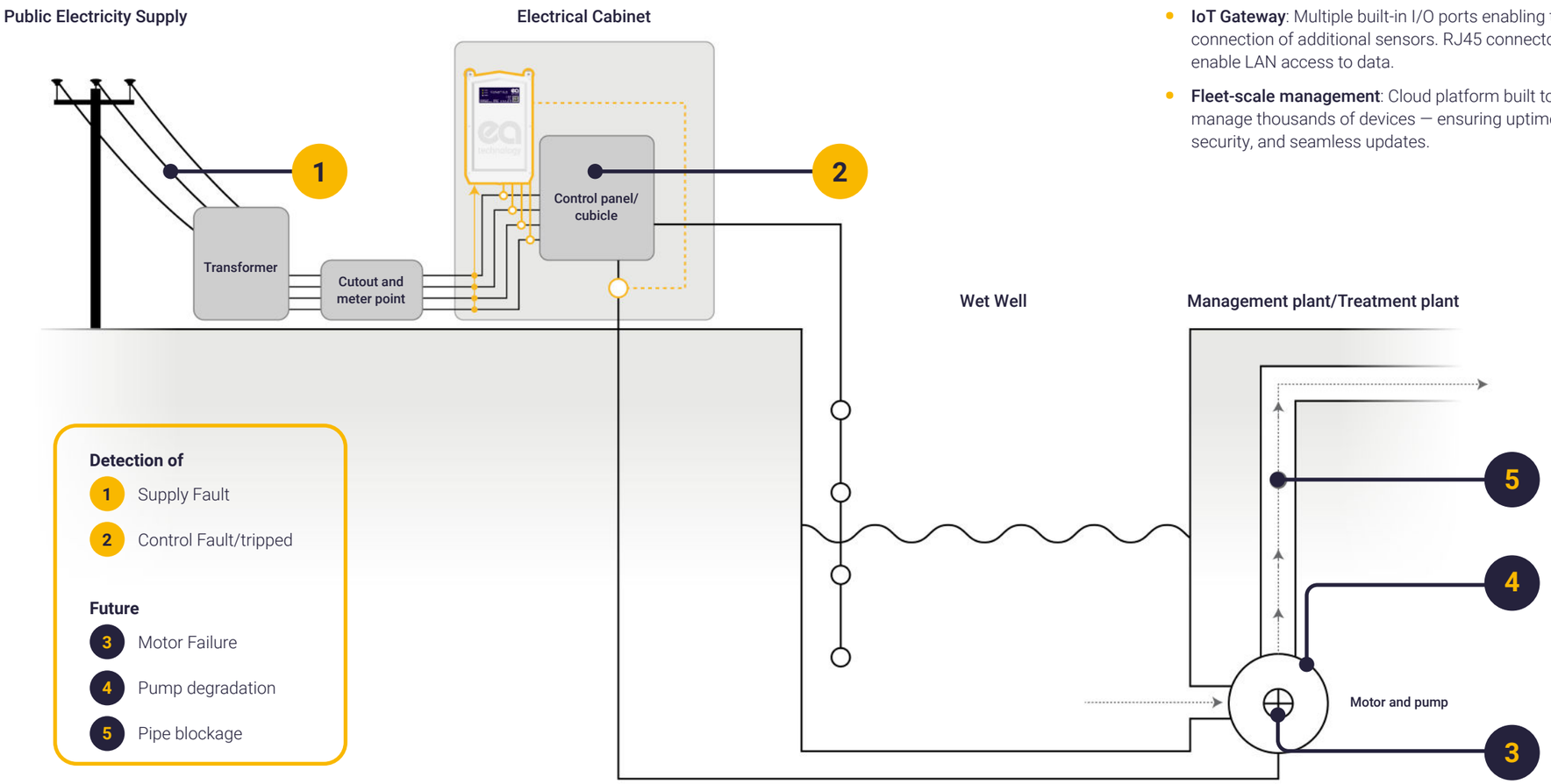
Introducing VisNet® Hub

The VisNet Hub is a next-generation Low Voltage (LV) monitoring device providing a window to the grid-edge, demystifying electrical blips and safeguarding essential water operations.

What is grid-edge technology?

Grid-edge, in this context, refers to the boundary between the traditional electricity grid and its end users. Sitting at the grid-edge the VisNet Hub operates to provide visibility across two domains:

- **On-site equipment** – State, utilisation, and condition of electrical assets.
- **Grid supply** – State and quality of the electricity delivered to the site.



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What makes the **VisNet Hub** unique?

- **Monitors up to 6 current channels** (3 phases + neutral), covering both the incoming site supply and/or outgoing feeders to individual pumps.
- **Full voltage visibility**: Continuously records incoming supply voltage, enabling both accurate power calculations and early detection of quality-of-supply issues.
- **High-frequency monitoring**: Sampling at 16kHz (320 samples per cycle) to capture waveforms and detect anomalies in real time.
- **On-device analytics**: Complex event processing happens locally, turning raw data into instant insights without heavy cloud processing.
- **Software-led and future-proof**: Remotely deploy new applications as needs evolve.
- **IoT Gateway**: Multiple built-in I/O ports enabling the connection of additional sensors. RJ45 connectors enable LAN access to data.
- **Fleet-scale management**: Cloud platform built to manage thousands of devices — ensuring uptime, security, and seamless updates.
- **Flexible data access**: Use a dedicated UI for visualisation or embed insights directly into existing systems via APIs.
- **Cybersecure by design**: Built for critical infrastructure with end-to-end security designed in the solution and ISO27001-certified processes.

In short, the VisNet Hub is more than a monitoring box — it's a portal to greater understanding of electrical blips which in turn prevents spills and associated fines.

Hub

VisNet Hub monitors:

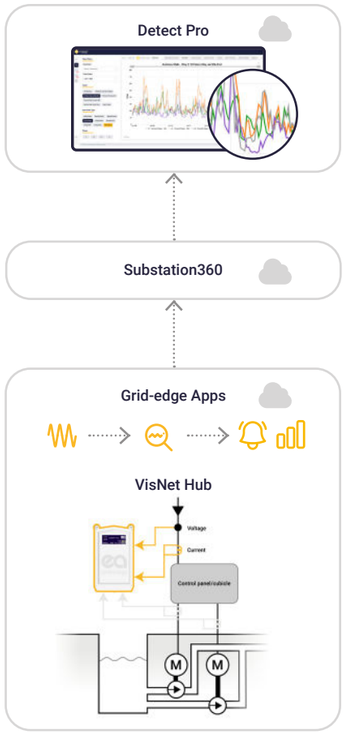
- Incoming supply voltage.
- Incoming supply current.

Optional

- Supply current up to 4 individual pump motors.
- On-site generation/supply
- Temperature sensors.
- Third-party sensor integration.

Safeguarding Power in Water Infrastructure

The VisNet monitoring ecosystem empowers water companies to move from reactive firefighting to predictive, preventative management.



Data is visualised on EA Technology's LV Monitoring UI – Detect Pro.

- Fleet alarms can be filtered in both tabular and geographical views.
- All measurement and alarm data can be viewed on a site and device level.
- Multiple views generated to visualise device alarm and measurement data.
- Data can be exported to CSV files for further post analysis.

Device information and measurement data is managed and stored on Substation360.

- Substation360 is a secure AWS cloud platform used to store all measurement and alarm data from the device as well as a fleet management tool.
- Fleet management layer enables the roll out of new updates (over the air) to installed units.
- APIs can be set up between S360 and other central data platforms (i.e SCADA).

Data is processed locally on the device – data outputs are provided by VisNet Apps.

- LV–CAP is the onboard Operating System (O.S) enabling the localised processing.
- Data is processed locally on the device (new algorithms and "Apps" can be deployed and run on the device).
- Events and alarms are packaged under use cases – and labelled as Apps.

The VisNet Hub is the monitoring device installed on site.

- Income voltage supply monitoring.
- 6 channels for current measurements (3 phase + neutral).
- Additional I/O ports for additional sensors (i.e contact temperature).
- Flexible communication (3G/4G + LAN via ethernet).

Potential ROI of electrical visibility at pumping stations

2,801
CAT1-CAT 3 pollution incidents reported in the UK (2024)

~£246k-£3m+
Average* cost of pollution incidents (CAT3-CAT1)

~25%
Average* percentage of these incidents caused at pumping stations

~45%
Average* percentage of incidents caused by electrical issues (supply and equipment)

*Average values based on multiple PIRP plans.

VisNet®

General Features

By monitoring at high frequency and processing data locally, the VisNet Hub transforms raw electrical signals into the following features & insights.

Feature	Insight
Supply Monitoring Real time load profiling	Loading profile at 10 minute reporting intervals for V / I / kVA / kVAR / THD
Supply Alerts Threshold based event detection	Off-supply, Over/Under voltage, High THD alarms
Detect electrical pump inactivity	Pump inactivity (failure to start) alarm, Phase loss alarm
Alert pump degradation indicators	Pump duty cycle monitor, Voltage imbalance alarm
Detect pump restart failure	Outage duration monitor, Site power restore alarm
Detect known causes of electric motor failures	Current imbalance alarm, Heating supply harmonics alarm
Event reporting for root cause analysis	Transient voltage and current capture
Control Panel Environment Monitoring Ambient Conditions	Cabinet environment (temperature, humidity), Entry detection

Impact in practice

The VisNet® Hub delivers value far beyond simple monitoring, it strengthens every part of a water utility's operation. By turning raw electrical data into actionable insight, it empowers teams to respond faster to incidents, meet rising regulatory expectations with confidence, protecting critical assets from avoidable stress, and safeguarding reputation in an era of intense scrutiny.

Operational response

With faster repairs and clearer incident insights, teams gain the visibility they need to act decisively. Received real time alarms to avoid/respond faster to spillage events:

- Identify grid supply issues (low volts, loss of supply) in real time, enabling early intervention (either avoiding or shortening power issues).
- Identify pump inactivity, when used in conjunction with water level measurements – it can be an indication of faulty pumps.
- Identify overworked pumps, when used in conjunction with water level measurements – it can be an indication of blockage.

Maintenance and Planning

By extending asset life and reducing costly callouts, preventive care and cost control go hand in hand. With the right visibility, utilities can also:

- Assess power quality issues (i.e. Harmonics) that can cause damage to equipment.
- Identify anomalies in pump activity (i.e.increases in inrush current).

Incident reporting

With evidence-based reporting, defensible accountability, and clear incident insights, water companies can build trust and prevent repeat incidents. In addition, they are able to access data retrospectively to better understand the root cause to pollution events.

Proof In Action

High Voltage Identification: Detecting hidden over-voltage threats to protect asset reliability

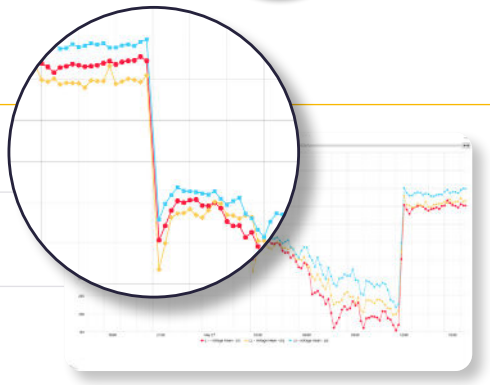
Event: UK pumping station, May 2025

What happened:

- A 20-minute outage occurred due to a fault on the high-voltage network.
- This was followed by a 7-hour voltage depression, normally enough to stall older pump motors.

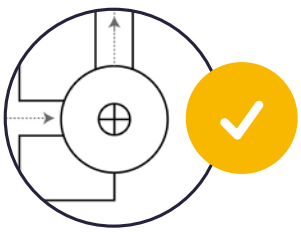
What the VisNet Hub showed:

- Clear evidence of the outage and subsequent voltage drop.
- Enabled engineers to confirm the event was caused by the DNO, not an internal failure.



Outcome:

- Newer smart pumps continued operating effectively throughout.
- Data provided evidence for compliance and operational review.



Lesson:

- The incident highlighted how modern monitoring and smart pump technology turn crises into manageable events. Without the VisNet Hub, the business could have suffered disruption, pollution, fines and reputational harm.

To book your demonstration or to get further information and advice please contact us on +44 (0) 151 347 2313 or email **sales@eatechnology.com / www.visnet.tech**

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