

Managing Low Voltage Capacity

What's the situation?

Our world is transitioning towards Low Carbon Technologies.

Complication

- DNOs/DSOs cannot be seen to block or delay the connection of Low Carbon Technologies.
- DNOs/DSOs must implement more dynamic ways of managing capacity, including consumer flexibility and load control.
- Customer service and continuity of supply remains of upmost importance.
- DNOs/DSOs have conflicting priorities, so good insights will help them make more efficient decisions.



What solutions are needed?

We need smarter ways of managing the grid –
traditional reinforcement alone is not affordable.
Network data is key.

Solutions Required



1. Network Visibility:

Build a comprehensive digital representation of the LV grid to enhance high level decision-making.



2. Accurate and accessible data:

Obtain precise insights on asset loading to understand capacity at a granular level.



3. Real-time data:

Monitor the grid in real time to minimise customer disruptions and respond swiftly to issues.



4. Enriched insights:

Utilise advanced analytics to transform raw data into actionable insights, optimising grid operations and prioritising reinforcement.



5. GridEdge Applications:

Ensure scalability by performing computational tasks and data processing closer to the data source. This enables advanced local decision-making and control mechanisms.

Achievable through

Modelling



Smart Meter Data



Basic LV Monitoring



VisNet Hub®



How we can help

LV Monitoring:

Gain real-time visibility of loading across each of your low voltage feeders and MV/LV transformers.

VisNet Grid Edge Functionality:

The VisNet Hub has a modular scalable approach to add (or remove) functionality from the device at installation or even remotely when deployed in the field. These functionalities are bundled in Apps. In this case, the VisNet Hub has Apps centered around LV circuits and MV/LV circuit capacity.

The VisNet Hub's Capacity App is designed to enable utilities to effectively evaluate headroom issues of their LV circuits and distribution transformers. The Capacity App includes five essential features:



Short/medium/long term overload:

Identify excessively loaded assets and distinguish between short, medium, and long-term occurrences.



Local Demand Control:

Get real time notifications for when demand is reaching capacity thresholds. This data can feed back to the control centre and/or locally to other assets in the substation via the array of input/output ports on the VisNet Hub.



Reverse Power:

Identify areas with high back-feed, such as from domestic PV generation, to your MV/LV substation.



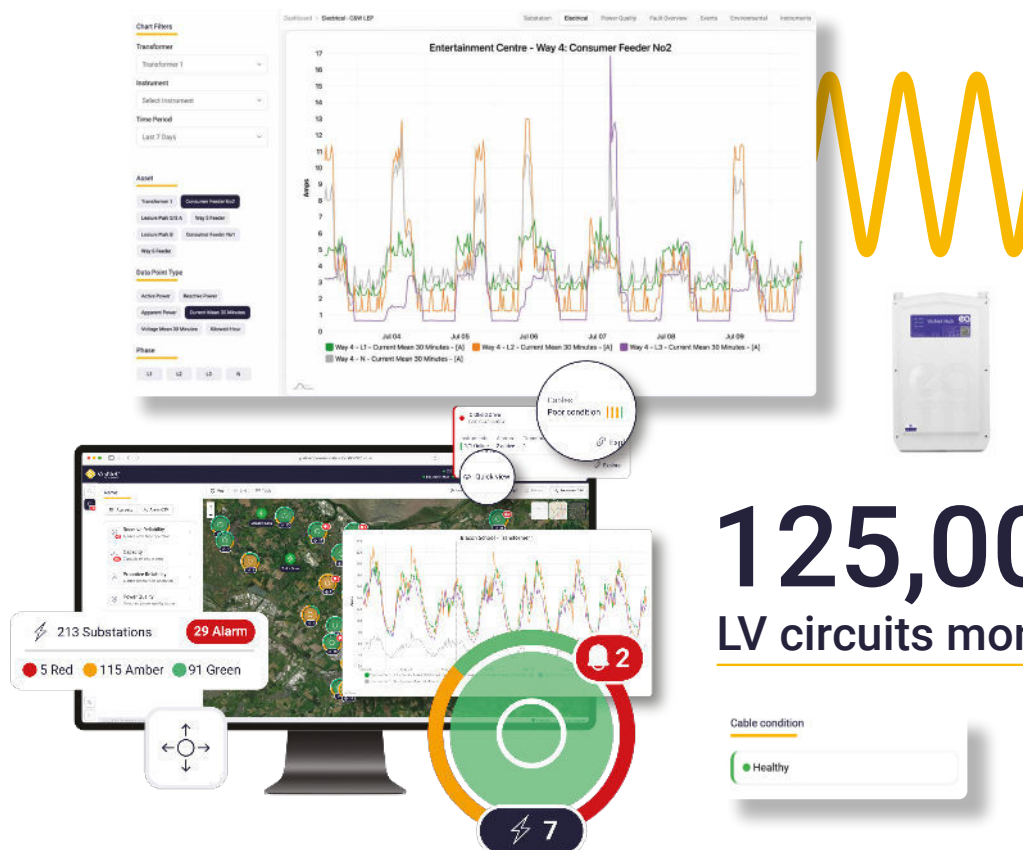
Phase Imbalance:

Receive alarms for phase imbalances to address network stability issues promptly.



Over / Under Volts:

Get alerts for when voltage is about to exceeds statutory limits to protect equipment and maintain power quality.



125,000
LV circuits monitored

Cable condition

Healthy

VisNet Hub is more than just an LV capacity monitor

The VisNet Hub is equipped with a range of data applications (Apps) that offer significant benefits to DNOs/DSOs, from supporting network planning and asset management to enabling proactive operations. All these Apps can run simultaneously on the same device.

Reactive Reliability Apps:

Detects and locates LV faults, improving repair times.

Proactive Reliability Apps:

Provides insights into cable conditions and the likelihood of failure, allowing DNOs/DSOs to proactively manage faults.

Power Quality Apps:

Monitors THD and other power quality features to identify areas of the network under high stress and potential poor supply quality.

Fault Level Apps:

Identifies when fault levels are outside acceptable limits, posing challenges to protection systems.

