LineSIGHT

Overhead HV Network Fault Location
and Management Solution

kelvatek
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OVERVIEW

Improved supply restoration and safety performance during HV overhead distribution network faults are of critical importance to Distribution Network Operators (DNOs), particularly during storm conditions.

Storms can cause extensive damage to rural sections of network, presenting potential safety risks for the public and network repair teams. Rural network faults can also be difficult to locate, increasing the time to locate and restore supply. This can result in damaged lines remaining in unsafe conditions for extended periods of time.

Issues associated with broken conductors or pole cross arm connections can result in conductors dropping onto objects below the line. This can be exceptionally hazardous and sometimes difficult for traditional protection to detect.

To address these issues and mitigate the associated safety risks, a new method for detecting, localising and automatically isolating these faults is available to DNOs.

LineSIGHT is a monitoring and fault management system for overhead distribution networks. Capable of accurately locating major outage issues such as faults, downed lines and low hanging conductors, the system helps prevent CIs and CMLs caused by outages as well as reputational damage for DNOs.

LineSIGHT can also detect component deterioration and developing intermittent problems. Detailed information about network condition can help with health assessment, allowing prioritisation of investment in replacement or reinforcement schemes.

NETWORK PERFORMANCE

LineSIGHT monitors current close to the sources in a network. This enables network operators to view power flowing into the distribution network, as well as voltages at each LineSIGHT monitoring unit - typically five to eight units per network. Monitoring for intermittent issues provides insight into developing faults on the network.

RESTORATION

- Accurate fault location to within 500m
- Reduces need for repair teams to 'walk the line' to locate faults
- Understand how long an outage it likely to last
- Detect downed and lowered lines on the network
- Identify 'nested' secondary faults
- Assist with automated restoration schemes

ASSET MANAGEMENT

- Assess network condition
- Identify incidents, repeating issues, going to be faulting
- Support timely, cost-effective intervention and refurbishment

BENEFITS

- Rapidly locate causes of outages to within 500 meters.
- Detect and locate developing network issues before they become outages
- Quickly allocate correct resources to incidents during storms
- Identify and locate nested faults during storms, enabling immediate response rather than detecting issues once the first fault is repaired
- Target maintenance, upgrades and replacement to maximise benefit from budgets

LineSIGHT BUSINESS-AS-USUAL ADOPTION PROGRAMME

From January 2021 Kelvatek is offering a four-stage business-as-usual adoption programme for interested DNOs:

[Stage 1] Data analytics

- Collate data on past networks performance, GIS information, customers affected by outages and geographical information.
- Use of statistical modelling, Machine Learning and pattern recognition to assess benefits.
- Outputs will inform accuracy of the proposed business case and identify suitable circuits for demonstration.
- Collation and analysis of data from past five years of 11 kV faults, assess each circuit for potential benefits and identify predictive patterns.

[Stage 2] Business case development

- Present data analysis findings allowing DNOs to make decisions on scale of rollout.
- Present budgetary estimation of costs and projected benefits informed by data analytics.
- Outputs of this stage will be collated in a high-level business case, detailing the improvements and benefits of LineSIGHT to inform investment decisions.
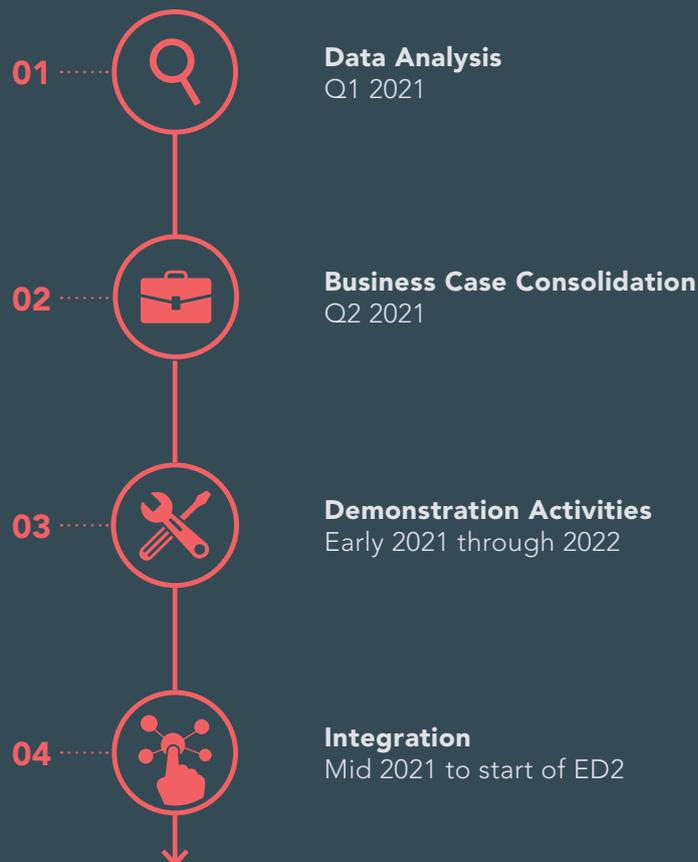
[Stage 3] Technology demonstration

- By selecting worst performing circuits and installing onto several circuits, we can demonstrate the system technology as well as simultaneously develop process and policy.
- LineSIGHT system demonstration at an independent test centre.

[Stage 4] Establish integration project, including Network Management System integration and working practice for maximum benefits

- By considering policy and processes, as well as IT integration and training at the outset, LineSIGHT can easily be installed and deliver immediate benefits.

PROGRAMME TIMELINE

01 ······○ **Data Analysis**
Q1 2021

02 ······○ **Business Case Consolidation**
Q2 2021

03 ······○ **Demonstration Activities**
Early 2021 through 2022

04 ······○ **Integration**
Mid 2021 to start of ED2

CONTACT US

To find out more about LineSIGHT and our Business-As-Usual Adoption Programme, please contact your Kelvatek Account Director.

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