



LineSIGHT

Overhead HV Network Fault Location
and Management Solution



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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. The ability to predict the onset of a fault in many cases, and even locate it before an outage is also possible.

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.



Consisting of 3 key components:

- **Monitoring hardware** that is fitted to a number of poles in the network to monitor for disturbances and collect data
- **Centralised data collection system** including advanced algorithms to process the data and provide information about the fault locations
- **Control Room integration** to provide timely information and insights, allowing control room staff to make decisions about switching and resource allocation



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.



PREDICTIVE TECHNOLOGY

- Sensitive monitoring situated in the network captures signatures of developing issues
- Identify where a fault is going to occur before any outages
- Proven predictive technology allows pre-configuration of networks before an outage
- Minimise CIs and CMLs if faults do develop to outage stage
- Opportunity to understand where the problems are and repair before an outage
- Enables a move from reactive to proactive network management



RESTORATION

- Accurate fault location to within 300m
- 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 300 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



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