

Can we marry network monitoring and management?

EIP022

28 February 2023

Background

- There are several commercially available LV and HV monitoring equipment/solutions which provide impedance-to-fault values for either pre-fault or post-fault events on distribution networks
- Converting impedance-to-fault values to physical locations on networks (e.g., X metres along feeder Y) is typically a manual process
- Informing Network Control Room and operational field staff is also a manual process
- Being able to more accurately inform staff where to look for pre/post fault locations is going to improve customer's quality of supply
- The desire is to have an automated process that does not need manual intervention to provide likely fault locations
 - An application to calculate the likely locations along the LV or HV feeder in GIS
 - An application to indicate on the single line diagram those likely locations.

Enablers and Constraints

Enablers

- Examples of innovation projects that provide fault locations include but are not limited to: HV Feeder monitoring to pre-empt faults, MILES and Arc Aid
- GIS contains records of cables and overhead lines routes
- We have experience of a number of portals that produce a fault impedance
- Fully digitised network records are available in SPN

Constraints

- The solution must be technology agnostic, i.e. take impedance to fault values for both LV and HV as input from sensors and monitoring solutions from many suppliers
- The output of the solution must integrate with our current Network Management System, GE PowerOn/ADMS
- Comprehensive records of LV and HV cables and overhead line conductors are required – only partial digitalised records available in EPN and LPN

Involvement and Implementation

Stakeholders

- **Network Control** – The solution will enable automated notification to Network Control Engineers and allow them to carry out timely switching on the network to isolate faulting/faulted network sections
- **Network Operations** – The solution will enable field crews to find the actual location of faults more quickly (for post-fault events) and carry out pre-emptive repairs for pre-fault events
- **Existing Customers** – customers will see their quality of supply improve and have supplies restored quicker post-fault

Target Market

- The target date for successful implementation is mid-2024
- All DNOs will be interested in a solution that can take a fault impedance and automatically convert it into the potential fault location based on the lengths and impedances of existing feeders

Energy Innovation Basecamp

28 February 2023
ICC Birmingham

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