

CASE STUDY

CableGuardian
proven Tier 1
monitoring
technology

5+
YEARS

£5M

Saved in Penalty Payments

30K

Avoided Delay Minutes

£150K

Saved in Maintenance Costs

CABLEGUARDIAN

**Locating Weather-Dependent
Faults in Network Rail
Western Region**



CableGuardian is the only product to offer proactive monitoring, detection and location of both insulator and conductor faults on live signalling power systems as specified in Network Rail specification NR/L2/SIGELP/27725. - Insulation Monitoring and Fault Location Systems for use on Signalling Power Systems.



Tier 3 Approved



Tier 2 Approved



Tier 1 Approved

Proven Trackside Technology Since 2018: This advanced system has been proven in operation since August 2018, with multiple UK regions already benefitting from the technology and further installations scheduled across the network this year.

Key Benefits:

- Fewer boots on ballast fault finding and cable testing.
- Reduced number of service-affecting failures.
- Quickly and accurately locate cable faults and cable theft.
- User friendly web portal for fault diagnosis location.
- Allows trending of insulation resistance and insulation capacitance at a cable section level.
- Technological alternative to the five-yearly manual cable testing requirements.

CableGuardian helping passengers to arrive on time.

CASE STUDY

USING CABLEGUARDIAN TO MONITOR AND LOCATE WEATHER-DEPENDENT FAULTS: WALES AND WESTERN REGION

CableGuardian is the first platform to offer proactive monitoring, detection and location of both insulator and conductor faults on signalling power systems as specified in Network Rail specification NR/L2/SIGELP/27725.

This unique product provides continuous monitoring of live signalling power supply systems at a cable section level without the need to power down the system, reducing the need for manual trackside fault-finding, reducing maintenance costs and 'boots on ballast'.



Faulty Cable Joint

Utilising CableGuardian for Low Insulation Resistance Monitoring

Network Rail's Western Region had an issue with a Signalling Power System (SPS), which would indicate low Network Insulation Resistance (IR) but only under wet weather conditions. The SPS comprised four feeders with a total length of over 44km.

Under the incumbent Tier 3 IMD monitoring device, identifying which feeder had the issue would have required manual intervention to isolate each feeder, combined with a certain amount of luck that this intervention took place during wet weather conditions.

As a result, Network Rail decided to replace the existing IMD with a CableGuardian Tier 2 system at the Principal Supply Point (PSP), providing continuous monitoring of each individual feeder. When the next spell of wet weather arrived, resulting in a drop in Network IR, it was instantly visible within the CableGuardian online portal.

The portal indicated that one feeder had the lowest IR and was most likely to have an issue. The feeder in question was over 14.5km in length. Viper Innovations pre-programmed the online portal with all cables and location cases on every feeder as part of the system engineering activity, which means Network Rail can easily add Tier 1 units temporarily or permanently to suit their requirements.

By deploying the 'roaming' CableGuardian units at locations along the suspect feeder and waiting for wet weather to see the results in the portal, the rail team enabled a combination of follow-up actions at specific locations.

CASE STUDY



Sub-Network Section IR Measurement Captured using Temporary CableGuardian 'Roaming' Units.

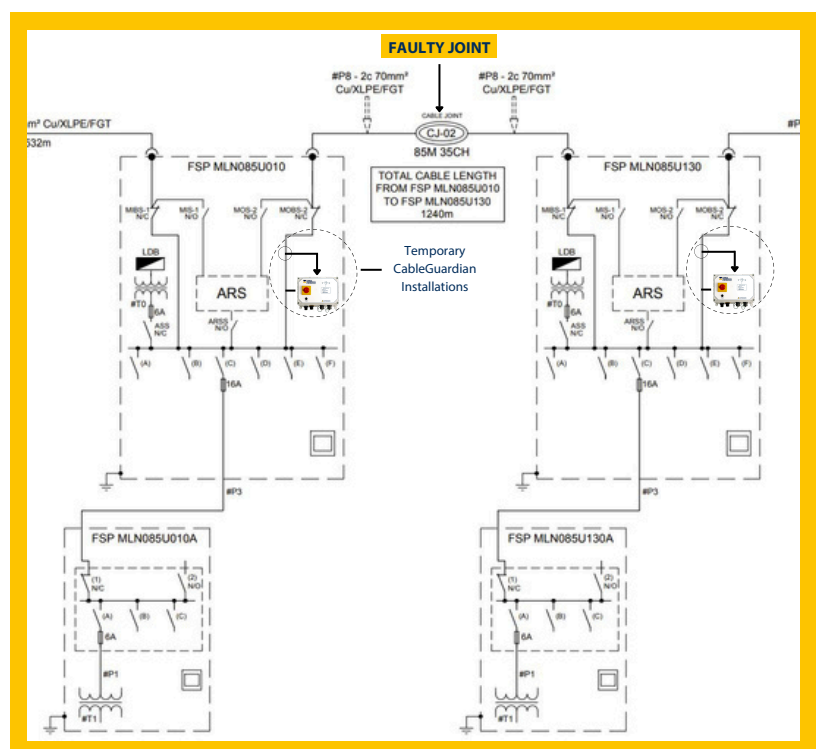
Combining the latest technology from CableGuardian with traditional fault-finding actions focused on specific areas in a planned and systematic approach led to the identification of a single suspect cable section. Testing the cable section and the joint within proved this was shorting to earth. The cable section was isolated and re-fed to maintain supply, and the failing joint was cut out as a temporary solution.

This enabled a planned repair comprising a new section of cable and joints, which increased the Network insulation resistance to an acceptable level and the feeder IR to a steady level consistently above 1MΩ regardless of weather conditions.

This type of fault is weather-dependent, requiring the latent fault and wet weather to be present simultaneously if the fault was to be found by manual testing.

As a result, it is highly unlikely that the standard maintenance periodic testing of cables would have found this failing joint, and it would likely have resulted in a service affecting failure with a potential worst-case scenario of 5,000-10,000 delay minutes.

Permanent monitoring by CableGuardian in a Tier 1 configuration would have shortened the duration of manual testing needed to pinpoint the failing joint, subsequently improving safety and reducing OpEx costs. The Wales and Western region are seeking to install CableGuardian Tier 1 monitoring at all critical assets moving forward.



Faulty Cable Joint Schematic



Get in touch with one of our experts today and learn what
CableGuardian could do for you:

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