

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 UTILISES TIER 2 CONFIGURATION TO MONITOR NETWORK RAIL INDIVIDUAL FEEDERS



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

OPTIMISING SIGNALLING POWER SUPPLIES ASSET MANAGEMENT WITH PRECISE IR MONITORING: VIPER INNOVATIONS AND NETWORK RAIL WALES AND WESTERN REGION - YATTON

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'.

Technology Upgrade

Network Rail Wales & Western region undertook a project to deploy CableGuardian on the Signalling Power System (SPS), which had continually recorded low Insulation Resistance (IR) values within the Intelligent Infrastructure (II) system. The SPS was an ageing asset being monitored by a single Insulation Monitoring Device (IMD) in a Tier 3 configuration, which provided a single IR value within the Intelligent Infrastructure System (II).

The SPS asset comprises two feeders totalling approximately 13km in length and a Relay Room close to the Principal Supply Point (PSP). All contribute their individual IR values to the total network IR value reported within II. Because of this, the causes of the low network IR values were not immediately evident. The traditional method of identifying the cause(s) and location(s) for the low network IR is to disconnect and test each cable section.

The decision was made to install CableGuardian in a Tier 2 configuration, with an individual CableGuardian unit monitoring each of the two feeders. This would give Network Rail insight into their asset, which had not been available until then.

Now, instead of a single value for network IR, Network Rail's E&P Engineers could see the individual IR measurements taken by the CableGuardian hardware, better understand their asset, and decide how to address the issue.



CableGuardian by Viper Innovations

CASE STUDY

Sub-Network Section

	From Location	To Location	Name	Cable Length	Type	Insulation Resistance	Insulation Capacitance	Voltage Drop	Insulation Status
+	Yatton Relay Room	L8	Group	2.75 km	6 Cables	> 500 kΩ	3.99 μF	Unknown	<input checked="" type="checkbox"/> IR Checked <input checked="" type="checkbox"/> IC Checked
+	Yatton Relay Room	M25	Group	10.3 km	18 Cables	> 500 kΩ	11.3 μF	Unknown	<input checked="" type="checkbox"/> IR Checked <input checked="" type="checkbox"/> IC Checked
+	Yatton Relay Room	Yatton Relay Room	Group	20.0 m	2 Cables and 1 Transformer	50.2 kΩ	18.5 μF	Unknown	<input checked="" type="checkbox"/> IR Low Alarm <input checked="" type="checkbox"/> IC High Alarm

From the data captured by CableGuardian, Network Rail could quickly review the status of its assets from its office rather than having to have 'boots on ballast' to test the cables and obtain this information.

It can be seen in the table above that:

- One feeder is 2.75km long with an IR measurement of >500kΩ
- The second feeder is 10.3km long with an IR measurement of >500kΩ
- The 20m cable to the relay room had an IR measurement of 50kΩ

The CableGuardian portal uses colour coding to identify which Sub-Network Section is below the alarm levels along with symbols to indicate the Sub-Network Section with the lowest IR as well as the Sub-Network Section with the lowest Normalised IR , a unique feature of CableGuardian indicating the lowest IR/km.

To measure IR, CableGuardian considers all the switchgear and ancillary equipment associated with the SPS, not just the feeder cables. The data within the CableGuardian portal indicated that the issue lay within the Relay Room rather than the feeders, removing the need to obtain possession, put 'boots on ballast', and test the feeder cables only to find that the issue lay elsewhere.

CableGuardian provided Network Rail with an understanding of their asset that they previously had yet to have and reassured them that the IR values of the individual feeders were above the levels that would have meant that further attention was necessary. The cause of the low IR value associated with the Relay Room emanated from some ancillary equipment rather than cables, and the appropriate steps will be taken to address this and bring the SPS out of the low IR alarm status.

Now that CableGuardian has been installed in a Tier 2 configuration on the SPS, this provides the NR Engineers with a technological alternative to the 5-yearly manual cable testing requirement NR/L2/SIGELP/50000.

CableGuardian is providing Network Rail with greater insight and understanding of its assets. It also empowers the rail industry to move from the uncertainty of periodic testing to a real-time condition-based approach.



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

www.viperinnovations.com/cableguardian

or contact one of our experts on:

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