Trans Pennine Enabling Works

Cable Theft Detection System

LBFoster®

Trans Pennine enabling works - Cable theft dectection system

Linbrooke
Total Network Solutions

Trans Pennine enabling works

Metal theft is a big problem for the railway as thieves' target signalling cable, power feed cables and overhead power lines to sell for scrap. These cables are particularly at risk during the installation and commissioning phases of projects as there is less risk to the thieves that when the systems are operational.

Once the systems have been installed and become operational the implications are due to the rail network being designed to "failsafe" when a cable is cut trains are brought to a standstill. This protects the passengers, train crew and infrastructure but, can lead to lengthy and costly delays whilst the problem is located and rectified.

Cable theft costs the rail industry millions of pounds every year. The total cost to the economy, taking into account the impact of freight delays to power stations, supermarkets and passengers who miss appointments or have their days ruined, is an even higher cost.

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Requirement

The requirement is to be able to detect that the cabling is being removed and provide an email or SMS to the correct personnel to get an instantaneous response to the affected area.

LB Foster Control and Display Solutions (C&DS) have developed and installed a range of easily deployable cable theft and Remote Condition Monitoring (RCM) systems which work on a completely wireless system.

Specification

> The system consists of a central Gateway Transponder that monitors movement of any number of Movement Tor Tilt Tags. Movement tags detect slight movement on cables or other fixed assets, whilst Tilt Tags detect a tilt of 45° or more making them ideal for protecting overhead power cables.

> The Gateway Transponder is housed in a standard Peli™ case and the Movement or Tilt Tags are housed in purpose built plastic tubes that feature fixing holes for easy deployment in cable troughs.

> The tags can be located up to 1km from the Gateway Transponder.

> The Gateway Transponder sends a message to the tags every 5 seconds and if any movement is detected the tags report it immediately.

> When the Gateway Transponder detects movement or tilting of a tag it sends a text and/or email message to the user.

> The tags also send a full 'health check' message to the Gateway Transponder every 30 minutes.

> Movement and Tilt Tags only transmit in response to a message from a Gateway Transponder.

> Battery packs last approximately 12 months in both the Gateway Transponder and tags and the Gateway Transponder has a battery test monitor.

> Battery levels can be monitored remotely from a web interface.

> Alarm monitoring, system configuration and deployment positioning records are all managed from a simple Web interface.

Our Solution

The system is a highly reliable and robust system which is now being utilised for trials in avalanche affected zones. The system has been used by Network Rail and has proved successful in deterring the theft of cabling along various routes.

The system can be deployed on to any asset that requires monitoring and when it moves the alarm is sent.