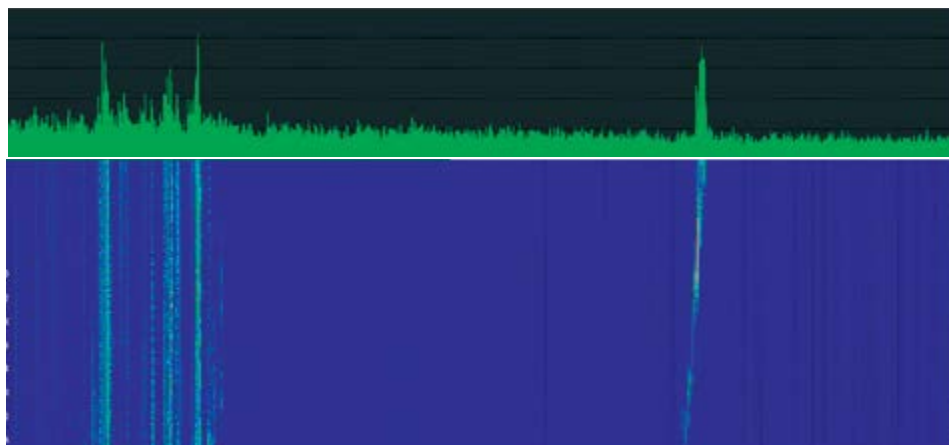


Praetorian Fibre Optic Sensing

Rail Monitoring, Track Health
& Intrusion Detection



For more information, please visit >
www.hawkmeasure.com



Train with 3 diesel locomotives

Light Vehicle at 70kph



Principle of Operation

Using a combination of Rayleigh backscatter and time of flight, Praetorian determines the presence, location, intensity and frequency of vibrations along an optical fibre in real time.

Rayleigh backscatter responds to physical vibration imparted on the fibre by disturbances to the application. HAWK's signal analysis software allows Praetorian to quickly determine the most likely origin of the vibration and report any nefarious signals to security personnel without notifying an intruder of their detection.

Function

Praetorian can be thought of as acting as a series of microphones along the fibre recording in real time. The system analyses enormous amounts of data using ultra-fast field-programmable gate array (FPGA) architecture to give real time feedback on the likely origin and type of disturbance. Utilizing proprietary pattern recognition software, Praetorian reduces the incidences of false positives normally associated with other Fibre Optic Sensors.

Praetorian's fast processing speed and pulse rate allow it to detect minute interferences that may otherwise go unnoticed. This, in addition to Praetorian's advanced frequency filtering and signal tracking software, make it the most advanced fibre optic interrogator on the market. Some examples of detectable activities include:

- Detection and location of personnel operating around or in rail corridors
- Detection and location of personnel movement in or around tunnels
- Tracking of rolling stock, speed, position and direction
- Level Crossing "All Clear" Detection
- Identification of rolling stock, light vehicle and personnel
- Protection of assets (copper cable and Fibre optic) from theft
- Detection and location of vandals in siding yards
- Detection and location of livestock on track

Praetorian also Geo-tags alarms and seamlessly integrates with existing supervisory control and data acquisition (SCADA) and digital control systems (DCS) so security or surveillance teams are able to respond immediately.

Primary Areas of Application

Installation locations:

- Tunnel openings
- Tunnel access points
- Level crossings
- Heavy freight rail corridors
- Passenger rail corridors
- Siding yards
- Existing fibre optic communication infrastructure
- Buried or above ground fibre installation

Future Sensing Opportunities

HAWK is also exploring possibilities for monitoring rail health specifically looking for:

- Flat wheel detection of rolling stock
- Broken rail detection and prevention
- Washout (of ballast) detection
- Foreign objects on track (rock fall/mudslides, etc.)

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