dataTaker

Case Study

A Train, Accelerometer, GPS and a dataTaker

Case Details

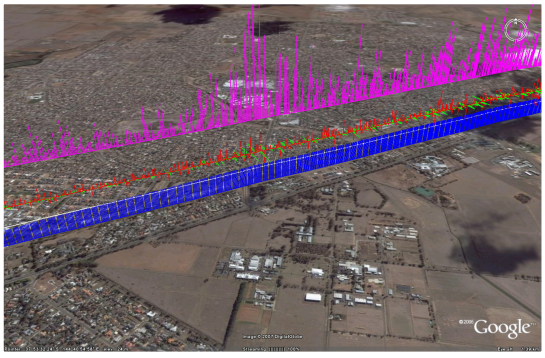
In 2005 the V/Line VLocity160kph trains and upgraded rail lines were introduced in Australia. During testing the train drivers complained of the sideways movement of the train. Repair crews went out to re-level the track. However when the crews went to the locations indicated by the drivers, based upon the distance along the track, the problem track could not be identified. Engineers 'road the rails' and documented the location of the problem sections. When the repair crews went out to the noted positions they could not identify the problems. A logging solution was thus required to record and tag the precise locations of problem tracks.

Key Requirements

Match location with accelerometer data

dataTaker DT80

1. A cost effective data logger expandable to 100 channels, 200 isolated or 300 single-ended analog inputs
2. Built-in web and FTP server allows for remote access to logged data, configuration and diagnostics
3. Modbus slave and master functionality allows connection to Modbus sensors and devices and to SCADA systems
4. Smart serial sensor channels capable of interfacing to RS232, RS485, RS422 and SDI-12 sensors
5. Rugged design and construction provides reliable operation under extreme conditions
6. Includes USB memory stick support for easy data and program transfer



VLocity train and 3D maps: The traces represent data gathered at specific GPS coordinates along the train track. The purple bars specifically represent the propensity of the train to derail.

dataTaker Solution

Equipment

dataTaker DT80 data logger
dataTaker CANgate

Sensors

Crossbow® Tri-axial Accelerometer
GPS

Implementation Notes

A GPS was connected to the *dataTaker* CANgate. The CANgate was then connected to a *dataTaker* DT80 data logger and a tri-axial sensor was connected to an analog channel. The GPS was placed on the roof of the train to give the current train position and the accelerometer would give the instantaneous train vertical and horizontal acceleration of the train at that position.

The results of the train tests were then converted to a Google™ Earth format using a small *dataTaker* program, for the purposes of plotting 3D geographical data from the *dataTaker* data logger.

Using the Google™ Earth plots, the repair crews were easily able to identify the locations of these trouble spots and repair them.

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