

Development of a Tunnel Monitoring Method Based on a Wireless Sensor Network

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A monitoring method with a wireless sensor network was developed to lighten the workload of data acquisition and reduce the monitoring cost in railway tunnels. A relay method was proposed to transmit the data for long distance in the tunnels with fewer sensors. The performance of the monitoring system was verified by means of field tests at actual railway tunnels. This paper also describes the data processing method which eliminates the short term change caused by daily temperature change in order to utilize the real time monitoring data for the maintenance of distorted tunnels. It is found that the low pass filter is an effective tool for eliminating the short term change.