



TECHNOLOGY

RFID Sensor for Locating Asphalt Concrete Batches within Constructed Pavements

OVERVIEW

In order to ensure, and ideally to improve the performance of asphalt pavements, it is vital that the influence of material properties on performance be clearly understood. Correlations between as-constructed properties of asphalt concrete in construction databases and field performance of pavements in pavement management systems can quantify the link between material quality and performance. Unfortunately, the dissimilar ways in which these two sets of data are recorded with respect to location along the pavement alignment makes it difficult to establish these correlations.

Researchers at the Department of Civil and Environmental Engineering at the University of Maryland-College Park have invented a new technique called, "RFID Sensor for Locating Asphalt Concrete Batches within Constructed Pavements". This invention is an inexpensive expendable electronic sensor based on radio frequency identification (RFID) technology that can be used to identify or tag truckloads of hot mix asphalt as they leave the production plant. The aspects that are original to this work are the encapsulation of the RFID tags so that they are rugged enough to withstand the thermal and mechanical stresses during the asphalt concrete transport and paving operations.

This sensor would be placed in a sampled truckload of material as it leaves the asphalt production plant and its digital signature read and recorded. After transport to the construction site and unloaded with the asphalt concrete into the paver, the tag would pass through the paver and be compacted into the finished mat. After construction, a vehicle-mounted scanner would be used to electronically read the digital identity signature embedded in the tags and cross reference them with GPS latitude and longitude coordinates. The identity signature and associated GPS coordinates can then be used to cross reference laboratory test results performed on specimens sampled from the truckload at the asphalt production plant to as-constructed in-place test results behind the paver as well as to future pavement performance data recorded in the agency's pavement management system. The principal benefit is the potential for more robust statistical analyses of the correlations between measured material properties and actual pavement performance in the field.

For additional information, please contact the Office of Technology Commercialization, University of Maryland College Park, via e-mail at otc@umd.edu or phone at 301-405-3947.

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Sensors/Monitors
- Engineering

EXTERNAL RESOURCES

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