

## **Contribution submission to the conference Dresden 2009**

**Car park management and train position monitoring based on magnetic imaging of vehicles** — ●HAIBIN GAO<sup>1</sup>, STEFAN VOIT<sup>2</sup>, and UWE HARTMANN<sup>1</sup> — <sup>1</sup>Physics Department, Saarland University, Campus, 66123 Saarbruecken, Germany — <sup>2</sup>Votronic GmbH, Saarbruecker Str. 8, 66386 St. Ingbert, Germany

Increasing traffic volume needs optimized traffic management for both economy and safety reasons. A car park guiding system is based on providing the real-time occupation of each parking lot. Efficient railway marshalling requires the actual train positions. Magnetic field detectors can be employed for vehicle position monitoring by means of magnetic profile measurement. Magnetoresistive sensors utilize the earth\*s magnetic field as a bias field for detecting the presence of ferromagnetic objects, i.e., components of a vehicle. The passive method of sensing requires no energy to be emitted, thus minimizing both energy consumption and risk of electromagnetic interference. Furthermore, the compact size of the magnetoresistive sensors allows for versatile placement options. A car park employed with more than 100 magnetic detectors in each parking lot is used to demonstrate the application of magnetic detectors. Customers can obtain the unoccupied lots\* positions via a large LED display. Other information like local news, time and commercial information can be presented simultaneously. Detectors were used to detect the actual train positions during railway marshalling process. They were buried underneath tracks to obtain magnetic profiles of passing locomotive and carriages. The results shows magnetic detectors can be applied in this field as well.

**Part:** AGSOE  
**Type:** Vortrag;Talk  
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