

Weigh in Motion Using Fiber Bragg Grating Sensors: An Industrial Case in Italy

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ABSTRACT

The ever increasing need for improved safety, reliability and efficiency is among the most important aspects of the railway industry worldwide. The need of a smart condition monitoring system is imminent as indicated by the increase in railway and underground accidents/incidences around the world. Railway monitoring requires extensive sensor networks for measuring strain, vibration, temperature, acceleration, etc. This would be difficult and cost-prohibitive to implement using conventional sensors. In previous works, we demonstrated that Fiber Bragg Grating sensors can be used as single technology to perform multifunction diagnostics in railway applications. Here, we extend our work demonstrating the capability of this technology to be efficiently used for weighing in motion applications and thus to monitor weight unbalance which in turn can be considered the main cause of train derailment.

INTRODUCTION

This work has been stimulated by an increasing interest from the railway industry in implementing SPMR (Smart Passenger Monitoring) for maintenance of railway infrastructure. Since the development of SPMR is still about the process in terms of both current and future demands. Therefore, as SPMR systems aimed at long-term monitoring it is very important to consider the railway people. One of the key issues in railway industries is the capability of continuous monitoring of this weight during normal operation conditions of the railway lines.

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Ключевые слова:

Содержание.

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