

ANALYSIS OF SURFACE CHARACTERISTICS AND NEW MAINTENANCE TECHNIQUES FOR ROAD, RAILWAY AND AIRPORT INFRASTRUCTURES

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Infrastructure construction and management requires validation and monitoring of the performance characteristics in terms of skid resistance, evenness and bearing capacity, along with tire-pavement contact noise, traffic vibrations and water drainage.

Controls can take place either during construction or the service life of the infrastructure and may lead to re-construction or to scheduled maintenance interventions targeting durability and safety. In this context, the pavements research group of DICAM aims to develop innovative technologies and methods for monitoring the pavement as well as new maintenance intervention techniques that aim to extend the service life and increase safety. In particular, the following topics have been recently addressed:

- (a) Vibratory Continuous Compaction Control of unbound layers, together with LWD or FWD systems used as cross validation methods;
- (b) Mobile Mapping Systems (MMS) for the measurement of various geometric characteristics such as profile and sections, for the identification of damages and for the calculation of indexes such as PSI and PCI or similar;
- (c) Laser Scanning Systems for the texture analysis of pavement surfaces and its correlation with skid resistance and surface drainage;
- (d) Microgrip testing methodology for the assessment of post-accident cleaning interventions on paved surfaces;
- (e) Multifunctional Cold laid micro-surfacing containing End of Life Tires (ELT) crumb rubber for enhanced skid resistance, noise abatement properties and low carbon footprint;
- (f) Novel waterproofing systems for bridges and paved surfaces containing ELT recycled rubber mat and bituminous coatings;
- (g) Wire heating technologies to control the moisture conditions of bituminous pavements surfaces in airports and road infrastructures;
- (h) Laboratory assessment procedure to verify the design of the high-performance instrumentations Eurobalise, installed on the railway infrastructure.



Fig. 1. Cold laid micro-surfacing.

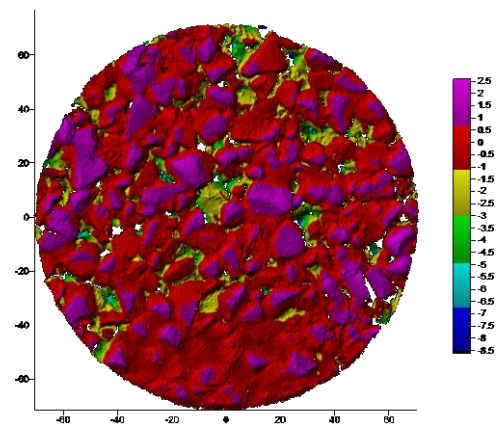


Fig. 2. Laser scanning of pavement texture.



Fig. 3. Continuous Compaction Control of unbound C&D layers.

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