

Technology Offer

Method and equipment for testing road longitudinal profiles in dynamic regime

Summary

A Romanian research institute has developed a method and an equipment for testing, in dynamic regime, the longitudinal profile of the road and highway pavements. The proposed system will be used for the determination of the longitudinal uniformity-one of the functional characteristics of the road structures involved in the safety of the circulation. The targeted partners are universities, research institutes or SME's from the same activity field and ready for technology transfer.

Creation Date	06 November 2014
Last Update	09 November 2015
Expiration Date	18 May 2016
Reference	TORO20131023002

Details

Description

The method and equipment for testing the road longitudinal profiles in dynamic regime consists of: the displacement on the tested pavement of a lab vehicle (VL) on whose lateral side a couple of two laser sources (SL I, SL II) is mounted; a continuous emission type and a video camera (VC) placed in line with the laser sources exactly at the middle of the distance (A) between these sources. Distance (A) is equal with the sampling distance imposed by the evaluation norms of the road longitudinal profile uniformity. The line scan video camera (VC) must be parallel with the laser beams (FL I) and (FL II), which are perpendicularly oriented to the pavement surface (PL).

The start of a sequence for the measurements simultaneously carried out by the two above mentioned sensors is achieved at the external command delivered by a vehicle displacement transducer every time when this vehicle has moved along distance (A).

The processing of the acquired data must begin with the extraction from each image received by the video camera with line type CMOS sensor, of the current ordinate that corresponds to the pixel that has received the laser source image reflected by the pavement. This thing can be achieved through a software application aimed for detecting the maximum illuminated pixel from the respective line. The program is also taking into account the wavelengths of the used laser beam (FL).

On the basis of the data acquired in this mode it is possible to calculate both, the variation of the road profile elevation and the lab vehicle own vertical displacement, in the frame of every measurement sequence.

Advantages and Innovations

Besides its relative simple construction, the proposed equipment is assuring the possibility to calculate the IRI (International Roughness Index), whose value is totally independent from the

own vertical displacements of the lab vehicle, on the basis of the relative ordinates y_i , which are constituting, each one, the elevation variation of the road profile in the frame of a measurement sequence.

Moreover, due to the fact that the line type video camera is functioning as a rule with high scanning frequencies, the equipment in conformity with the invention has the possibility to effectuate the acquiring of the road longitudinal profile also in the conditions in which the lab vehicle is displacing with the admitted speed on the respective road.

Stage of Development

Prototype available for demonstration

IPR Status

Patent(s) applied for but not yet granted

Comment Regarding IPR status

Patent applied for at the National Office for Patents and Trademarks

Keywords

Technology

001001003	Electronic circuits, components and equipment
001001004	Electronic engineering
001001011	Optical Networks and Systems
01001002	Digital Systems, Digital Representation
01004003	Applications for Transport and Logistics

Market

02001002	Scientific computers
02006004	Data processing, analysis and input services
02007001	Systems software
02007002	Database and file management
08002005	Machine vision software and systems

NACE

M.72.1.9	Other research and experimental development on natural sciences and engineering
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Network Contact

Issuing Partner

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Open for EOI : **Yes**

Dissemination**Send to Sector Group**

Automotive, Transport and Logistics

Client**Type and Size of Organisation Behind the Profile**

R&D Institution

Year Established

0

Already Engaged in Trans-National Cooperation

No.

Languages Spoken

Romanian
English

Client Country

Romania

Partner Sought**Type and Role of Partner Sought**

The Research Institute is looking for partners such as universities, research institutes or SMEs from the same activity field, ready for further developments or technology transfer.

Type and Size of Partner Sought

SME 11-50, University, R&D Institution

Type of Partnership Considered

Manufacturing agreement

Technical cooperation agreement
Research cooperation agreement