Monday 2 July, 2018 - 14.00
Aula Castigliano, Building 5, ground floor

DYNAMICS OF FOOTBRIDGES MADE OF FIBRE-REINFORCED POLYMER COMPOSITES

Dr Stana Živanović

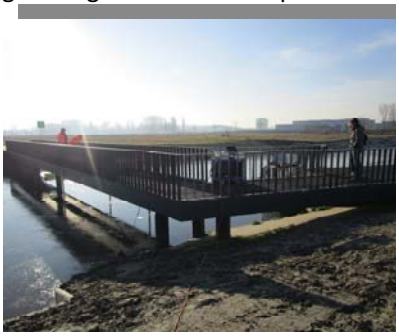
University of Warwick, School of Engineering, Coventry, United Kingdom

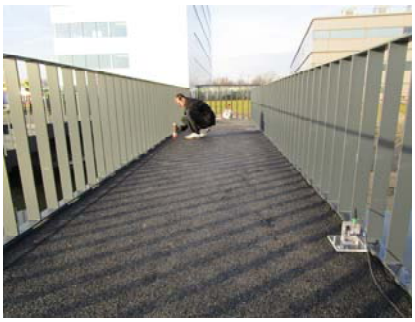
e-mail: s.zivanovic@warwick.ac.uk

ABSTRACT

Structural application of fibre-reinforced polymer (FRP) composite materials is one of the key factors leading to technological innovations in aviation, chemical, offshore oil and gas, rail and marine sectors. Motivated by such successes, FRP shapes and systems are increasingly used in bridge engineering. An obstacle to a wider use of FRP materials in structural engineering is the current lack of comprehensive design rules and design standards. While the preparation of design guidance for static actions is at an advanced stage in the USA and EU, the design against dynamic loading is underdeveloped, due to lack of data related to in-service vibration performance of full-scale structures.

This talk aims to provide insight into dynamic performance of FRP footbridges tested over the past two years. Dynamic properties will be presented first and compared against the dynamics of structures made of more traditional construction materials, such as steel and concrete. This will be followed by examples of evaluation of the vibration serviceability limit state under (mainly human-induced) dynamic loading and confirmation (or dispute) of some presumptions about ability of these light-weight structures to perform well under dynamic actions.





The Speaker: Dr Stana Živanović is a Reader in Structural Engineering at the School of Engineering, University of Warwick, UK. Her research interests and expertise are in the area of vibration serviceability of civil engineering structures, with special emphasis on modelling dynamic loading generated by human activities, human interaction with slender structures, and vibration performance of relatively novel construction materials, such as FRP composites. Stana heads the *Humans and Structures Laboratory* at Warwick and is a principal investigator on the EPSRC-funded project on dynamics of FRP structures, some results of which will be presented in this talk.