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Fibre Reinforced Concrete

From Basics to Structural Applications

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Abstract

With increasing environmental problems posed by the construction industry, such as the consumption of natural resources and greenhouse gas emissions, novel and innovative materials and structures are necessary. Within the concrete industry, fibre reinforced concrete (FRC) has proven to be a promising solution for overcoming these issues. FRC, i.e., concrete produced with steel or plastic fibres, brings many benefits over traditional reinforced concrete (RC), in terms of toughness, ductility, as well construction cost and time. FRC has been proven to be an excellent solution in partially or completely replacing traditional reinforcement for many types of structures: ground-supported slabs, pavements, roads, tunnel linings, pipe sewer lines and flat slabs. Increasingly, design codes are being produced to help engineers safely and reliably design FRC structures. This lecture will present a general introduction into FRC mix design and its mechanical properties, as well as FRC structural applications and analysis.



Dr. Albert de la Fuente Antequera, is an Associate professor of Concrete structures. During his 10-year research career, he has published 52 research papers in journals indexed on the SCIE list, 63 conference proceedings and 4 books and book chapters on the topics of FRC, concrete structural design and optimisation and sustainability analysis using multi-criteria decision making methods. Prof. de la Fuente is an active member of RILEM and *fib* where he is the member of several Task Groups and Committees on topics such as FRC tunnels and pavements, sustainability of precast structures and precast concrete bridges. He has successfully supervised 7 PhD (with more than 10 on-going), 25 MSc and 80 BSc theses and has been an active consultant in the UPC spin-off enterprise Smart Engineering Ltd. He is the Coordinator of several research projects funded by the Spanish government and the EU with a combined grant value of more than one million EUR.