

Research in the application of UHPFRC for strengthening existing structures in Bulgaria

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1 Abstract

This article reviews the possibilities of the application of Ultra-High Performance Fiber Reinforced Concrete (UHPFRC) for strengthening existing steel and concrete structures in Bulgaria. Although the application of UHPFRC in structural engineering is increasing worldwide in the last decades, both for strengthening and for new designs, in Bulgaria it is still highly restricted. This is mainly due to the lack of experience and knowledge in design engineers, contractors and clients.

In order to investigate the possibilities of its local production in concrete plants and to gain experience in its application for strengthening existing structures a research project in the University of Architecture, Civil Engineering and Geodesy in Sofia has started recently. Under this project strengthening of steel orthotropic bridge decks as well as reinforced concrete beams is envisaged. The strengthened specimens will be tested in laboratory under static loading and the results are going to be compared with the test from non-strengthened ones. All specimens are full scaled as for the orthotropic deck only a segment between two cross girders is considered.

The results and experience gained from the research project will be used in the future to promote the application of UHPFRC in Bulgaria for durable reinforced concrete repairs and strengthening of existing steel bridges with orthotropic decks.

Keywords: ultra-high performance concrete; strengthening, concrete beams; orthotropic bridge decks, research.