FACULTY OF CONSTRUCTION AND LAND USE
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Fire Performance of FRP Systems for Concrete Structures

By

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Over the past few decades, research has shown that fibre reinforced polymers (FRPs) can be efficiently, economically, and safely used both for internal reinforcement and for external strengthening and rehabilitation of reinforced concrete (RC) structures. However, there are numerous potential concerns associated with the behaviour of FRP materials in fire, and this remains a key factor limiting the application FRP materials in many buildings, parking garages, and industrial structures. This presentation will provide an overview of ongoing research in this area by Dr. Bisby and his colleagues at Queen's University and the National Research Council of Canada. Details of experiments to investigate the fire performance of FRP materials and FRP-reinforced and/or strengthened RC slabs, beams, and columns will be presented and discussed, with a view to informing design decisions enabling fire-safe application of FRP materials in buildings.

Dr Luke Bisby

Dr Luke Bisby is currently a Reader and the Ove Arup Foundation/Royal Academy of Engineering Senior Research Fellow in Structures in Fire at the University of Edinburgh. He received his Bachelor's degree in Civil Engineering from McGill University (Canada) in 1997, and his Master's and Doctoral degrees in Civil Engineering from Queen's University (Canada) in 1999 and 2003, respectively. He joined Queen's University as an Assistant Professor in 2003, and in 2008 took up his current position in Edinburgh. Dr. Bisby's research background is in the use of fibre reinforced polymer (FRP) materials for reinforcement and strengthening of concrete structures, with a current emphasis on the performance of these systems at high temperatures or in fire. Other research interests in this area include column strengthening with FRP wraps and beam and slab strengthening with near-surface mounted systems. More recently, Dr Bisby has initiated research to study the fire performance of unbonded post-tensioned concrete structures, ultra-high-performance FRP-prestressed precast concrete structural elements, and textile reinforced mortar strengthening systems.