Tim Heistermann
Luleå University of Technology

2012-03-14

ABSTRACT OF WORK

I am currently working on a RFCS project called *COMPFIRE*, which involves several European universities and industrial partners. The objective of this project is to develop a comprehensive component-based design methodology for composite joints against fire. Fire tests have been carried out on joint components, structural subassemblies and demonstration structures.

My particular focus is on the component behaviour of reverse channel connections. The reverse channel appears to have a high ductility in beam to column assemblies due to its possibility to develop catenary action and deformation of the web channel. In order to characterize the behaviour of the composite joint components and develop simple temperature dependant models of composite component behaviour, constant temperature tests have been performed at The University of Manchester, University of Coimbra and The University of Sheffield. The test data is analysed by extensive finite element simulations. They comprise 3 dimensional models, including contact behaviour, temperature dependent material properties and mesh refinement. Based on the verification of the performed tests, an extensive parametric study has been carried out in order to develop simplified models and to investigate the impact of no. of bolt rows, bolt spacing, endplate thickness, reverse channel thickness and temperature on the resistance and ductility.