COST Action C26
Urban habitat constructions under catastrophic events
Working Group 1 – Fire resistance

Progress report

The members of the working group presented their work internally during Delft meeting (14 presentations), where the following main research topics were defined as: Fire model, Connection modelling, Member behaviour, Material simulation, Fire after earthquake, and Global analyse.

During the Praha Workshop march 30-31, 2007 presented the members the work on national projects on posters (Connection modelling in fire, Burgess I., *United Kingdom* ; Mechanics of tensile membrane action, Burgess I., *United Kingdom*; Fire analysis on steel portal frames damaged after earthquake according to performance based design, Faggiano B., Esposto M., Mazzolani F.M., & Landolfo R., *Italy;* Precious and cossfire: two RFCS projects on joints subjected to fire, Franssen J.M. & Hanus F., *Belgium*; Numerical analysis of beam to column connection at elevated temperatures, Kwasniewski L., *Poland;* Stainless steel structural elements in case of fire, Lopes N., Vila Real P.M.M., Simões da Silva L., *Portugal* & Franssen J.-M., *Belgium;* Fire design of composite steel-concrete columns under natural fire, Pintea D. & Zaharia R., *Romania;* Variations of forces in a real steel structure tested in fires, Sokol Z. & Wald F., *Czech Republic* ; Analytical model for the web post buckling in cellular beams under fire , Vassart O., *Luxemburg*, Bouchaïr H. & Muzeau J.-P., *France*; Temperature of the header plate connection subject to a natural fire, Wald F., Chlouba J. & Kallerová P., *Czech Republic*; Temperatures in unprotected steel connections in fire, Wang Y., Ding J., Dai X.H. & Bailey C.G., *United Kingdom;* Steel framed structure under fire loading, Drabowicz Z., Kwasniewski L., *Poland. ).* During the Workshop oral presentations for the other WG were limited to the main research topics presented only (Introduction by chairman of WG1, *F. Wald;* Connection modelling, *I. Burgess*; Members behaviour, *N. Lopes;* Fire after earthquake, *B. Faggiano;* Global analyses, *M. Gillie;* and State of the art and invitation to poster session, *Y. Wang*). For the STSM was recommended the Mission of Mrs. Petra Kallerová from CTU in Prague to TU Sheffield in April 2007. The nest meeting will be focussed to the preparation of the presentation of common progress on work on selected research topics at Seminar 2008 for audience outside the WG. The interest of the government, fire brigades, is expected to motivate. The focus on mechanical properties of the materials after fire and the continuity of COST C17 Built Heritage: Fire Loss to Historic Buildings by the Hungarian partner.

During the Timisoara meeting, 26-27 October 2007, the working group focussed into Preparation of the Technical sheets for Action Seminar 2008. Each WG member presented his possible contribution to the Technical sheets for Action Seminar. The following subject with responsible colleagues/contributors was found. Performance based design (Wang/Wald/Heinisuo), Fire modelling (Wang/Santiago/Fransen), Material simulation (Pintea /Kaliske/Bacinkas/Török/Thomopoulos), Member behaviour (Lopes/Drabowicz/Veljkovic/Vila Real/Both), Connection modelling (Buick/Burges/Wang/Wald/Santiago), Global analyses (Gillie/Kwasniewski/Datoussaïd), Fire after earthquake (Faggiano/Zaharia/Pintea), Fire design in Europe (Heinisuo/All members), Existing buildings and fire design (Nigro/Hajpál/All members), Building after fire (Wang/Török/Wald), Robustness of structures (Wald/Sokol). For fire lexicon Prof. Wang prepared 73 words including explanation and figures based on EN ISO 13943: 2001 Fire safety - Vocabulary.

The meeting in Vilnius 11-12 April 2008 was focussed to finalise the Technical sheets for Action Seminar 2008. The topics were précised. The focus of WG to problems of fire safety of

existing buildings, to the cooperation to the public authorities, benchmarks, and key studies were discussed.