



State of Art & Future Activities

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Remit of WG1

- Structural Fire Engineering?
- Fire Resistance?
- Fire Safety Engineering?

Fire Resistance

- Insulation: practically predictable if (1) thermal properties of materials are available; (2) no coupling with load bearing/integrity.
- Load bearing: focus of virtually all presentations.
- Integrity: very little information generally. Is it predictable?

Predicting Structural Temperatures

- Thermal properties of insulation materials under different heating conditions (e.g. parametric fires)
- Durability of fire protection materials
- Stability of fire protection materials

Structural Fire Responses

- Structural materials: steel, concrete, timber, masonry, aluminium, composite
- Structural components: beams, columns, slabs, connections
- Whole structures
- Combination of hazards
- Risk assessment

Future Activities

- COST C26 WG1 comprehensive state of art report on fire resistance
- Identification of generic research topics addressing bottle neck issues for application of EU/National research funding
- Education & practical applications

Welcome to Poster Session

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Variations of fire

Using an analytical model of the additional heat is added to the standard design situation. These heat sources are: fire, smoke, and fire. The paper presents the results of the numerical analysis of the fire, smoke, and fire.





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Temperature of header plate connection subject to a natural fire

The paper presents the experimental programme and provides the temperature curves development in the fire compartment and the primary and secondary beams and the header plate connection. Comparisons are also made between the test results and the design fire prediction (ISO 834).





Fire compartment



Gas temperature



Connection temperature



Poster Session

- Connection modelling in fire Burgess I., *United Kingdom*
- Fire analysis on steel portal frames damaged after earthquake according to performance based design, Faggiano B., Esposito M., Mazzolani F.M., & Landolfo R., *Italy*
- Precious and cossfire: two RFCS projects on joints subjected to fire, Franssen J.M. & Hanus F., *Belgium*
- Behaviour of a cast in-situ concrete structure during a compartment fire, Gillie M. & Stratford T., *United Kingdom*
- Non-linear modelling of reinforced concrete beams subjected to fire, Gribniak V., Bacinskas D., & Kaklauskas G., *Lithuania*
- 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*
- Some remarks on the simplified design methods for steel and concrete composite beams, Nigro E. & Cefarelli G., *Italy*
- 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*
- Class 4 stainless steel box columns in fire, Uppfeldt B. & Veljkovic M., *Sweden*
- Analytical model for the web post buckling in cellular beams under fire, Vassart O., *Luxemburg*, Bouchair 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*
- **New generation of concrete reinforcement**, Sitkiewicz Z., *Poland*



Thank you for your Attention

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