

## COST TU 0904 – SCIENTIFIC REPORT

Subject: Short Term Scientific Mission

Name: Numerical modelling of steel and concrete composite structural members in fire situation

Reference: ECOST-STSM-TU0904-180413-0294-20

Short mission dates: From 18 April 2013 to 24 April 2013

Visitor: Dr. Ing. Gisèle BIHINA, Centre Technique Industriel de la Construction Métallique (CTICM), France, [gbihina@cticm.com](mailto:gbihina@cticm.com)

Host: Prof. Dr. František WALD, Faculty of Civil Engineering, Czech Technical University (CTU) in Prague

During the stay of the visitor, following aims were reached:

1. Attendance to the COST meeting

The visitor had the opportunity to attend the Prague meeting held from 18 to 19 April 2013 at CTU. The meeting focused on two workpackages, namely WP4: Benchmark studies, and WP6: Topics for upgrades to Eurocodes.

2. Attendance to the Application of Structural Fire Engineering international conference

This conference was also held at CTU, from 19 to 20 April 2013 and involved different countries, either European, Asian or American. The conference was divided into different sessions regarding the fire behaviour of steel, concrete and timber structures via several presentations.

3. Numerical modelling of the behaviour of concrete with ANSYS

The visitor stayed at the Civil Engineering Department of CTU from 22 to 24 April 2013 with Prof. WALD and different Ph.D. students of the fire research group. A presentation of the numerical simulation of a fire test on a fibre reinforced concrete slab connected to timber beams was made by Mr Petr Vymlatil and Ms Eva Horova. This fire test was carried out in the scope of the ongoing Ph.D. work of Ms Horova who aims at proposing a model for such type of composite structures. Via the aforementioned presentation, the visitor could improve her knowledge about finite element modelling of concrete using ANSYS code. It must be noted that both concrete and timber are still being paid much attention by researchers due to the lack of available data on their very specific behaviour, especially in a fire situation.

The visitor also took the opportunity of her stay at CTU to carry some numerical simulations on the basis of existing ANSYS concrete models with temperature dependent properties. This can lead to an improvement of the current finite element models of steel and concrete composite structures developed by CTICM engineers.