

STSM Scientific Report

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Host name: prof. Yong Wang, The University of Manchester, United Kingdom

STSM Topic: Heat Transfer in Fire

Period of the STSM: 17/5/2012 to 26/5/2012

Purpose of the STSM:

The main purpose of the STSM was to analyse results of fire tests, which took place in Czech Republic and United Kingdom under the auspices of both universities and results are also analysed together. The biggest problem – specification of heat transfer coefficient and emissivity of steel members during fire tests was discussed. After improving values of these variables were reached better agreements of results of measured temperatures during fire and analytical and numerical models.

The goal of this STSM also was to visit fire laboratories at The University of Manchester and consult experiences with fire experiments in different countries. Very important part of the STSM was a discussion with team of researchers, who are interested in fire design and fire experiments.

Description of the work carried out during the STSM:

During the STSM were improved calculations to gain better results. At the first step was necessary to improve analytical models with different heat transfer coefficient and emissivity in accordance to newest knowledge in this topic. Then was improved numerical model in accordance to analytical model and results were compared. The same process was applied to results of fire tests, which took place in Manchester and both were compared.

The part of my work was to make study of sensitivity due to emissivity and heat transfer coefficient.

Description of the main results obtained:

The main result was specification of heat transfer coefficient and emissivity of fin plate and reverse channel connection during fire test in Czech Republic and United Kingdom. Very important result also was improving of analytical and numerical models in accordance to results of both fire tests.

Future collaboration with host institution:

In future is collaboration of both universities necessary. It is very important to unify all variables and inputs into numerical and analytical models to get comparable results.

In Prague 5th June


Jiri Jirku