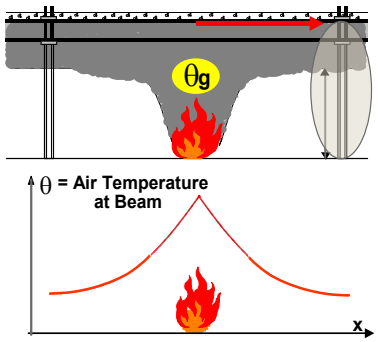
TEMPERATURE ASSESSMENT OF A VERTICAL STEEL MEMBER SUBJECTED TO LOCALISED FIRE PROJECT (LocaFi)

Goal of the project

The main goal of the project is to improve the existing knowledge on the effects of the localized fires in a building compartment. With the actual methodology included in the Eurocodes for the fire design of buildings, it is only possible to assess the temperature of a steel element in the vertical axis of the localised fire. It is impossible to asses the temperature or the flux received by a vertical member at a given distance of the fire source.

Short description of the project

The project is devoted to the development of an analytical model for the calculation of the temperatures in the vertical structural steel elements of a building, subjected to localised fires.
The new method, developed by means of experimental and numerical research, will provide the fluxes received in any point of a building compartment subjected to a localised fire.



Project implemented by

- ArcelorMittal Luxembourg (coordinator)
- Centre Technique et Industriel de la Construction Métallique, France
- Politehnica University of Timisoara, Romania
- Universite de Liege, Belgium
- University of Ulster, Ireland

Implementation period

01.07.2012- 30.06.2015

Fields of interest

Design of buildings in fire situation.

Financed through/by

Research Fund for Coal and Steel - RFCS

Research centre

Research Center for Mechanics of Materials and Structural Safety - CEMSIG

Main activities

- Collection of the different national annexes and national parameters for the application of the Natural Fire Models in different European countries and implementation of theses parameters in a Software;
- Definition and realisation of laboratory tests assessing the effect of the real flame emissivity for element engulfed into the fire;
- Definition and realisation of laboratory tests assessing the fluxes received by an element subjected to localised fire but not engulfed in the fire;
- Development and validation using CFD models of simplified analytical model for the evaluation of the fluxes received by an element in any point of a compartment;
Implementation of the developed analytical model in a user-friendly tool;
- Redaction of a design guide for the application of the new methodology including design examples.

Results

Design procedures based on the analytical models developed within the project will be proposed.

Applicability and transferability of the results

The analytical models developed within the project will be introduced in a user friendly software and in an advanced calculation model for fire design, in order to offer a large utilization of the procedure for the construction market.

Research team

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