

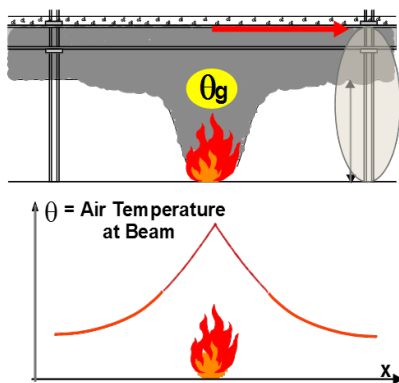
TEMPERATURE ASSESSMENT OF A VERTICAL STEEL MEMBER SUBJECTED TO LOCALISED FIRE PROJECT (LocaFi)

Goal of the project

The main goal of the project, ended in 2015, was 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 assess 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

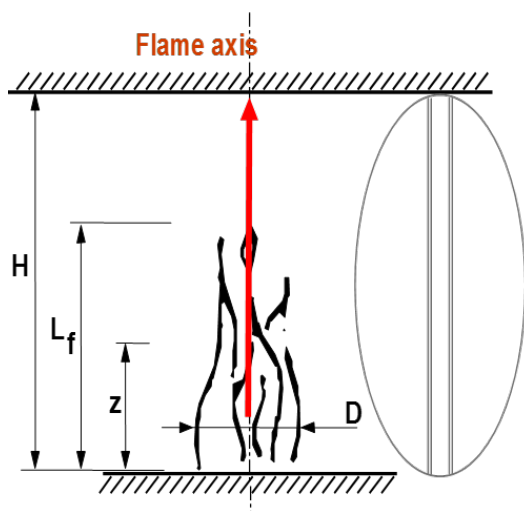
01.07.2012- 30.06.2015

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 these 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

The design procedures based on the analytical models developed within the project are proposed to be implemented in the Eurocodes.



Applicability and transferability of the results

The analytical models developed within the project were 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

Assoc. Prof. Raul Zaharia, PhD
Prof. Acad. Dan Dubină, PhD
Lecturer Dan Pintea

Fields of interest

Design of buildings in fire situation.

Education is not the filling of a pail, but the lighting of a fire”
William Butler Yeats

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Research centre

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