



FISHWALL PROJECT

Fire and seismic performances of hybrid fire walls in case of single-storey industrial and commercial steel buildings



It is well known that the intrinsic fire resistance of single-storey unprotected steel-framed buildings is largely sufficient to guarantee the evacuation of occupants in the event of fire. In consequence, for this type of buildings, the main concern of national fire regulations in Europe is how to prevent the spread of fire to the whole building platform. To achieve this objective, two performances are usually necessary, namely, the appropriateness of constructive systems to avoid any risk of progressive collapse between fire compartments in case that the collapse of fire exposed part of the structure occurs, and the efficient separating function of fire walls to limit the fire inside the initial compartment. In practice, many constructional solutions can be implemented to ensure above performances and one of the most used solutions is to place, by means of "fusible" links, a non-loadbearing fire wall between two independent steel structures. In case of fire, these fusible links allow the wall to be disconnected, on the one hand, from the structure affected by fire and to be remained adequately fixed, on the other hand, to the steel structure on the other side of the wall and therefore not exposed to fire. However, due to the lack of corresponding scientific evidence though the feedback recollected from real fires is very positive about the performance of such type of solutions, questions are still being often raised about its real adequacy in fire situation, which, in certain cases, has also to provide an enough seismic resistance, if they are used in seismic areas. Thus, the investigation of the seismic behaviour of the fusible links and how they interact with the steel structure under the seismic action is paramount to conceive an effective solution that can be also employed in seismic-prone regions.

Currently, concrete or masonry wall solutions are frequently used for the compartmentation of buildings,

predominately for low-rise commercial and industrial steel buildings. Nevertheless, as an alternative solution, the fire walls with lightweight sandwich panels (comprising two thin flat metal faces and an insulated core) offer numerous benefits in comparison to other solutions, including fire resistance, durability, flexibility, easy dismantling and fast construction times. In addition, they provide the possibility to have a complete steel-based solution for single-storey industrial and commercial buildings. However, particular attention has to be paid to constructional detailing of such type of wall solutions when they are implemented in single-storey buildings with unprotected steel structure.

In this context, the FISHWALL project funded by the research Fund for Coal and Steel (RFCS) was conducted to develop design guidance and recommendations for an innovative hybrid fire wall solution based on lightweight steel-faced sandwich panels associated with unprotected steel structure capable of filling the necessary performance requirements under both fire and seismic actions.

The present technical workshop is organised by the consortium of the EU-RFCS funded research project FISHWALL. The results of this project will be presented during this full-day event.





PROGRAMME

- 9:00 - 9:30 ➤ Registration
- 9:30 - 9:45 ➤ Introduction and overview of the FISHWALL project
CTICM
- Experimental campaign – Results and exploitation of fire tests**
- 9:45 – 10:00 ➤ Fire walls with large span sandwich panels
JORIS IDE
- 10:00 – 10:20 ➤ Sliding fire door systems with door frame in steel structure
PAVUS
- 10:20 – 10:40 ➤ Steel members protected by sandwich panels
EFFECTIS
- 10:40 – 11:00 ➤ Sandwich panel fire wall with steel purlins penetration
PAVUS
- 11:00 – 11:20 ➤ Sandwich fire wall associated with "fusible" links
CTICM
- 11:20 – 11:40 ➤ Material tests on aluminium bolts
CVUT
- Experimental campaign – Results and exploitation of Seismic tests**
- 11:40 – 12:10 ➤ Fusible links
UNITN
- 12:10 – 12:30 ➤ **Question and answer session**
- 12:30 – 13:45 ➤ **Lunch**
- Numerical modelling and parametric analyses**
- 13:45 – 14:30 ➤ Fire performance assessment of steel structures associated with partition fire walls using "fusible" links
CTICM/CVUT
- 14:30 – 15:10 ➤ Seismic performance assessment of steel structures associated with partition fire walls using "fusible" links
UNITN
- 15:10 – 15:30 ➤ **Break**
- Design guide of fire walls using sandwich panels**
- 15:30 – 16:00 ➤ Design guidelines and rules
BRIAND
- 16:00 – 16:40 ➤ Constructional details
EMB/CTICM/ EFFECTIS
- 16:40 – 17:00 ➤ **Question and answer session**
- 17:00 ➤ **Meeting close**



WHO SHOULD ATTEND?

This workshop will be of interest to design offices, architects, project owners, control offices, national authorities, steel constructors, steel envelope manufacturers, sandwich panel manufacturers.



PARTICIPATION IS FREE BUT REGISTRATION IS MANDATORY

As the number of participants is limited, places will be allowed according to the registration date.

REGISTER HERE



DOCUMENTS AND WORKSHOP DELIVERABLES

Power point presentation materials and all the technical documents will be made available to attendees.