



COST Action TU0604
Integrated Fire Engineering and Response



RELIABILITY OF STEEL ROOF STRUCTURES OF THE SPALADIUM SPORTS HALL IN CASE OF FIRE

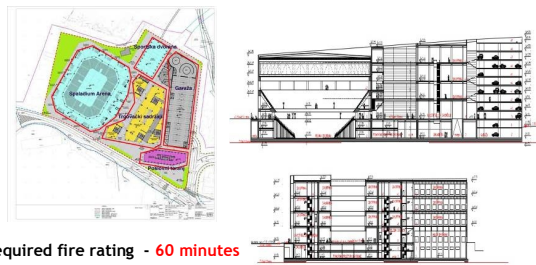


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SPALADIUM ARENA is a multi-purpose hall

- surface area of 28.500 m²
- 12,000 seating capacity.

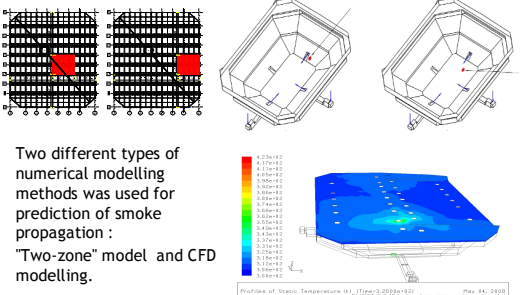
handball, basketball, tennis, volleyball, boxing, motocross, trade fairs, conventions, exhibitions and concerts



Required fire rating - 60 minutes

Creete meeting, 14 - 15. 10.2011.

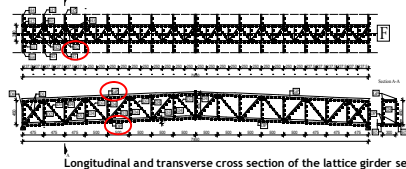
CONSIDERED DESIGN FIRE SCENARIOS



- Two different types of numerical modelling methods was used for prediction of smoke propagation :
- "Two-zone" model and CFD modelling.

Creete meeting, 14 - 15. 10.2011.

MECHANICAL RESPONSE OF STRUCTURE



Longitudinal and transverse cross section of the lattice girder section


Position	β	β_{fi}
GP	4.2	2.0
DP	4.0	2.0
H2	2.2	2.0

Calculated values of the safety index β show that the elements of the load bearing roof structure are higher than the codified values of the safety index β_{fi} in case of fire, thus the reliability of the designed structure is proved.

Creete meeting, 14 - 15. 10.2011.

CONCLUSIONS

- with the aim to optimise the construction cost, succesfull combination of prescriptive and performance based design was used for the roof structure thermal response and for the smoke movement prediction in the evacuation phase of Spaladium arena



Creete meeting, 14 - 15. 10.2011.