

COST Action TU0904
Integrated Fire Engineering and Response
Meeting at Technical University of Crete 14 - 15 October 2011

SAFETY ASSESSMENT OF STEEL STRUCTURE OF SINGLE-STOREY INDUSTRIAL BUILDING AFTER A LOCAL FIRE

WG1 – Zenon Drabowicz, University of Warmia and Mazury in
Olsztyn, Poland,

WG2 – Paweł A. Król, Warsaw University of Technology,
Poland

Single-storey, two-bay industrial steel-framed building with columns rigidly mounted in the foundation and roof trusses pivotally supported on the columns was subjected to a local fire.

Some polypropylene tanks stored in piles near the extreme pillars of the left side of the building has completely burned.

Steel construction of the hall was not protected against the fire temperatures at all.



Main structural components of the building have been subjected to high temperatures of varying degrees, depending on their location in the structural system.

None detailed data are available regarding either the time-length of the fire itself or the distribution of the temperature field. Local Fire Department has not provided this sort of information.



CONCLUSIONS

- The design project of the presented building haven't included any calculations, or guidance on fire protection, and steel structure was not protected against fire at all.

- Fire Service has not specified the temperature field distribution in fire-stricken areas. In Polish realities they are not used to do it, in general.

- In case of new buildings (including also existing ones, for which the change of function is possible during their lifetime) it should be obligatory to determine how the high temperature may influence the structure, and execute the project design taking into account the real fire-load density and specifying the necessary fire protection.
- State Fire Service should at least in approximate range determine the temperature field distribution in fire-stricken premises.

COST Action TU0904
Integrated Fire Engineering and Response
Meeting at Technical University of Crete 14-15 October 2011

THANK YOU FOR YOUR ATTENTION