Report of the EUSAS workshop on

"Smoke Propagation and Smoke Control in Buildings"

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1. General

The workshop was held on June 20th-21st, 2002, at the main building of the Vienna fire brigade. Mr. Steinkellner as head of the Vienna fire brigade, which is the oldest professional fire brigade in the world, opened the workshop.

The topic of the conferences were introduced by the president of EUSAS, Pr. Luck and afterwards the sessions were conducted by the chairmen M. Schnell from the VdS and R. Pamlitschka, from the Professional Vienna Fire Brigade.

2. Organisation and Performance

10 technical papers were presented by experts from Germany, Austria, Switzerland,. UK and Belgium. 53 participants (including the speakers and chairmen) registered for the workshop. This number and the rather intensive discussions, which were raised among the experts showed that subjects and the speakers were chosen carefully. The technical contents of the papers covered both theoretical based topics as well as important practical aspects. Thus the audience was introduced effectively into this important subject without being superficial. The workshop was structured into the following sessions.

3. Sessions

Status of CFD-, Zone- and analytical models

As a result from a co-operation of the Gerhard-Mercator-Universität Duisburg and the National Institute of Standards and Technology a paper was given by C. Rexfort describing a CFD model taking into account coagulation effects which was verified to some extent with an open EN54 test fire. Prof. Schneider from the Technische Universität Wien then showed a couple of examples of smoke calculations using a multi-room fire model and other tools which were applied to simulations on railway stations, tunnels and industrial halls. Another topic was covered by Dr. Covelli, Tecova AG, who described the reaction processes in the fire itself on the basis of physical modelling based on energy and momentum balances for instance. The possibility of using or misusing CFD calculations was then discussed in detail by R. Chitty of BRE. O. Knospe from the Institut für Industrieaerodynamik finally reported about experiments dealing with the mixing effects of smoke plumes and air which lead to a controversial discussion about the full applicability of the study.

Hot Smoke Tests

One reason for hot smoke tests in buildings is the search for an answer to the question if such a building will be safe in case of fire. A number of examples on smoke layer formation in addition to the problems associated with such a method like the proper visual assessment of the tests were given by Dr. Seifert from the Fraunhofer-Institut UMSICHT. It was made clear that quality criteria's are important for such tests. Dr. Morgan of the FRS then described a couple of additional important aspects (such as possibilities for downscaling of tests) and some impressive case studies in large buildings like the Brussels airport and the European parliament.

Practical aspects, standardisation and case studies

In the last session J.-C. de Smedt gave on behalf of his company a lecture on projects on fire safety for two new large airport terminals, which were made in co-operation with the FRS. He described in an overview the risk analysis and the simulations performed using various simulation programs. F. Peter from the Vienna professional fire brigade reported about the status, problems and ongoing developments with and concerning Austrian standards and guidelines for smoke and heat exhaust ventilation systems. Prof. Ostertag from the Technische Universität München finally described in a study the physical background of measures against smoke penetration into staircases on the basis of a project dealing with such a situation in a post office tower.

4. Remarks from the secretary

If there is an interest to get in touch with a speaker directly for more details of his paper please contact the secretary under secretariate@eusas.ch.