

The Students' View of the Third Training School: Advanced Fire Engineering in Practice

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It is with great pleasure that we report to you on our experiences at the COST TU0904 IFER Young Researchers' Training School Pt III. The training school was held in Luleå, Sweden between 12-15 March 2014; the purpose of which was to broaden the research background of the participants.

The participants were introduced to the views of some leading researchers and practitioners, invited to present their work on benchmark studies and then challenged to understand and use different software modelling tools. The aim of the COST TU0904 Action was to develop the next generation of leaders in fire engineering research and practice across Europe. We, the young researchers are pleased to report that the school was a success and far exceeded the intended targets.

After multiple connecting flights, we each touched down on an icy Luleå Airport and got settled in for what promised to be an educational training school. The school turned out to be truly international, with participants from a wide range of countries, including Sweden, Czech Republic, UK, Poland, Romania, Italy, Portugal, Greece and Slovenia to name just a few.

We were warmly welcomed by **Ulf Wickstrom** at Luleå Technical University on the first day and after catching up with old friends, we settled down to the first day of the school. This took the form of the students' presentations on individual benchmark studies and dissemination of our papers within the COST validation and verification publications. After 28 individual benchmark studies presented by the participants, we were then briefed by **František Wald**, **Ian Burgess** and **Florian Block** on the task which lay ahead of us over the coming days.

This third training school took the ambitious step of setting an example building fire design scenario, devised by Florian. In the building scenario, the effects of a localised fire were investigated, with a holistic approach taken to examine smoke movement, people evacuation and structural response of the building. The software programs used for each of these aspects were FDS, SMARTMOVE and LS DYNA, respectively.

The action dinner was held on the evening of the first day, within the surroundings of the university staff room. All present were treated to local dishes, served with a warm smile by local undergraduate civil engineering students. During dinner, the 31 participants were broken into nine groups and allocated varying input parameters for the design scenario. Each group quickly got busy with their first main task, to beat off competition and conjure up the most imaginative team name!

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Early on the second morning, the hard work got under way through a series of introductory lectures, followed by hands on tutorial sessions with the software. **Tomaz Hozjan** kicked off proceedings with a lecture on structural behaviour, followed by **Marta Sitek** providing a background and tutorial for LS DYNA. **Shrikant Sharma** provided an introductory lecture to people movement in the case of fire and **Joakim Sandström** rounded off the lectures with an introduction to fire dynamics and heat transfer. The theory and tutorials of FDS and SMARTMOVE were provided by **Wolfram Jahn** and **Martin Henriksen**.

Over the following two days, the participants worked through tutorials and developed their case study with the use of the three available software packages. The overall aim was to come up with design recommendations based on the group's analysis of the building scenario. This was then to be presented to the international expert panel for critique and feedback. To the eventual winners, was the promise of prestige and honour.

The competition was fierce between groups, with team members forming strong bonds and working late into the night - with several very fortunate to catch the last bus home. The next day, after another morning of intense work, there was a welcome break in the form of an afternoon long 'non-technical excursion'. Participants explored the Subarctic surroundings and the city of Luleå, before returning to the university to continue with their analyses.

On the morning of the final day the results were interpreted and group PowerPoint presentations composed. Each group presented their findings to a very high standard. It was clear that the high quality of teaching and training had enabled each participant to come to grips with the aspects examined. Every group completed the three types of analysis and it was interesting to learn of how the safety of persons and integrity of the structure changed with the different input variables used.

The participants were then brought together for the closing session and presentation of certificates, including the coveted winners' diplomas. The eventual case study winners, group 'Spotifire' took the title, just ahead of the 'Fuego Mechanikaras'. In truth however, every participant of the event departed Luleå a winner due to the knowledge and experience gained.

There is no doubt that the strong bonds and networking contacts made between participants and experts will bear fruit over the decades to follow. This will not only be of benefit to the fire engineering profession, but far more importantly, to ensure the life safety of the persons and emergency services who may find themselves within the vicinity of structures exposed to fire in the future.

On behalf of all the participants, thank you to the staff and students of Luleå Technical University for their warm hospitality. We would also like to thank all of the experts and the organising committee for making this event so rewarding and enjoyable. Their dedication and hard work was clearly evident and was very much appreciated by each of the participants.

Thank you.

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