International Association for Fire Safety Science

Newsletter

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Editor: James Mehaffey
jim.mehaffey@ott.forintek.ca

The year 2005 is now with us and promises to be an exciting one for everyone in the Fire Safety Science and Engineering Community. The past six months has seen great activity leading towards the 8th IAFSS Symposium in Beijing this coming September. The organisation of the event is in the capable hands of the China Fire Protection Association, under the direct supervision of the Secretary General, Mr Yin Tielin. Carole Franks and I took the opportunity to visit Beijing last September to discuss the arrangements with Mr Yin and his colleagues. We were shown the principal venues and facilities, and taken to several hotels which will be available for the delegates. Everything is now in place for a truly memorable meeting. It is perhaps worth pointing out that of the wide range of accommodation that is offered, that which is available on campus is of high quality and excellent value for money. Full details may be found in the "Invitation to Register" brochure which will be available very shortly (it will be possible to download it from the IAFSS and the 8th Symposium websites). An exciting programme of events for accompanying persons is being finalised.

As Dr Craig Beyler reports in this Newsletter, there has been an outstanding response to the Call for Papers. Since the beginning of December, he has kept the Programme Committee informed of the number of submissions. This increased from 80 to over 300 over a matter of a few days before the gate was closed – a record number submitted for an IAFSS symposium. This is most encouraging, showing not only that there is great interest in this particular meeting but also that, against the odds, fire research is alive and well despite the funding problems that are being experienced world-wide. Craig and his colleagues at HAI are to be congratulated for setting the system in place which allows such large numbers of papers to be processed quickly and efficiently. The Session Chairs now have the responsibility of shepherding the papers through the next stage of the process – reviewing, which is without doubt the most important process in ensuring a Symposium of the highest standard. I would like to add my thanks to all those who will be devoting their time and effort to allow us to achieve this goal.

At the Beijing Symposium, awards will be given for the first time to three students who have successfully defended their research dissertations during the three year period up to 30th September 2004. There will be one award for each of the three regions – the Americas, Europe and Africa, and Asia/Australasia. As I write, the Awards Committee is working hard under the chairmanship of Professor Mario Fontana to select the three winners from a total of 17 dissertations submitted by the research supervisors (5 from Asia/Australasia, 7 from Europe/Africa and 5 from the Americas). This is not an easy task, and I would like to thank all those who have been involved in the review process for their help in this new venture – particularly the "local" coordinators, Professor Toshi Hirano, Professor Geoff Cox and Professor Pat Pagni.

I would like to finish by sending you all my best wishes for a happy and prosperous New Year. Let us take advantage of the huge interest in the 8th Symposium by encouraging our friends and colleagues in Fire Safety Science to take up membership of the IAFSS. In that way, the Association would be guaranteed a prosperous New Year as well as a long and happy future.

Dougal Drysdale

In this issue

China Fire Protection Association New Address:

Please note that the China Fire Protection Association (organisers of 8th IAFSS Symposium) has moved. The new contact information is:

China Fire Protection Association
5th FL, Fire Station, No. 19A, Huawei Xili, Chaoyang District, Beijing 100021, P. R. China

Tel: +86-10-87789260
Fax: +86-10-87789267 or +86-10-87789261
E-mail (general affairs): cfpa-gjb@126.com
E-mail (for 2005 IAFSS Meeting): iafss2005@126.com or iafss2005@china-fire.com.cn

Over 300 papers and posters submitted to the 8th IAFSS Symposium

The deadline for paper submissions to the 8th IAFSS Symposium has passed and over 300 papers and posters have been sent to reviewers for evaluation and comment. Papers were received across the full range of fire science topics from countries from around the globe.

This symposium is the first to use a fully electronic web-based submission and review process. Papers were submitted via a dedicated website and reviewers were notified of their duties via email. Reviewers will download their assigned papers from the website and provide their evaluations and comments electronically at the website. Most of the program committee's work in selecting papers after the reviews are complete will occur online or via email.

This process promises to shorten the time required for review. All reviewers have been encouraged to complete their reviews promptly and papers will be acted upon as quickly as possible. This will provide authors with timely notice of action on their papers. We plan to complete the entire review and notification process well before the May 2005 deadline and will be looking to accepted authors to complete their revisions work in a timely fashion as well.

Upon acceptance of papers and posters, authors will be provided with comments from both the technical reviewers and from our proceedings editorial staff, Dan Gottuk and Brian Lattimer. Most authors have used the template provided on the website and this has resulted in good initial formatting that will speed publication of the proceedings. Authors will be required to provide a disposition of comments that indicates the author's plan in responding to reviewer comments. After the disposition has been approved by the track chair who assigned the reviewers, the final camera-ready copy will be submitted by the authors. Authors will be asked to provide these needed documents within a scheduled period beginning at the acceptance date. The camera-ready copy will be used to prepare the CD that each symposium attendee will receive at the symposium, as well as for the hard copy symposium volume to be produce after the symposium.

Authors and reviewers have and will spend countless hours in producing and peer reviewing the contents of the 8th IAFSS symposium. We thank them all for their tireless efforts that will make the symposium a success. This symposium promises to be an exciting and productive gathering of fire scientists and practitioners that will move fire safety science and global fire safety forward. We look forward to seeing all of you in Beijing.

Craig Beyler, Program Committee

What is "fire"?

For a long time I have been worried about the formal definition of "fire" as a phenomenon (not an event). What once appeared in ISO definitions and other international documents as well as in British and other national standards was or was a slight variation on "a combustion system that emits heat, light and smoke".

There are now new definitions in ISO 13943 "Fire Safety – Vocabulary" in English, French and German. The English definitions of "fire" are now:

1) Fire (controlled), "feu" in French and "Feuer" in German:
"Self supporting combustion which has been deliberately arranged to provide useful effects and which is controlled in its extent in time and space."

2) Fire (uncontrolled), "incendie" in French and "Brand" in German:
"Self supporting combustion which spreads uncontrolled in time and space."

Combustion is defined separately by "exothermic reaction of a substance with an oxidizer."

This document is now itself being revised!

Of course there is a sense in which those working in the field do not nor need to bother with terminology. We know or think we know what is meant. But definitions are sought by legal systems so that people not in the fire field ask those that are to provide definitions.

But is it satisfactory to define fire in these ways? We are an Association with "fire" and "science" in our title so it is incumbent on us to support these definitions or provide better ones.

There are problems of course. An English smoker asks for "a light" – a French one asks for "feu". A "bonfire" is a good fire, but what is a candle, the flame from a Bunsen burner, a flame fed by a pressurized fractured fuel pipe and so on?

It is inappropriate to comment on the French and German versions except to point out that despite the distinction drawn between controlled and uncontrolled fire, there is not a one-to-one correspondence between them in compounds, e.g. "fire model", "fire risk", where "feu" often appears in the French version and "Brand" in the German.

Fire Services use a "fire triangle" the apexes of which are FUEL, OXYGEN & HEAT. Breaking any one of the three connections leads to extinction. This is nearer to what is required but there are two features missing.

There is an ambiguity in FUEL (not defined). The combustion zone transfers heat back to the condensed phase to produce gaseous fuel and the air is entrained by the combustion zone: there are no taps. I suggest something encompassing the thought that fire includes a gaseous combustion zone which has no taps, is self sustaining until the fuel or the oxygen runs out or the links in the triangle are broken. Gaseous combustion without taps is surely the core of the definition. The only formal reference to any part of this idea was put by Morton over 40 years ago. One great advantage of this definition is that it separates fire from fire tests (also not defined). So, are the words "controlled" and its opposite, and "self sustaining" the right ones to use? The UK fire service uses "control" for a fire under their control before extinction. Both definitions refer to events not phenomena.

As an Association we cannot be indifferent to the science of fire, so I am suggesting we point out the problem to those bodies which do get involved in terminology and its standardisation. This seems to me the least we can do. And if we don't who should?

Another problem word is "flashover" of which there seem to be several definitions. The fire services seem to stick to a gas phase definition, and yet the ISO and other definitions refer to fire spread and fuel surfaces. These are – to me – not alternatives but different types of flashover: the essence is "flash" and "over" – "overhead" and "over surfaces" are two varieties. ISO 13943 does refer to "transition", but it could be "slow" or "fast".

Philip H. Thomas

The World Fire Statistics Centre

OBJECT AND HISTORY

The World Fire Statistics Centre's main concern is to persuade governments to reduce national fire costs.

The Centre has been supported for many years by the Geneva Association (the International Association for the Study of Insurance Economics). During 1975-78 the Association sponsored a research study at Sussex University by Tom Wilmot. His report, *European Fire Costs - the Wasteful Statistical Gap*, contained a methodology for calculating national fire costs and disclosed that fire was costing around 1% of gross domestic product (GDP) in many leading countries. The report suggested that there was very little political will to reduce national fire costs. Compared with powerful campaigns to reduce road accidents, fire prevention was, he considered, a Cinderella.

The Centre was formed in 1981 to carry forward the work outlined in the report. Since then, a little progress has been made in persuading governments to tackle fire more effectively. Overall, however, fire prevention still remains, in the Centre's view, lacking the political support it deserves, particularly in comparison with road safety.

ACTIVITIES

(a) Statistics

The Centre collects, and presents to a United Nations Committee annually, fire cost statistics under seven main headings from around twenty leading countries worldwide, mainly from Western Europe, but also including, for example, the USA, Japan and Canada. Since the end of the Cold War, several Central European countries have joined the scheme, including Poland, the Czech Republic and Slovenia. During the past three years the scope of the Centre's statistical collection and analysis has expanded to include data on fire deaths in countries of Eastern Europe and other states that were formerly members of the Soviet Union, based on figures published by the World Health Organization (WHO) as part of its annual causes of death enquiry. These figures show an appallingly high rate of fire deaths in several East European countries.

Each annual report from the Centre to the UN forms the basis for a Bulletin with a worldwide circulation of over 300 to relevant government departments, fire protection associations, fire brigades, insurance companies, fire engineers, the trade press and academic fire experts.

These statistics have often proved of use during national reviews of various aspects of fire-related expenditure or organisation; for example the Audit Commission review of the fire services in England & Wales, a Greek study of building protection, a Norwegian study of the incidence of large fires in industry and a New Zealand examination of the risks of death and injury arising from fire. In addition, the Centre's statistics are often referred to in academic works, for example *The Economics of Fire Protection* (Prof. G. Ramachandran, Routledge, 1998).

(b) Seminars

The Geneva Association has helped to organise periodic international seminars, in order to enable the Centre's latest work to be presented and discussed and to provide a forum for other fire experts working in related fields. Over the years the Centre has been represented at many international conferences, eg the International Fire Symposium organised in Luxembourg in 1984 by the EC Commission, in liaison with the European Association of Professional Fire Brigade Officers and the Confederation of Fire Protection Associations - Europe. During more recent years, the Centre has attached increased emphasis to publicising its work, both by issuing a number of press releases and by giving a series of papers or talks at meetings and seminars in Prague, Nottingham, Helsinki, Oslo, Boston, Madrid, Melbourne, Hanover, Singapore, Krakow, Vienna, Minneapolis, London and Moreton-in-Marsh (the UK Fire Service College).

(c) European Initiatives

The Centre has for some considerable time been trying to interest the EC Commission and the European Parliament in the inter-related issues of fire protection and fire costs. For many years these approaches achieved little success. However, a European fire statistics seminar organised jointly with the Federation of European Union Fire Officers Associations (FEU) in Augsburg in June, 2000 ended with agreement on the establishment of a core group, to which the Centre is providing the secretariat, to develop proposals for a European fire statistics database to meet the needs of likely users. Following the analysis of responses to a questionnaire circulated to the core group, a report suggesting possible initial steps towards this objective is being finalised, with publication expected by the end of 2004.

(d) How Academics Can Help

If governments are to be persuaded to lay down a national strategy for reducing fire costs, it needs a united effort by fire experts to point out how needless is most fire wastage and to encourage politicians and civil servants to find ways to cut back this vast loss. Any support given by members of IAFSS (either individually or collectively) would be warmly welcomed.

Any IAFSS member wishing to be put on the circulation list for the WFS annual Bulletin should contact the Geneva Association at www.genevaassociation.org/wfsc.htm

Tom Wilmot and Tony Paish,
World Fire Statistics Centre

NRCC Fire Research Program

The National Research Council Canada's Fire Research Program will focus its strategic research on fire performance evaluation, fire safety of large structures, and fire protection of transportation systems in the next 5 years. Related strategic project areas include:

- Performance of Fire Detection and Suppression Systems
- Material Fire Characterization
- Fire Resistance of Structural Systems
- Development of Design Fires
- Smoke Management in the Built Environment
- Fire Risk and Human Behaviour
- Fire Performance of Houses

The newly-launched NRC Fire Research Program website (http://irc.nrc-cnrc.gc.ca/fr/index.html) provides a detailed description of the strategic direction. It also contains information on research publications, services, facilities, organization and staff.

Joseph Su,
National Research Council of Canada

Education in Fire Protection of Buildings – University of Coimbra, Portugal

In October 2005, the first programme in Fire Protection of Buildings will be introduced at the University of Coimbra. This programme will be coordinated and developed through a partnership between the Department of Civil Engineering at the University (DEC/FCT UC) and the Portuguese National Laboratory of Civil Engineering (LNEC). In this first edition, the following courses will be offered:

- *MSc in Fire Protection of Buildings;*
- *Post-graduate course in Fire Protection of Buildings*; and
- *Post-graduate course in Design of Building Structures.*

Coordination of the courses will be undertaken by João Paulo Correia Rodrigues; DEC/FCTUC - jpaulocr@dec.uc.pt, and Antonio Leça Coelho; LNEC - alcoelho@lnec.pt. Most Portuguese specialists in the fire safety of buildings will participate as professors in this programme. Several foreign teachers and researchers of world merit will also participate.

Students enrolled in the *MSc in Fire Protection of Buildings* will take 12 different 30-hour modules (Fridays and Saturdays) between October 1, 2005 and June 30, 2006, and will be expected to complete an MSc thesis between October 1, 2006 and September 30, 2007.

Students enrolled in the *Post-Graduate Course in Fire Protection of Buildings* or in the *Post-Graduate Course in Design of Building Structures* will take 5 obligatory and one elective 30-hour module Saturdays between October 1, 2005 and June 30, 2006.

Applicants will be accepted between March 15 and September 15, 2005. For more information see the web site www.dec.uc.pt (in Portuguese and English).

News from University of Canterbury

The fire engineering laboratory facilities continue to develop at the University of Canterbury in New Zealand. In 2004, a heated wind tunnel was completed and commissioned. The appartus has already been used by students taking the Fire Safety Systems course and is forming part of the project work carried out by a Masters research student. A small-scale furnace has also been constructed for testing structural connections under fire conditions.

Prof. Dave Purser will visit the University in the second half of 2005 to teach a course in Human Behaviour. The course will be available to Masters students and to a limited number of outside participants. A related series of professional short-courses is being planned.

Interaction with the New Zealand Fire Services (NZFS) continues to be fruitful. Several students have attended a two-day Grade 2 Breathing Apparatus (BA) course at the NZFS Woolston Fire Training Centre. Students also attended several training house burns organised by the NZFS for volunteer crews. Those who had completed the Grade 2 BA course were able to take part in some of the exercises and get some first-hand experience of fighting structure fires.

Experimental Crown Fires

The Canadian Journal of Forest Research has published a special issue (Volume 34, 2004) devoted to documentation of the results from a series of experimental crown fires burned in the Canadian Northwest Territories over several years. These experiments formed the International Crown Fire Modeling Experiment. They included measurements of the radiation intensity received in front of advancing forest crown fires as well as exposure of simulated residential structures, fire protection shelters, fire protective clothing, and other items to the severe fire environment. IAFSS members may find this special issue to be of particular interest.

Frank Albini, Research Prof. (retired), Mechanical and Industrial Engineering, Montana State University, Bozeman. Residence: 114 Arrowhead Trail, Bozeman MT 59718 USA falbini@imt.net

Carleton University's First Graduates in Fire Safety Engineering

The Department of Civil and Environmental Engineering of Carleton University (Ottawa, Canada) is pleased to announce that Dominic Esposito and Derek Gruchy have successfully defended their Masters Theses and received their MASc Degrees during Fall Convocation. Esposito and Gruchy are the first graduates working in the area of Fire Safety Engineering. Graduate courses in this area at Carleton University started in September of 2001, following the Establishment of the NSERC/Forintek Industrial Research Chair in Fire Safety Engineering in March of 2001. Esposito studied the economic impact of fires in buildings, while Gruchy developed a computer model to predict occupant evacuation during fire emergencies in buildings. Both Esposito and Gruchy worked under the supervision of Professor Hadjisophocleous, who holds the Industrial Research Chair in Fire Safety Engineering. Both research projects are part of the Chair's Research Program aiming at developing a Comprehensive Fire Risk Analysis Computer Model to evaluate fire safety designs of buildings.

CONFERENCE NOTICE BOARD

9th International Fire and Materials Conference

The Fire and Materials 2005, the 9th International Conference in this series, will be held January 31 to February 1, 2005 in San Francisco, USA. Fire and Materials is a major international forum on fire performance of materials, composites and products. The programme and full details are now available on Interscience Communications website with the facility for delegates to register online at:
http://www.intercomm.dial.pipex.com/html/events/fm 05index.htm

The conference will feature parallel sessions on the second day to accommodate a Fire Investigation Seminar. Papers on Fire Causes, Investigation Techniques and Case Studies will be featured as an alternative to the two sessions on Materials Fire Testing for Regulatory Compliance and Predictive Methods.

The Fire Safety in Transportation session features key papers on fire safety issues in aircraft, railway, automobile and marine applications. Fire and Materials 2005 promises to be a comprehensively international event with speakers from the world's leading industrial, national and specialist research laboratories, academic institutions and regulatory bodies. Speakers from NIST (US), NRCC (Canada), SP (Sweden), SWRI and FM Global (US), LNE (France), Federal Aviation Administration and the US Navy will be joined by speakers from Australia, Belgium, Korea, Sweden and the UK.

Fire Safe Use of Timber in Construction Seminar

A Fire Safe Use of Timber in Construction Seminar, "Building Confidence in Timber" will be held May 24-26, 2005 in Wellington, New Zealand. The purpose of the seminar is to familiarise regulators and other experts in fire safety and construction in the Asia-Pacific Economic Cooperation (APEC) region with approaches to managing risks that do not impede the use, and therefore, trade in wood products unnecessarily. For more information see **www.branz.co.nz** (APEC Fire Seminar).

10th International Fire Protection Symposium 2005 "Methods of Fire Safety Engineering"

The 10th International Fire Protection Symposium 2005 "Methods of Fire Safety Engineering" (10-IBS) will be held June 6 – 7, 2005 in MESSE Hannover, Germany. The symposium, organized by the German Fire Protection Associations (vfdb) together with Braunschweig University of Technology deals with "Methods of Fire Safety Engineering" from a national and an international point of view. While German experts explain concepts and the main contents of the new vfdb Guidelines on Fire Safety Engineering, international scientists and code writers will give important background information or insight into similar guidelines and experiences in their countries. For more information please see **http://www.10-ibs.de/**

1st International PhD Workshop on Fire Protection Science and Engineering

The 1st International PhD Workshop on Fire Protection Science and Engineering (PhDfire1) will be held June 8, 2005 in MESSE, Hannover, Germany. This workshop will enhance the scientific interchange among young researchers in the field of fire protection science and engineering, and provide a forum for PhD candidates and their tutors to present and discuss their work and results. For more information and call for papers please see http://www.phdfire1.de/

4th International Conference on Advances in Steel Structures

The 4th International Conference on Advances in Steel Structures (ICASS'05) will be held June 13-15, 2005 in Shanghai, China. The previous three conferences were held in Hong Kong with great success in 1996, 1999 and 2002. As with the previous conferences, this conference is intended to provide a forum for discussion and dissemination of recent achievements by researchers, designers, product providers, fabricators and erectors in analysis, behaviour, design and construction of steel, aluminium and composite steel-concrete structures. For more information see:
http://www.cse.polyu.edu.hk/seminar/conf/icass05.pdf

8th International Symposium on Fire Safety Science

The 8th International Symposium on Fire Safety Science will be held September 18-23, 2005 in Beijing, China at Tsinghua University. It will be co-hosted by the China Fire Protection Association, the University of Science and Technology of China, and Tsinghua University. The arrangement committee chair is Prof. Fan.

Tsinghua University is one of the premier universities in China. The campus is situated in northwest Beijing on several former royal gardens of the Qing Dynasty and is surrounded by historical sites in northwest Beijing. With a splendid legacy accumulated over the past 90 years, Tsinghua has retained its character and charm while promoting rigorous scholarship and research that ensure academic and educational prestige in China and abroad.

Further information on the Symposium can be found by going to www.iafss.org and clicking on the 8th Symposium button.

Call for Papers: 4th Mediterranean Combustion Symposium

The 4th Mediterranean Combustion Symposium will be held October 6 – 10, 2005 in Lisbon, Portugal. The symposium is the fourth in a series on combustion and related topics held by the scientific communities around the Mediterranean. All topics in the combustion field are pertinent to this Symposium, including papers addressing fire-safety and explosion engineering. Authors are asked to submit full papers by June 15, 2005. Instructions for submitting a paper can be found at **http://www.combustioninstitute.it** . Notification of acceptance will be made by July 30, 2005. Further information concerning the Symposium is available from Federico Beretta at **beretta@irc.cnr.it**.

Secretariat

Carole Franks
C/o Interscience Communications
West Yard House
Guildford Grove, Greenwich
London SE10 8JT, UK
Tel: +44 (0)20 8692 5050
Fax: +44 (0)20 8692 5155
Email: iafssmembers@dial.pipex.com