FE News

Fire Engineering News :: Department of Civil Engineering

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Research sponsorship

Research projects undertaken by our students often need money to pay for equipment and materials, particularly where there is experimental work involved. The Department of Civil Engineering provides limited financial assistance and we are also able to use a small portion of the New Zealand Fire Service Commission sponsorship money to help students with their research. However, we are grateful to several other significant sources of funding which allow us to continue a range of projects:

- Winstone Wallboards Ltd provided materials and advice for a project on fire performance of Gib® Gypsum Plasterboard.
- Carter Holt Harvey Futurebuild provided materials and half of the funding for an Enterprise Scholarship (matched government funding) for a study on fire performance of connections LVL (laminated veneer lumber).
- Tim Porter received a Technology for Industry Fellowships (TIF) from the FRST. His research titled: Determining Realistic Financial Losses in NZ Business following Fire was a cooperative study with Marsh Ltd. Tim spent a year with Marsh Ltd. in their Auckland office under the supervision of Neil Gravestock (1998 MEFE Graduate).
- Building Research Association of New Zealand (BRANZ Ltd) has provided a scholarship for a project to develop design fires for residential buildings by Elizabeth Young.

Scholarships and awards

The MEFE programme has two new scholarships. Firstly, the Arup Fire scholarship awards $A2,500 to a full-time student to support their research work. Arup Fire is one of the leading international fire engineering consultancies and many of our graduates are or have been employed by Arup Fire throughout Australia, Asia and the UK. The inaugural recipient of the Arup Fire scholarship was Anthony Ng who is investigating the fire design of transformer rooms in buildings.

The second scholarship is to be provided by the Society of Fire Protection Engineers New Zealand chapter. The scholarship is open to all full-time thesis research students who are enrolled in the MEFE programme. This scholarship is worth $2,000 to the student plus an additional award of up to $500 to fund the costs of carrying out the research work.

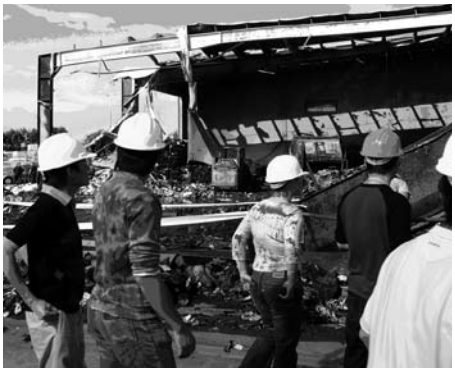
The New Zealand Fire Service Commission continues to strongly support the MEFE programme. Scholarships to the combined value of $20,000 were awarded to three students: Pauline Anderson, Wei-Li Tsai and James McBryde.

Keryn Goble and James McBryde were both awarded University scholarships to undertake their studies in the MEFE programme. Keryn Goble was also awarded a Freemasons University Scholarship.

Roger Harrison was awarded a BRE Publications runners-up prize for his thesis research paper presented at the Interflam 04 conference on "Thermal spill plume studies for the design of smoke control systems".

Fire visits

With the help of the New Zealand Fire Service and in particular Alan Taylor and Alan Merry we have been able to make several site visits to local fires. These visits included a paper-recycling facility and a storage warehouse for rural supplies. Damage to the paper-recycling facility was extensive and the fire severely compromised the stability of the concrete tilt-slab walls; a topic which has been the subject of research by some of our recent students. The fire in the storage warehouse was not so significant but did raise a number of issues regarding the use of roof panels to vent fires and is now a matter under further investigation by a project student.



Visitors

Prof Dave Purser and Dr Jenny Purser visited us through the University's Erskine Fellowship scheme. Dave taught the Human Behaviour in Fire paper to a class of 27 students. Dave also gave a highly successful one-day workshop to fire engineering professionals organised in associated with the Society of Fire Protection Engineers New Zealand chapter. Courses were held in Christchurch, Auckland and Wellington with over 200 participants attending the three sessions. Dave and Jenny also had discussions with several research students regarding their work on human behaviour and fire product toxicology. This year we also welcomed exchange students Martin Nilsson and Johannes Bjerregard from Lund University, Sweden.

For more information please contact:
Fire Engineering, University of Canterbury, Civil Engineering Department
Private Bag 4800, Christchurch, New Zealand 8020

Website: www.civil.canterbury.ac.nz/fire/firehome.shtml

Staff news

Congratulations to Mike Spearpoint completed his PhD at the end of 2005. His research examined the applicability of the IFC building data model to fire engineering. The work used database methods to create a repository of fire growth information and a suite of software applications were developed to interpret IFC documents in a form that can be imported into fire simulation tools. Mike was also promoted to a Senior Lecturer position beginning in 2006.

Andy Buchanan was on study leave in 2005, mostly at Bristol University where he gave some fire engineering lectures. In the UK he visited the University of Edinburgh, and Arup Fire offices in London and Bristol where he made contact with several Canterbury fire graduates including Ben Hume, Mike Inwood and Christine Duncan. Unfortunately he suffered a major accident, being hit by a bus while out jogging in Bristol, with 5 weeks in hospital. Andy is slowly returning to work, with a full recovery expected soon. Prof. Roger Plank from the University of Sheffield, UK, has been able to visit on an Erskine Fellowship to teach Andy's Structural Fire Engineering course in 2006.

Charley Fleischmann has taken over from Andy Buchanan on the Government's national Fire Advisory Panel.

Fire Engineering Research Reports

04/7 S Harris
Fire Resistance of Epoxy-Grouted Steel Rod Connections in Laminated Veneer Lumber (LVL)

05/1 B Chiam
Numerical Simulation of a Metro Train Fire

05/2 B Stratton
Determining Flame Height and Flame Pulsation Frequency and Estimating Heat Release Rate from 3D Flame Reconstruction

05/3 W Lane
Ignition, Charring and Structural Performance of Laminated Veneer Lumber (LVL)

2005 Social activities

The Institution of Fire Engineers (IFE) Canterbury Group ran a fun quiz night as one of their activities and a team of Jerry Chang, Nathaniel Petterson, Mike Spearpoint and Duane Harding-Browne (Senior Fire-fighter, Blue watch, Woolston Fire station) managed to just nose into first place after a charades play-off against the other leading team.

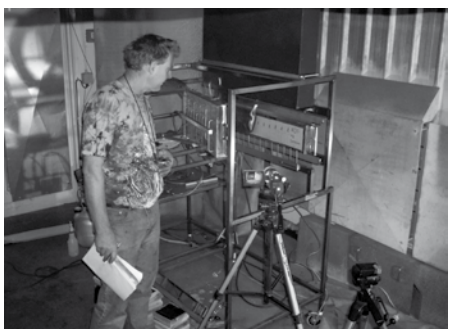
PhD Research

Tony Parkes has completed has experiments for his research into radiation compartment effects (shown below). Results have been used to compare the measurements with predictions made by the FDS field model. Tony presented a paper on his work at the IAFSS conference in China and is in the process of analysing his data.

Jerry Chang is continuing his PhD on fire resistance of hollow-core prestressed concrete floor units in multi-storey buildings under the supervision of Dr Buchanan, Dr Moss and Dr Dhakal. The project is funded through a larger FRST programme examining Future Building Systems in precast concrete. A suitable analytical model has been developed and will be used to investigate the fire performance of the flooring systems that arise from the FRST project.

Laboratory Developments

The laboratory continues to develop with the help of our two laboratory technicians, Grant Dunlop and Bob Smith. This year we constructed and calibrated our LIFT apparatus as part of the thesis research undertaken by Geoff Merryweather (below). Geoff also constructed a RIFT addition for our cone calorimeter. Our small-scale furnace used for testing structural connections under fire conditions has been upgraded.



2005 Conferences

FESA, Singapore, February 2005.
M J Spearpoint

APEC Fire Safe Use of Timber in Construction Seminar, Wellington, May 2005.
M J Spearpoint, G Merryweather, A H Buchanan

IAFSS Symposium on Fire Safety Science, China, September 2005.
T Parkes, A H Buchanan, P J Moss

FPANZ Annual Meeting and Conference, Auckland, August 2005.
M J Spearpoint

Recent Publications

- Bernhart D, Buchanan A H, Dhakal R, Moss P J. *Effect of Top Reinforcing on the Fire Performance of Continuous Reinforced Concrete Beams*. Proc. 8th Intl. Symposium on Fire Safety Science, Beijing, China, 2005.
- Chiam B H, Spearpoint M J, Fleischmann C M. *FDS simulation of a metro train fire. Proc. Intl. Technical Congress on Fire Safety in Terrestrial Passenger Transportation*, Universidad de Cantabria, Spain, pp. 275-286, October 2005.
- Harrison R, Spearpoint M J. *Spill over: Simplified balcony spill plume calculations*. Fire Prevention & Fire Engineers Journal, pp. 33 -35. July 2005.
- Parkes A R, Fleischmann C M. *The Impact of Location and Ventilation on Pool Fire in a Compartment*. Proc. 8th Intl. Symposium on Fire Safety Science, Beijing, China, 2005.
- Spearpoint M J. *New Zealand's experience in implementing a performance-based regulatory system and the lessons learnt*. Proc. FESA 2005, Singapore, pp. 141-147. February 2005.
- Spearpoint M, Huynh M, Moghtaderi B, Merryweather G. *Flame spread measurements of New Zealand timber using an adaptation of the cone calorimeter*. Proc. APEC Fire Safe Use of Timber in Construction Seminar, Wellington, May 2005.
- Spearpoint M J, Olenick S M, Torero J L, Steinhaus T. *Ignition performance of new and used motor vehicle upholstery fabrics*. Fire and Materials, vol 29, pp. 265-282. 2005.
- Yii, E H, Fleischmann, C M, Buchanan, A H, *Experimental study of fire compartment with door opening and roof opening*, Fire and Materials, vol. 29, pp. 315-224, 2005.