The Structural Steel Research Group (SSRG), Centre for Construction Materials and Technology of the Department in collaboration with Strathclyde University, UK and the National Science Foundation, USA organised the Second International Conference on Thin-Walled Structures from 2 to 4 December 1998 at the Mandarin Hotel, Singapore. Prof Hang Chang Chieh, Deputy Vice-Chancellor, NUS officially opened the conference.

Many of the problems encountered in thin-walled structures arise because of the effects of local buckling. The knowledge of various facets of this phenomenon has increased dramatically since the 1960s. Problem areas which were hitherto too complex for rigorous analysis or whose subtleties were not fully realised have in these years been subjected to intensive study. Great advances have been made in the area of inelastic buckling. The growth in the use of lightweight strong materials, such as fibre-reinforced plastics has also been a contributory factor towards the need for advances in knowledge of the far post-buckling range. This international gathering provided the opportunity for discussion of recent developments and trends in the design of thin-walled structural elements.

The conference featured about 100 papers by experts from 25 countries. The topics included thin-walled structures - applications, innovative structures, materials, fire resistance; ship structures; offshore structures; bridges; cold-formed steel structures; shells and pressure vessels; perforated members; storage racking; storage structures and silos, among others.

Keynote papers presented were (i) Light Gauge Steel Framing for House Construction by Prof J Michael Davies, The University of Manchester, UK, (ii) Design of Steel Arches by Prof N S Trahair, The University of Sydney, Australia, (iii) Smart Thin-Walled Structures by Prof B K Wada, California Institute of Technology, USA, (iv) Some Design Problems in Thin-Walled Structures by Prof Jim Rhodes, University of Strathclyde, UK, (v) Finite Strip Analysis of Shear Walls and Thin Plates with Abrupt Changes of Thickness by Using Modified Beam Vibration Modes by Prof Y K Cheung, The University of Hong Kong and (vi) Ferrocement: A Cementitious Thin Wall Structural Element – Research to Practice by Prof P Paramasivam, The National University of Singapore.

All papers presented at the conference were published by Elsevier, UK in a special volume of the conference proceedings edited by N E Shanmugam, J Y Richard Liew and V Thevendran.

The contest received a good response with 23 teams competing. Using up to 2 kg of newspaper, 1 piece of 150 X 200 X 10 mm wood for the base plate, two pieces of wood, 1 roll of tape, 1 ball of string, 8 nails and 20 ice-cream sticks and assorted hand tools, each team designed and built a crane that was aesthetically-pleasing, lightweight and yet can support the maximum load at a...
Study of Urbanisation Impact on Singapore’s Catchment Runoff

With the rapid urban development taking place in Singapore it is of utmost importance to have an accurate estimate of its impact on the drainage system and on the water quality of the receiving water body. Undesired impacts can only then be incorporated in the urban planning and/or management.

This project is a two-year collaborative research project between NUS and Ministry of the Environment, with a research funding of $218,200, to look into the impact of urbanisation on Singapore’s catchment runoff. A widely used physically-based catchment model such as MIKE11 will be applied in the study. Like any other catchment models, MIKE11 will have to undergo calibration process. Since it deals with a multi-objective calibration process, Genetic Algorithm (GA) will be coupled together with Neural Network (NN) to determine the model’s calibration parameters. Thus, the objective of the proposed study is to combine the strength of the conceptual catchment model and the soft computing power such as that like GA and NN.

Contact person:
Principal Investigator:
Assoc Prof. Liang Shie-Yui, Tel: 8742155;
email: cvelsy@nus.edu.sg
Collaborators:
From NUS: Assoc Prof. Chan Weng Tat;
Asst Prof Karina Gin;
Asst Prof Anthony Greer;
Dr Tirtha Gautam, and
Dr Khu Soon Thiam.
From ENV: Mr Lim Meng Check;
Mr Tan Tien Ser;
Mr P Mano Kalatarasan;
Mrs Indrani C Rajaram

(Cont’d from pg 1)

prescribed distance of 500 mm from the base of the crane.

The brainchild behind the competition, Assoc Prof Wang Chien Ming, said that such a fun design contest not only provided an opportunity for students to demonstrate their innovative talents but also helped the students to gain an appreciation of how things were built for functional requirements and beauty.

The students were given one day to fabricate their crane models and the models were inspected and tested on 25 September 1998. It was interesting to see a large variety of innovative crane designs with some teams designing cranes with cable-stayed booms while others opted for cranes with truss-like booms. Invited judges for the event were Mr Lim Keng Kuok, Vice-President of the Singapore Structural Steel Society, Prof Low Teck Seng, Dean of Faculty of Engineering and Assoc Prof K Y Yong, Head of Civil Engineering Department. The students who participated and witnessed the contest enjoyed the nail-biting competition as the first placing for the best crane moved from one team to another. At the end, the $300- first prize winning crane structure was surprisingly strong, capable of holding about 11 Newtons of force but weighed only 0.68 kg. All in all, the students agreed unanimously that the competition was a valuable learning experience and that it has made them appreciate their engineering mechanics course even better.

CE Dept
WITS Team Won National Award

Our Department’s WITS Team, THE CHAIN, represented the National University of Singapore in the recent 1998 Public Sector PS21 WITS Convention and competed with some 370 teams from various Public Service Sectors and Statutory Boards to win a silver medal.

THE CHAIN worked on the project entitled “Interuption to the continuous supply of air for waste treatment using biological treatment processes”. The theme of the project evolved from problems faced by the Environmental Engineering Laboratory. During the research activity, there was a need to nurture biological bacteria for treatment of waste. To treat such waste, a constant continuous supply of air was needed. If there were interruption to the air supply, the bacteria population would deteriorate and be reduced over time. The dead bacteria had to be discarded and the whole process of culturing such bacteria set back by at least 2 weeks. This resulted in delays in the research analysis, which could be critical due to the limited time available to the research students.

Previously, a compressor was used to generate continuous supply of air to bacteria in order to treat the waste. On many occasions, especially over the weekend, power failures occurred and interrupted the operation of the compressor, thereby cutting off the oxygen supply to the bacteria and resulting in bacteria mortality. To minimize losses and delay in research activities, a fail-proof-system was developed so that waste can be treated with bacteria without any interruption.

Laboratory Technologist Mr Foo Chee Kiong, who is the team leader, received the medal from Mr Peter Ho, Chairman of Public Sector PS21 Committee, at the closing ceremony in the World Trade Centre on 27 November 1998. This is the second time the team led by Mr Foo has won such National awards. They won a Silver medal at the PS21-1995 Public Sector WITS Convention in 1995 and a Bronze medal at the 4th In-house WITS Contest in 1994. The team also received The WITS Distinguished Effort Award on 3 December 1998 at NUS WITS Day.

THE CHAIN has done the Department proud.

Team Leader : Foo Chee Kiong
Facilitator : Theresa Yong
Members : Teo Beng Lay, John Choy, Jamilah Bte Mohd,
Ooh Sing Hua, Sarimah Bte Mustafa, Lim Huay Bak,
Kamsan Bin Rasman
Mr Khoo Boo Tat graduated in 1979 from the then University of Singapore with a bachelor of engineering degree in civil engineering with honours. In 1983, he obtained his MSc degree in construction from the National University of Singapore. He began his career in L&M Prestressing as an engineer in 1979 and rising to become the general manager of the company building, to provide accommodation for the skilled foreign workers of the company.

At the same time, it moved into its new premises, a 4-storey complex of 48,000 sq ft building at Changi South Avenue 2. A hostel was also built, annexed to the premises, a 4-storey complex of 48,000 sq ft building at Changi South Avenue 2. A hostel was also built, annexed to the company building, to provide accommodation for the skilled foreign workers of the company.

The research was prompted by the fact that there is a dearth of vibration results for Mindlin plates when compared to classical thin plate solutions. To generate the vibration results, the authors have successfully employed the Ritz method for general plate shapes and boundary conditions. The Ritz method, once thought to be awkward for general plate analysis, can be automated through suitable trial functions (for displacements) that satisfy the geometric boundary conditions a priori.

The research work has been well-received by academics and researchers, as indicated by the frequent requests for the authors’ papers and the Ritz software codes. The book is thus written with the view of sharing this so-called p-Ritz method for the vibration analysis of Mindlin plates and its software codes with the research community.
The objectives of this symposium are to review recent developments in the techniques of field measurements in Geomechanics, and its role for cost-effective analysis, design and construction in Geotechnical Engineering. The symposium will provide a forum for presentation and discussion by researchers, practitioners, manufacturers, suppliers and end users of field instruments. This forum will provide an effective means for dissemination of current state of the art in field measurements and data interpretation for analysis of field performance of geotechnical structures. It will also serve as a catalyst for further collaboration between industry, universities and research institutions to direct R&D efforts into developing better instrumentation and systems to provide cost effective solution to field measurements, monitoring requirements and data interpretation and analysis in geomechanics.

Deadline for submission of abstracts has been extended to 15 March 99.

FMGM 99 Secretariat, AV Consultants Pte Ltd
232-A River Valley Road Singapore 238290
Tel: (65) 7356255 Fax: (65) 7352091
Email: avconsul@pacific.net.sg

Conference Secretary:
Assoc Prof Harry Tan Siew Ann,
Dept of Civil Engineering; NUS.
Tel 8742278; Fax 7791635;
Email: cvetansa@nus.edu.sg


The conclusion of the Second International Conference on Thin-Walled Structures was marked by a one-day International Workshop on Recent Developments and Future Trends in Thin-Walled Structures on 5 December 1998, jointly organised by the Structural Steel research Group (SSRG) in collaboration with the National Science Foundation, USA. The workshop was held at the Computer Centre Auditorium, NUS. The full day workshop with 60 participants taking part in the active discussions followed presentation of nine papers by leading researchers in the field of Thin-Walled Structures.

The papers presented at the workshop were published in a Special Issue of the Journal of Thin-Walled Structures. Prof N E Shanmugam of the Dept. and Prof W W Yu of the University of Missouri-Rolla edited the volume.

On 24 Oct 1998, the university organized a Campus-wide Open 7-a-side staff soccer carnival, to promote healthy lifestyle, and to foster relationship within the campus community. The Geotech laboratory and others in the Civil Engineering Department formed a team of 10 players to compete in the carnival. With the player’s hard work, superb team spirit and with cheers from numerous cheerleaders from the laboratory, the Geotech team clinched the silver medal of the tournament.

by: Mr Loh Chang Kaan, Graduate student in Geotech Lab
Assoc Prof Chow Yean Khow, Department of Civil Engineering, has been invited to be a member of the Board of Directors of the International Association for Computer Methods and Advances in Geomechanics (IACMAG). The objective of IACMAG is to promote basic and applied research, and industrial applications related to computer methods and other advances in the interdisciplinary area of geomechanics. He is currently also on the Conference Advisory Board of the 7th International Conference on Civil and Structural Engineering Computing to be held in Oxford, England from 13 – 15 September 1999.

Assoc Prof Liong Shie-Yui has been invited to serve on the Advisory Committee of the 4th series of International conference Hydroinformatics 2000 to be held in Iowa Institute of Hydraulic Research, USA, from 23 – 27 July 2000.

List of Publications (July – September 1998)


New Appointments and Promotions

ADJUNCT PROFESSOR (R & D)
Dr Kog Yue Choong, 1 August 1998 to 31 July 1999

VISITING PROFESSOR
Prof Barry J Adams, University of Toronto, Canada
10 - 24 October 1998

DISTINGUISHED VISITING PROFESSOR
Prof Osamu Kusakabe, Tokyo Institute of Technology, Japan
31 October - 26 November 1998

VISITING SENIOR FELLOW
Dr David Ho Wai Sum, SCIRO, Australia
22 October 1998 to 22 October 1999

ASSISTANT PROFESSORS
Dr Chen Yongze, 17 October 1998
Dr Hu Jiangyong, 26 December 1998

ADMINISTRATIVE OFFICER
Ms Chia Lai Peng (Xie Liping), 30 October 1998

RESEARCH ENGINEERS
Dr Tirtha Raj Gautam, 5 November 1998

RESEARCH SCHOLARS
Miss Chua Gek Hong, 15 October 1998
Mr Wong Kuok Yong, 26 October 1998
Mr Michael Sofian Tanuhedrate, 24 November 1998
Mr Zhang Ziyang, 30 November 1998
Mr Xie Chi, 2 December 1998

CORPORATE SUPPORT OFFICER V
Mrs Henderson Belinda Jane, 6 January 1999

PROMOTIONS
Dr Richard J Y Liew, Associate Professor
Miss Tan Cheng Sim, Christine, Senior Administrative Officer
Mdm Siti Rohani bte Mohd Sani, Secretary Grade III (Grade A)
Miss Yeo Lee Tiang, Corporate Support Officer Grade I
Mdm Sarimah bte Mustafa, Corporate Support Officer Grade II
Mdm Oh Siew Choo, Campus Attendant, Grade I
Prof Paramasivam received the Outstanding University Researcher Award

Prof P Paramasivam received the Outstanding University Researcher Award from the Vice-Chancellor Prof Lim Pin on 7 October 1998 for his contributions in the field of ferrocement technology and fibre reinforced cement composites. He played an active role in promoting ferrocement technology in Singapore to various structural precast elements such as sunscreens, secondary roofing slabs, water tanks and repair materials for public housing through Research & Development. He received Research Awards from the American Concrete Institute in 1989 and 1997 for the innovative use of ferrocement in sunscreens and for his outstanding and sustained contributions in Concrete Technology in Singapore respectively. Recently, he was elected Vice-President of International Society of Ferrocement and Editor-in-Chief of Journal of Ferrocement.

Mr Shen Ruifu, Research Scholar, Department of Civil Engineering, was presented with the KKNN Best Paper Award 1998 for Young Researchers at the 8th KKNN Seminar on Civil Engineering, Singapore, on 1 December 1998. The award paper is entitled “Centrifuge modelling of pile response due to excavation-induced soil movement” authored by Mr Shen and his supervisors Associate Professors Leung Chun Fai and Chow Yean Khow.

Dr Wong Sook Fun, Research Fellow, Department of Civil Engineering, was presented with the SsangYong Young Concrete Researcher Award 1998 at the 23rd Conference on Our World in Concrete and Structures (OWICS), Singapore, on 26 August 1998.

Dean’s List Semester I 1998-99

The following CE students have been placed on the Dean’s List for their outstanding performance in their Semester I examinations, 1998-99:

Civil Engineering 2

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact Person</th>
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<tbody>
<tr>
<td>Foong Kok Gheng</td>
<td>Mark Tuck Yee, Vincent</td>
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<td>Han Chong Teng, Francis</td>
<td>Ong Seong Yong, Jeremy</td>
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<td>Koh Meng Hong</td>
<td>Pang Sze Dai</td>
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<td>Lam Wing Yin</td>
<td>Tan Chuan Ching</td>
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<td>Lee Cheh Hsien</td>
<td>Toh Han Lin</td>
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Civil Engineering 3

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<tr>
<td>Chai Khye Yeien</td>
<td>Koh Peng Jek</td>
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<td>Chia Joo Ngang</td>
<td>Lim Chang Chi, Gary</td>
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<td>Koh Soo Jin, Adrian</td>
<td>Poh Wei Giap, Colin</td>
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<td>Qian Xu Dong</td>
<td>Thoo Jung Chee</td>
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<td>Sim Chin Chye</td>
<td>Yeo Seow Aik</td>
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<td>Venugopal s/o Rajamani</td>
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Civil Engineering 4

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Forthcoming International Conference and Workshops

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<th>Date</th>
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<tr>
<td>15 – 16 Apr 1999</td>
<td>IES-CTR Symposium on Public Transit for the 21st Century</td>
<td>Assoc Prof T F Fwa</td>
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<td>Tel: 874 2276</td>
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<td>1 – 3 Dec 1999</td>
<td>5th International Symposium on Field Measurements in Geomechanics</td>
<td>Assoc Prof S A Tan</td>
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<td>e-mail: <a href="mailto:cvetansa@nus.edu.sg">cvetansa@nus.edu.sg</a></td>
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<td>Tel: 874 2278</td>
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<td>15 – 17 Dec 1999</td>
<td>Fourth Asia-Pacific Conference on Computational Mechanics for the Next Millennium</td>
<td>Assoc Prof K K K</td>
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<td>Tel: 874 2570</td>
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<tr>
<td>28 – 30 Jun 2000</td>
<td>6th International Conference on Applications of Advanced Technologies in Transportation Engineering</td>
<td>Assoc Prof T F Fwa</td>
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Adviser: Assoc Prof K Y Yong (Head of Department)
Editorial Committee: Assoc Profs H C Chin (Chairman), M A Mansur, S A Tan and V Thevendran

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