

Structural, Environmental, Coastal and Offshore Engineering

Edited by
Abd Nasir B Matori, Zubair Imam Syed,
Mohamed Hasnain Isa and Bashar S. Mohammed



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Civil, Offshore and Environmental Engineering
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June 3-5, 2014, Kuala Lumpur, Malaysia

Edited by

**Abd Nasir B Matori, Zubair Imam Syed,
Mohamed Hasnain Isa and
Bashar S. Mohammed**



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FOREWORD

**ASSOC. PROF. IR. DR. MOHD SHAHIR
LIEW**

Head of Civil Engineering Department &
Chairman of ICCOEE2014
Universiti Teknologi PETRONAS

Dear Distinguished Delegates, Sponsors and Exhibitors,

Greetings and welcome to the 2nd International Conference on Civil, Offshore & Environmental Engineering 2014 (ICCOEE2014).

Universiti Teknologi PETRONAS warmly welcomes you to the 2nd International Conference on Civil, Offshore & Environmental Engineering 2014 (ICCOEE2014) in Kuala Lumpur, Malaysia. ICCOEE 2014 is an international forum of distinguished intellectuals engaged in scientific, engineering and technological research dedicated toward the sustainability of civil engineering knowledge and application.

The conference provides a venue for you to share and exchange the wealth of knowledge in the civil engineering fraternity with the delegates. ICCOEE2014 is part of the World Engineering, Science & Technology Congress (ESTCON2014), whereby 8 other conferences are being held simultaneously at the same venue. The potential collaboration is unlimited as participants can freely attend any of the other conferences. ICCOEE2014 will bring together colloquy and exchange of ideas of latest research and development in the main traditional areas of civil engineering, including coastal and offshore structures. It is our aspiration that this conference will nurture research in the areas of civil engineering, and amplify its positive impact to the mainstream built environment.

Malaysia is fast becoming a hub for knowledge and R&D for South East Asia. With PETRONAS' support, the University conducts extensive research activities in collaboration with PETRONAS and other institutions and industries locally and internationally.

It is my pleasure to personally invite you to participate in this conference for showcasing your latest academic achievements and for networking with key researchers from all over the world.

Come and join us in Kuala Lumpur Convention Centre on the 3rd-5th June 2014 at our once in two years Engineering Congress, ESTCON 2014, in particular the ICCOEE 2014.

Thank you.

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PLENARY SPEAKER 1

PROF. DR. IR. PIETER VAN GELDER

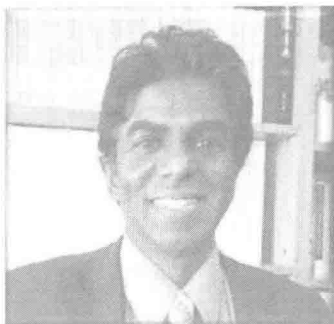
Professor of Safety Science,
Faculty of Technology, Policy and Management, Delft
University of Technology,
The Netherlands.

Safety Matters in Civil Engineering - A Historical Overview and a Look into the Future

BIOGRAPHY

Prof. Dr. Ir. Pieter van Gelder is a full-time professor of safety science at the Faculty of Technology, Policy and Management of Delft University of Technology since 2013. Until then he was the associate professor of probabilistic design methods at the Faculty of Civil Engineering and Geosciences of Delft University of Technology. He has actively involved in research and education on safety and reliability since 1991. His research interests are in risk analysis and optimization of systems, processes and structures. He teaches 4th and 5th year courses at TU Delft and has supervised over 50 MSc students and 10 PhD students. He conducts research on new methods and techniques in risk analysis. van Gelder has authored and co-authored more than 290 journal papers, and several books in the field of risk and safety. He is the project leader in several ongoing national and EU research projects, namely iNteg-Risk (Large scale EU integrated project on integrated risk management in industrial systems), SMARTTEST (Smart Resilience Technology, Systems and Tools) and MATRIX (New multi-hazard and multi-risk assessment methods for Europe). Van Gelder is a member of Technical Programme Boards and a scientific committee member of annual international conferences such as the ESREL and IPW (International Probabilistic Workshop) series. He is co-editor and reviewer of several journals, i.e. RESS (Reliability Engineering and System Safety) and AJSE (Arabian Journal of Science and Engineering). van Gelder is also a coordinator and member of the curriculum committee of the Technical Module of the post-academic course on public safety at Delft Toptech.

PLENARY SPEAKER 2



PROF. DR. PRIYAN MENDIS

Professor of Department of Infrastructure, Engineering
Member of the Melbourne Energy Institute (MEI),
Built Environment Research Group,
The University of Melbourne.

Engineering Challenges in Safe and Sustainable Tall Buildings

BIOGRAPHY

Prof. Dr. Priyan Mendis has a distinguished and internationally recognized track record for research in tall buildings, behaviour of concrete structures under extreme loading and sustainability aspects of build environment as evidenced by publishing several books and book chapters, more than 100 journal papers and 200 conference papers. He is a leading member of the Melbourne Energy Institute (MEI) Built Environment research group and currently leading the infrastructure node. He obtained his PhD from Monash University in 1987. He worked as a Structural Engineer at Connell Wagner Ltd in Melbourne before joining the University of Melbourne in 1991. He has been an expert consultant for design of high-rise structures in Australia and overseas (Malaysia, Dubai etc), including tallest buildings in the world. He is an expert in design of structures for dynamic effects such as wind and earthquakes and also other effects such as blast and fire. He has also led the CTBUH (World Council of Council on Tall Buildings and Urban Habitat) sub-committee of use of high-performance concrete in tall buildings and is a member of the Performance-based design and progressive collapse committees. Prof. Mendis has also served as the Chair of ACI International Sub-Committee on High-Strength Concrete between 1996 and 2001. He was the chairman of the working group nominated to revise the Australian Concrete Standard, AS3600 to include High-strength Concrete (HSC) up to 100 MPa and a key member of the AS3600 code committee for more than 20 years. His current research includes sustainable infrastructure, protective technology of structures as well as disaster mitigation and management.

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CHAPTER 1:

Environmental and Water Resources Engineering