



The Institution of Engineers, Singapore

70 Bukit Tinggi Road, Singapore 289758

Tel: (65) 6469 5000 Fax: (65) 64671108

E-mail: ies@iesnet.org.sg

Website: <http://www.ies.org.sg>

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Media Release

International and Local Engineering Communities Pay Homage to an Exceptional Engineering Leader and Outstanding Local Engineering Projects Presented with The Institution of Engineers, Singapore (IES) Awards

Dr Vivian Balakrishnan presents the inaugural IES Lifetime Engineering Achievement Award, as well as the IES Prestigious Engineering Achievement Awards at the Gala cum Awards Dinner of the inaugural World Engineers Summit (WES) 2013

The Institution of Engineers, Singapore (IES) presented the IES Prestigious Engineering Achievement Awards 2013 to deserving organisations and individuals at the Gala cum Awards Dinner of the World Engineers Summit (WES) 2013 at Marina Bay Sands today. Dr Vivian Balakrishnan, Minister for the Environment and Water Resources, graced the event as the Guest-of-Honour.

Attended by local and international engineers and professionals in the green field, the WES 2013 Gala cum Awards Dinner also saw the presentation of the inaugural IES Lifetime Engineering Achievement Award to Emeritus Er. Prof Lee Seng Lip, whose lifetime accomplishments and achievements have made profound impact on the engineering

industry and community, notably for his work in infrastructural engineering, particularly in structural, geotechnical and construction technology; and for bringing national or international honours to Singapore

“I am deeply honoured by the award. Having worked for four decades in infrastructural engineering in Singapore, both in education and practice, I have witnessed with admiration, the infrastructural and economic development of Singapore into a world class city state and am proud to have contributed to its growth as an engineer,” said Emeritus Er. Prof Lee Seng Lip.

“As a veteran who has contributed so much to the engineering profession throughout the course of his entire career, Emeritus Er. Prof Lee is most deserving of the IES Lifetime Engineering Achievement Award,” said Prof S. K. Chou, President of IES.

Selected after a rigorous round of judging by a panel of experts, 13 entries stood out amongst 25 submissions in the four categories under the IES Prestigious Engineering Achievement Awards 2013. The top project will stand to receive the ASEAN Outstanding Engineering Achievement Award, a coveted accolade for engineering professionals and organisations in the region.

“The submissions for this year’s IES Prestigious Engineering Achievement Awards are of such high calibre that the judges had a hard time deciding which projects to pick to receive the Awards,” said Prof Chou. “I would like to congratulate all the engineers for doing themselves, their organisations and the engineering profession proud. Through this award and other initiatives, IES will continue to do our part in motivating engineers to achieve excellence in various fields so as to improve quality of our lives.”

Garnering four awards, the Agency for Science, Technology and Research (A*STAR) emerged as the biggest winner of the evening for their projects: Metamaterial ZeroPhase-Shift Line Antennas in collaboration with the National University of Singapore, and AGLAIA: Automatic Glaucoma Diagnosis and Its Genetic Association Study through Medical Image Informatics under the Applied Research and Development category; and Eyefly 3D – Making 3D available for anyone, anytime, anywhere in collaboration with Nanoveu Pte Ltd and Temasek Polytechnic, and Voiceprint Technology: My Voice Tells Who I am under the Technology Innovation category. Coming in a close second, ST Electronics walked away with three awards.

Addressing A*STAR's achievement, Executive Director of A*STAR's Science and Engineering Research Council, Dr Tan Geok Leng said, "A*STAR is delighted to receive five awards this year, which is a record number of IES wins for us. These awards underscore A*STAR's commitment to undertake innovative research, and demonstrate our R&D capabilities. Several of these awards are also joint honours we share with industry and clinical partners, and are a testament to the impact of our research on the industry ecosystem. We remain committed to fostering the highest quality of research, and will continue to drive innovation that benefits the public and contributes to Singapore as an innovation hub."

In addition to the contribution of the projects to the well-being of people and communities, contenders of the IES Prestigious Engineering Achievement Awards also had to demonstrate their resourcefulness in planning and solving design problems; the pioneering use of materials and methods; innovative planning, design and construction; and unusual aspects and aesthetic values.

Annexes:

Appendix A – IES Prestigious Engineering Achievement Awards 2013 – Winning Projects

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Appendix C – IES Lifetime Engineering Achievement Award 2013 – Profile of Award Recipient

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About The Institution of Engineers, Singapore (IES)

The Institution of Engineers, Singapore (IES) was formally established in July 1966 as the national society of engineers in Singapore. IES is the premier engineering institution in Singapore and is called upon by the Government to provide feedback on professional engineering matters.

IES is well represented among the faculty members of the major engineering institutions of higher learning in Singapore. Through close collaboration with the local universities and

polytechnics, IES organises courses, seminars and talks for engineers and IES members to advance the continuous development of engineers.

The Institution maintains close links with professional organisations of engineers regionally and throughout the world. These include organisations in Australia, China, Japan, United Kingdom and the United States. The Institution also represents Singapore in the ASEAN Federation of Engineering Organizations (AFEO) and the Federation of Engineering Institutions of Asia and the Pacific (FEIAP) in promoting goodwill and fellowship among all engineers in ASEAN and the Asia-Pacific region.

Through its Engineering Accreditation Board (EAB), IES obtained full signatory status in the Washington Accord (WA) in June 2006. The entry grants IES the authority to represent Singapore, the first country within the ASEAN region which has obtained full signatory status in the WA, to vet education systems under the WA mutual recognition framework.

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MEDIA CONTACT

Desmond Teo
Publications Manager
The Institution of Engineers, Singapore
DID : (65) 6461 1229
Mobile: (65) 9747 9365
Email : desmond@iesnet.org.sg
Appendix A

Jeslyn Pua
Senior Associate
The Right Spin Public Relations
DID : (65) 6325 5929
Mobile: (65) 9369 9598
Email: jeslyn@therightspin.com.sg

IES Prestigious Engineering Achievement Awards 2013 – Winning Projects

Applied Research and Development

1. Metamaterial Zero-Phase-Shift Line Antennas
By Institute for Infocomm Research – A*STAR & National University of Singapore
2. Nanomaterials and Nanotechnology for Sustainable Water Solutions: Purification and Desalination

- By Singapore University of Technology & Design
3. AGLAIA: Automatic Glaucoma Diagnosis and Its Genetic Association Study through Medical Image Informatics
By Institute for Infocomm Research – A*STAR

Engineering Project

4. one-north
By JTC Corporation
5. Keppel FELS DSS™ 20NS – Floatel Superior By Keppel FELS Limited
6. Intelligent Energy System (IES) Pilot
By ST Electronics Pte Ltd – Info-Comm Systems
7. Incident Management System: An Integrated Advanced Platform to mitigate the impact of Natural Disasters, Human-induced Environmental Hazards and unforeseen events from Climatic Change
By ST Electronics Pte Ltd – Large-Scale Systems Group

Technology Innovation

8. Voiceprint Technology: My Voice Tells Who I am By Institute for Infocomm Research – A*STAR
9. Eyefly 3D – Making 3D Available for Anyone, Anytime, Anywhere
By Nanoveu Pte Ltd; Institute of Materials Research and Engineering – A*STAR & Temasek Polytechnic
10. Inexpensive Game-Changing and Sustainable Technology for Clean Energy Production
By National University of Singapore
11. AgilFence Perimeter Intrusion Detection System (PIDS)
By ST Electronics (Satcom & Sensor Systems); Changi Airport Group & Institute for Infocomm Research – A*STAR

Young Creators Award

12. Flexible Aqueous Rechargeable Battery for Wearable Electronics By Nanyang Technological University
13. Brain Controlled Home By Republic Polytechnic Appendix B

IES Prestigious Engineering Achievement Awards 2013 – Citations of Winning Projects

1. Metamaterial Zero-Phase-Shift Line Antennas

By Institute for Infocomm Research – A*STAR & National University of Singapore

A*STAR's Institute for Infocomm Research (I²R) pioneers a new class of antennas exploiting metamaterial technology wherein a zero-phase-shift (ZPS) line has been proposed and applied to design antennas. The development of the zero-phase-shift line has created a unique and "Singapore-brand" metamaterial-based antenna technology. This new class of high performance zero-phase-shift line based antennas has been developed for wide-range applications from LTE, WLAN/WiFi to RFID systems. In RFID systems, the developed zero-phase-shift line structure features lesser lag and will hence increase the reliability of RFID tag detection that are useful in the areas of sensitive products tracking and the logistics sector.

2. Nanomaterials and Nanotechnology for Sustainable Water Solutions: Purification and Desalination

By Singapore University of Technology & Design

Water desalination and purification represent a critical process towards the solution of water shortage worldwide. Dr. Yang's research team focused on surface modified ultralong carbon nanotubes (UCNTs) membranes and used them as desalination and purification devices for seawater.

It is found that the composite UCNT-MCE membranes can effectively absorb salt, biomolecules, and heavy metals with more than 400% of adsorption capacity, which is 2 orders of magnitude higher than current technologies.

3. AGLAIA: Automatic Glaucoma Diagnosis and Its Genetic Association Study through Medical Image Informatics

By Institute for Infocomm Research – A*STAR

The AGLAIA system automatically processes and analyses eye retinal images to detect visual cues for glaucoma detection. The system was developed by an interdisciplinary team of computer scientists and engineers from the Institute for

Infocomm Research, A*STAR and clinician–scientists from the Singapore Eye Research Institute.

AGLAIA will potentially lead to cost savings in the clinical management of glaucoma. A key advantage of AGLAIA is that it is designed to work on digital non–stereo retinal (fundus) images, which is a cost–effective ocular imaging modality widely available in primary healthcare institutions such as polyclinics, and increasingly optical shops as well. In this way, AGLAIA will be able to act as a tool to facilitate mass screening for the early detection of glaucoma to save sight. There are no other systems in use worldwide for this purpose.

4. one–north By JTC Corporation

Launched by President Tony Tan on 4 December 2001, one–north is a 200–hectare master development by JTC Corporation.

Strategically positioned near to tertiary institutions and science parks, its world–class business park facilities are built to promote research and development in Biomedical Sciences, Infocomm Technology, Media, supported by strong Science & Engineering capabilities.

The one–north master plan, enabled by engineering innovations and capabilities, consciously adopts a work–live–play–learn concept for inspiring minds to congregate, collaborate and create.

5. Keppel FELS DSS™ 20NS – Floatel Superior By Keppel FELS Limited

First–of–its–kind: DSS™20NS is first accommodation semi designed and built to operate in North Sea, one of the harshest offshore environment.

New generation rig with advanced technical features, engineered to surpass prevailing industry benchmarks and raise the bar for offshore safety and accommodation standards in the oil and gas industry.

Singapore – ASEAN collaboraton: Singapore–centric design and innovation combined with ASEAN–wide execution.

6. Intelligent Energy System (IES) Pilot

By ST Electronics Pte Ltd – Info-Comm Systems

Energy Management has gained importance going forward. The Intelligent Energy System Pilot is an important step towards a smarter power grid, enabling informed consumers choices and control over electricity usage.

ST Electronics Info-Comm Systems, in partnership with Accenture and EMA, provided Advanced Metering Infrastructure (AMI) and Communication System in support of energy providers and consumers.

The resulting Smarter Power Grid will assist to drive energy efficiency and provide holistic views on energy consumption, this marks a big step towards energy efficiency and energy surety.

7. Incident Management System: An Integrated Advanced Platform to mitigate the impact of Natural Disasters, Human-induced Environmental Hazards and unforeseen events from Climatic Change

By ST Electronics Pte Ltd – Large-Scale Systems Group

Singapore Technologies Electronics Limited had completed an engineering project on Incident Management System (IMS) in 2012.

It is a technological, collaborative platform that drastically improves the effectiveness, efficiency and productivity in the management of environmental related incidents or crises over the traditional way.

The system facilitates analysis and forecast, and helps generate better preventive actions and response plans. It thus contributes significantly towards mitigation of environmental impacts on the society at large.

8. Voiceprint Technology: My Voice Tells Who I am By Institute for Infocomm Research – A*STAR

Dr Li Haizhou and his team made a remarkable breakthrough in developing voiceprint technology, which identifies a person accurately by his/her voice. The team achieved a leading performance in US National Institute of Standards and Technology international competitions in 2008 and 2012, and deployed the technology to power Baidu-Lenovo A586, the world's first voiceprint smartphone. The release of the Baidu-Lenovo A586 marks an important milestone of mass market adoption of speaker verification technology. The voice-unlock feature in the smartphone allows users to unlock their phone screens using spoken passphrases.

9. Eyefly 3D – Making 3D Available for Anyone, Anytime, Anywhere

By Nanoveu Pte Ltd; Institute of Materials Research and Engineering – A*STAR & Temasek Polytechnic

Eyefly3D, is a thin, flexible screen protector which, when affixed to a high resolution device turns mundane 2D into a glasses-free 3D viewing platform. This extraordinary plastic film measures at a mere 0.1 mm, and is the first glasses-free 3D accessory that can display content in both portrait and landscape modes.

Coupled with software applications for both the Apple iOS and Android platforms, mobile device users are able to play 3D content via the film, and these applications allow 2D pictures taken to be converted into 3D. Development is also underway on a software development kit that enables game developers to convert their existing games into 3D versions.

10. Inexpensive Game-Changing and Sustainable Technology for Clean Energy Production

By National University of Singapore

World's first tri-hybrid technology to deliver efficient on-site hydrogen production from raw water and sunlight.

New generation of photocatalysts having high tolerance towards diverse water conditions.

A key technology to convert buildings into energy-generating ones.

11. AgilFence Perimeter Intrusion Detection System (PIDS)

By ST Electronics (Satcom & Sensor Systems); Changi Airport Group & Institute for Infocomm Research – A*STAR

AgilFence is an indigenous designed & developed system using patent-pending Fibre Bragg Grating technology & unique intelligent adaptive signal processing algorithm. AgilFence is high performance & cost-effective, field-proven in Changi Airport and more than 10 other sites. AgilFence is a force multiplier. It allows security forces to reliably detect, pinpoint and respond to any attempt of perimeter intrusion.

12. Flexible Aqueous Rechargeable Battery for Wearable Electronics By Nanyang Technological University

High power rechargeable symmetric battery featuring low cost Hewettite mineral rock fiber electrodes.

Aqueous based electrolyte for safe performance compared to lithium-ion or lead acid batteries.

Flexible battery architecture optimized for wearable electronics applications.

13. Brain Controlled Home By Republic Polytechnic

To help patients who can't move, speak or move eyeballs to control household electrical appliances such as TV, Light, and Fan or those patients just by "Thinking".

User-friendly and easy-to-use.

Cost-effective and affordable.

Appendix C

IES Lifetime Engineering Achievement Award 2013 – Profile of Recipient

Emeritus Er. Prof Lee Seng Lip

Professor Lee Seng Lip graduated from Mapua Institute of Technology, Manila with a BSCE Degree and was awarded the President's Gold Medal in 1950. He obtained his MSE Degree from the University of Michigan, Ann Arbor, in 1951 and his PhD from the University of California, Berkeley, in 1953. Upon graduation, he worked for Bechtel Corporation, San

Francisco, until the fall of 1955 when he joined the Department of Civil Engineering at Northwestern University, Evanston, Illinois, as an Assistant Professor and was promoted to full Professor in 1960 and supervised 26 PhD graduates before joining the Asian Institute of Technology, Bangkok, in 1968 as Professor and Head of Division of Structural Engineering and Mechanics. He supervised 13 DEng graduates before joining the National University of Singapore in 1975 as Professor and head of Department of Civil Engineering, a position he held until 1989. He was conferred an Emeritus Professorship in 1990 and continued to serve as professorial Fellow. To-date he has supervised 14 PhD graduates.

His research interests cover infrastructural engineering with particular reference to structural, geotechnical and construction technology in which field he has published more than 500 papers in international and regional journals and conferences and delivered many keynote addresses in many countries. He has served as advisor/consultant in numerous infrastructure projects, director of companies in the industry and is co-holder of a patent on Fibredrain for consolidation of soft clay.

He is an Honorary Fellow of IES, an Honorary Member of ASCE, and a recipient of the University of California Berkeley Distinguished Engineering Alumnus Award (1991). For his contributions in civil engineering education, research and development, and professional practice, he has received honours and awards which include A P Greenfelder Construction Prize (1982) of American Society of Civil Engineers, Maurice P van Buren Structural Engineering Award (1989) of American Concrete Institute, International Federation of Asian and Pacific Contractors Association and Philippine Contractors Association Foundation Research Awards for Works on Deep Basements (1979) and Soil Stabilization (1982), Public Administration Medal (Silver) Singapore (1985), Singapore National Science and Technology Award (1987) and First Institution of Engineers Singapore Innovators' Award (1990). A symposium on Innovative Solutions in Structural and Geotechnical Engineering was held in his honour (1999), jointly sponsored by the School of Civil Engineering, Asian Institute of Technology, Thailand and Department of Civil Engineering, National University of Singapore. He was conferred the title of Honorary Fellow of the Asean Federation of Engineering Organizations in 2006. Another symposium on his contribution to Education, Research and Practice in Civil Engineering and Infrastructure was held in Singapore (2011) organized by the Department of Civil and Environmental Engineering, National University of Singapore.