

Press Release

The Hong Kong Institution of Engineers Announced the Awardees of Five Engineering Awards

(15 March 2024, Hong Kong) At its 46th Annual Dinner today, the Hong Kong Institution of Engineers (hereafter “the HKIE”) paid tribute to the stellar and multivarious achievements of some of our city’s most distinguished engineering professionals by presenting them with a diverse spectrum of awards.

The HKIE is pleased to have The Hon Andrew Leung Kwan-yuen, GBM, GBS, JP, President of the Legislative Council of the HKSAR, as the Principal Guest at the Dinner, and Dr Sunny Chai Ngai-chiu, SBS, JP, Chairman of the Hong Kong Science and Technology Parks Corporation, as the Guest of Honour.

The President of the HKIE, Ir Dr Barry C H Lee, presented the five engineering awards. The HKIE Honorary Fellows were awarded to Ir Prof Lau Ching Kwong and Ir Edmund Leung Kwong Ho; The HKIE Gold Medal, to Ir Prof Naemullah Hussain; The President's Award, to Ir Szeto Ka Sing; and the Young Engineer of the Year Award, to Ir Dr Kwok Tai Wai. The HKIE Grand Award 2024’s numerous recipients are set out later in this press release.

The HKIE Honorary Fellow 2024

Each year, especially distinguished members may be elected as Honorary Fellows for the remarkable services that they have rendered to the HKIE, the engineering industry, or a scientific discipline. This year two Fellows were elected.

Ir Prof Lau Ching Kwong is a highly experienced civil and structural engineer. After receiving his Diploma in Building from Hong Kong Technical College in 1965 (now The Hong Kong Polytechnic University), he continued his extensive knowledge journey. He earned his Bachelor of Engineering in Civil Engineering from Hong Kong Chu Hai College, Master of Science in Bridge Engineering from University of Surrey, and finally, Doctorate in Engineering from Tsinghua University. He is proudly the first Hong Kong engineer to receive this doctorate.

Ir Prof Lau’s distinguished civil service career spanned more than 35 years. He began with the Hong Kong Government in 1966 as Assistant Engineer. In 1994 and 1996 respectively, he was promoted to Government Engineer and Principal Government Engineer. He became Deputy Director of Highways Department in 1997. In late 2000 until his retirement in 2002, he was Director of Civil Engineering Department (now the Civil and Engineering Development Department (CEDD)).

In Hong Kong, Ir Prof Lau earned the title of “King of Bridges (香港橋王)” for his knowledge and experience in planning, designing and building large-scale infrastructure projects. He is particularly well-known and praised for his work on Hong Kong’s three world-class cable supported bridges that grace Hong Kong’s skyline - Tsing Ma Bridge, Kap Shui Mun Bridge and Ting Kau Bridge. While Director of the CEDD, he was instrumental in the early planning and design of Hong Kong Disneyland Theme Park after the government approved construction in 1999.

In 1999, he received “Mao Yisheng Bridge Construction Grand Award (茅以升橋樑大獎)” and “Tien-yow Jeme Civil Engineering Prize (中國土木工程詹天佑獎)” for his outstanding contribution to the Hong Kong and Mainland China engineering field.

Upon retiring in late 2002, Ir Prof Lau was engaged in 2003 as Executive Director of Transportation by AECOM Asia Co. Ltd. In this role, he managed and coordinated construction of Sutong Bridge, Shanghai Yangtze River Crossing /Tunnel and Bridge and Hong Kong-Zhuhai-Macao Bridge.

In recognition of his significant contribution to the engineering profession and society, Ir Prof Lau is a fellow of the HKIE, Hong Kong Institution of Highways and Transportation, Institution of Structural Engineers, Institution of Civil Engineers, and Hong Kong Academy of Engineering Sciences. He was elected President of the HKIE for Session 2002/2003 and to this day remains involved in its initiatives.

With more than 40 years of experience and knowledge to share with fellow and future engineers, he is currently a valuable mentor to the teaching team in the Department of Civil Engineering at his alma mater Hong Kong Chu Hai College and has been a part-time professor at Tsinghua University since 2004.

Ir Edmund Leung Kwong Ho has made significant contributions to engineering and society over his long career.

He received his Bachelor of Engineering in Mechanical Engineering from The University of Hong Kong (HKU) in 1967. In the 1970s he helped build the E&M system for phase one of the Mass Transit Railway system. To develop his engineering skills, he worked at a number of leading organisations including China Light and Power, GEC Hong Kong, HUD Engineering and Parsons Brinckerhoff (Asia). Gaining experience as a consulting engineer and contractor, he eventually moved up to senior management positions, overseeing a diverse range of engineering works. At the UK-based Hyder Consultants Group, he was Chairman of the East Asia Region and a Main Board Director. Afterwards, he became Managing Director of Hsin Chong Construction Group, a publicly listed entity. After retirement, he became Chief Officer of Kowloon-Canton Railway Corporation, managing its railway assets following the merger with MTR.

Ir Leung is very active in public service, having served in many capacities on town

planning, energy, public utilities and politics. He has voted for all of Hong Kong's Chief Executives as a member of the Selection Committee and Election Committee. He was a member of the Airport Authority, Town Planning Board, and Energy Advisory Committee. He was Chairman of the latter and was also Chairman of the Drinking Water Safety Advisory Committee. He is an advisor to the Ombudsman. His current non-engineering public service includes Deputy Chairman of The Hong Kong Institute of Directors and a Director of the ESG Consortium.

Ir Leung has played an active role in HKIE. He joined the Mechanical Engineering Division in the 1970s and later helped form the Building Services Group, Nuclear Engineering Division and Energy Discipline. He was President for session 1995/1996 and continues to actively participate in HKIE activities to this day. He has mentored young engineers including leading many delegations to Mainland China to broaden their outlook beyond Hong Kong.

For the last four years, Ir Leung has been a columnist at The Standard, writing about Hong Kong's infrastructure and other current topics to promote engineering to young people. He is also helping to compile the history of Hong Kong infrastructure as an editor of a volume of Hong Kong Chronicles.

To award his outstanding contribution to the profession and society, Ir Leung has received Order of the British Empire, Justice of Peace, Silver Bauhinia Star, and HKIE Hall of Fame. He is an Honorary Fellow of Energy Institute and Chartered Institution of Plumbing and Heating Engineering. He is also a Fellow of HKIE, Engineers Australia, Chartered Institute of Building Services Engineering and Hong Kong Academy of Engineering Sciences. Academically, he is an Honorary Fellow of HKU and Lingnan University.

The HKIE Gold Medal 2024

Each year, the Gold Medal is awarded to an outstanding member in recognition of his/her specific contributions to or achievements in his/her engineering field. This year, the Medal went to **Ir Prof Naeemullah Hussain**.

Ir Prof Hussain is an internationally recognised engineer and architect. Born in India, he graduated from West Pakistan University of Engineering and Technology in 1962. He first worked in East Pakistan (now Bangladesh) for Associated British Consultants, designing buildings and factories, before transferring in 1964 to Kenchington Little & Partners in London, one of their controlling firms.

From 1966 to 1967, he studied architecture at Architectural Association School of Architecture in London before joining Christiani & Nielsen to work as a construction engineer on the M5 Midland Links Motorway viaducts.

In 1969 Ir Prof Hussain joined Arup, where he has worked up to the present, except for a year off to earn his Master of Science degree in Concrete Structures at Imperial College London and a year in Pakistan working for Gammon Construction.

With Arup he has worked in Canada, Hong Kong, Malaysia, Nigeria, and UK. He has been involved in bridge designs in Australia, Brunei, Canada, China, Chile, Denmark, England, Hong Kong, India, Indonesia, Iran, Korea, Malaysia, Maldives, Myanmar, New Zealand, Nigeria, Philippines, Scotland, Singapore, South Africa, Sweden, Thailand, Tonga, Turkey, United States, and Vietnam.

Based in Hong Kong since 1998, Ir Prof Hussain is an Arup Fellow and its Global Bridge Leader. In 2012, he was awarded the Prince Philip Medal by the Royal Academy of Engineering (RAEng) in UK for Exceptional Services to Engineering. In 2018, he was inducted into the Scottish Engineering Hall of Fame. In 2022, he received the Institution of Structural Engineers (IStructE) Gold Medal in recognition of his enduring major and inspirational contributions to bridge design on a global scale, reflecting his background in both architecture and engineering. He is a Fellow of the Hong Kong Academy of Engineering Sciences, Royal Academy of Engineering, and the HKIE.

Some notable award-winning projects he worked on, both as designer and project manager, are: Ludgate Railway Works (London), Oresund Crossing (Denmark-Sweden), Channel Tunnel Rail Link – High Speed 1 (UK), Hulme Arch Bridge (UK), West Rail Line (Hong Kong), Hong Kong-Shenzhen Western Corridor (Hong Kong), Incheon Bridge (Korea), Stonecutters Bridge (Hong Kong), Queensferry Crossing (Scotland), Hong Kong-Zhuhai-Macao Bridge (China), Temburong Bridge (Brunei) and Gerald Desmond Bridge (the United States).

Ir Prof Hussain's interest is in holistic approach to design, where form, function and economics each carry equal weight. He was Chair of Outstanding Structures Committee of International Association for Bridge and Structural Engineering and is the Hong Kong delegate to Permanent Committee of the Association.

The President's Award 2024

The President's Award was set up by the Institution to recognise the dedicated and valuable services of members of any class who had served the HKIE with distinction. This year, the award went to **Ir Szeto Ka Sing**.

Ir Szeto is a Fellow Member of the HKIE. His professional service spans over 50 years, with profound expertise in Marine and land transport, as well as oil and gas engineering. He is a certified inspector for Ocean-going Dangerous Goods Tankers.

Ir Szeto had assisted various government departments as professional expert on court cases related to lift incident, gas explosion and underground chemical tank leakage. He

also provided expert input into legislative amendments to ordinances related to Merchant Shipping, Amusement Rides, Lifts and Escalators.

He was a Member of Engineers Registration Board, and Vice President of the Institute of Marine Engineering, Science and Technology, UK. He is now the Chairman of the International Strategy Board of the Institution of Mechanical Engineers, UK.

Young Engineer of the Year Award 2024

The Young Engineer of the Year Award aims to recognise outstanding young engineers for their significant contributions to, and outstanding achievements in, the profession, the community of Hong Kong, and the HKIE. This year, **Ir Dr Kwok Tai Wai** received the Award.

After earning a master's degree in Civil and Environmental Engineering from Imperial College London, and another one in Mathematics of Finance from Columbia University, Ir Dr Kwok went on to pursue a doctorate in International Real Estate and Construction from The Hong Kong Polytechnic University (PolyU), completing the programme in 2023 as its youngest graduate.

Ir Dr Kwok has worked extensively in both civil and building engineering projects, including, while at the engineering consultancy Atkins, the Guangzhou–Shenzhen–Hong Kong Express Rail Link and Doha Metro. A fascination with prefabrication and MiC led, by degrees, to the position of Head of Operations at Wah Tung Façade and the task of overseeing its façade and MiC business, and over 300 employees. Iconic façade projects like Hong Kong Palace Museum and Fullerton Ocean Park Hotel were among the fruits of his supervision.

Ir Dr Kwok is currently leading the technology start-up InnoWah—as its Founder and CEO—to develop a digitalised fabrication process for building materials to enhance operational efficiency and product quality. He has also published research papers as first author in international journals, driving Hong Kong's adoption of prefabrication and digital technology.

As Founder and Chairman of Insquare Foundation Limited, a registered charity, Ir Dr Kwok cultivates young people's knowledge of programming languages, inclusively their community participation, and provides STEAM education for financially disadvantaged students. Even before such endeavours, he was a volunteer teacher at Principal Chan Free Tutorial World.

Apart from serving as Professional Reviewer for Institution of Civil Engineers, Ir Dr Kwok nurtures young minds in his capacities as HKIE School Ambassador and Mentor of PolyU's and Federation of Hong Kong Industries' (FHKI's) mentorship programme. As Executive Member of two FHKI councils, he tirelessly shares his experience and

co-organises CPD events, recruiting new young members for the HKIE in Greater Bay Area's manufacturing industry. Besides, he is a part-time lecturer at two member institutions of Vocational Training Council teaching engineering subjects.

Certificates of Merit for the Young Engineer of the Year Award 2024 went to Ir Francis Yuen Piu Hung and Ir Lo Yuk Hong.

The HKIE Grand Award 2024

The HKIE Grand Award champions our members' and their projects' exemplary contributions to the development of Hong Kong.

Innovation Category

Grand Prize, Sub-category I – An Invention (All Member Group)	Ir Prof Ngan Hing Wan, Alfonso Awarded Project: Rate-jump method for nanomechanical testing
Grand Prize, Sub-category II – An Innovative Application (All Member Group)	Ir Lau Hoi Fung, Ir Prof Tso Chi Yan, Dr Chan Ka Chung, and Ir Leung Chi Fai Awarded Project: iPaint AI and related best practices
Grand Prize, Sub-category II – An Innovative Application (Young Member Group)	Ir Ng Ka Chun, Mr So Tin Ching, Miss Ng Chak Lam Rica, and Mr Chan Wai Ching Charles Awarded Project: Intelligent Safety 2.0 for Light Rail Utilising IoT, AI & Computer Vision

Infrastructure Category

Grand Prize	Ir Leung Chung Lap Michael and Ir Tsang Hing Kai Ivan Awarded Project: Tseung Kwan O - Lam Tin Tunnel
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Awarded Projects of The HKIE Grand Award 2024

The HKIE Grand Award 2024 - Innovation Category

Sub-category I - An Invention (All Member Group)

Awardee: Ir Prof Ngan Hing Wan Alfonso

Submission: Rate-jump method for nanomechanical testing

There has been enormous interest in and demand for accurately measuring the mechanical properties of soft materials, such as biological cells and tissues, advanced polymers and gels, etc., using nanomechanical test platforms including nanoindentation, atomic force microscopy and optical tweezers. In addition, metals and alloys for high-

temperature applications also require non-destructive testing for their mechanical properties. This award concerns a general method for accurately measuring the intrinsic elastic modulus of materials by introducing a rate jump in the test force or sample displacement during an unloading process in any nanomechanical test platform. The method is widely used by peer researchers. It has also been developed into a Chinese National Standard GB/T 43112-2023 for instrumented indentation for metallic materials, which will be implemented starting from 1 April 2024. This standard is an example of China leading the world in engineering methods for material testing.

The awardee, Ir Prof Alfonso H W Ngan, is Kingboard Professor in Materials Engineering and Chair Professor of Materials Science and Engineering at The University of Hong Kong. He is an International Fellow of the Royal Academy of Engineering in the UK, Fellow of the Hong Kong Academy of Engineering, and recipient of the Guanghua Engineering Science and Technology Prize of the Chinese Academy of Engineering, Changjiang Professorship from the Chinese Ministry of Education, and Rosenhain Medal from the Institute of Materials, Minerals and Mining, UK.

Sub-category II - An Innovative Application (All Member Group)

Awardees: Ir Lau Hoi Fung, Ir Prof Tso Chi Yan, Dr Chan Ka Chung, and Ir Leung Chi Fai

Submission: iPaint AI and related best practices

Times Square, embracing its architectural legacy, has pioneered energy conservation through electricity-free cooling technology, iPaint, which has high solar reflection and mid-infrared emission. It is applied to cooling towers' condenser water pipes, effectively lowering condenser water temperature. AI algorithms complement iPaint by dynamically adjusting cooling tower setpoints to ensure energy-efficient operation without compromising occupant comfort, a breakthrough known as iPaintAI. This advanced system further integrates BIM, GIS, IoT sensor data, and BMS analytics for peak performance.

Simultaneously, a suite of best practices fortify the iPaintAI initiative:

- Crafting a BIM model streamlines mechanical plant management.
- Rigorous RCx protocols enforce measurement and verification for plant enhancement.
- Cooling tower thermal performance undergoes scrutiny, aligning with established fresh water cooling standards.
- A comprehensive energy audit, conducted in 2022, adheres to the stringent BEEO.

This transformative project is helmed by a team of distinguished professionals: Ir Lau,

Technical Director at EnerRight Intelligent Limited; Ir Prof Tso, Associate Professor at CityU; Dr Chan, Research Assistant Professor at the PolyU; and Ir Leung, Technical Manager at Times Square Limited.

Sub-category II - An Innovative Application (Young Member Group)

Awardees: Ir Ng Ka Chun, Mr So Tin Ching, Miss Ng Chak Lam Rica, and Mr Chan Wai Ching

Submission: Intelligent Safety 2.0 for Light Rail Utilising IoT, AI & Computer Vision

Safety is of paramount importance in railway operations. The Intelligent Safety 2.0 is an advanced solution that enhances safety in Light Rail System by leveraging Computer Vision, Artificial Intelligence (AI) and Internet of Things (IoT) technologies. It provides anticipative and comprehensive measures under the Light Rail environment, given its unique feature of high interface volume with roadside traffic.

The system continuously monitors train speed, track conditions, and detects risks such as trespassers or track obstructions, issuing real-time reminders and offering automatic safety measures. It predicts roadside traffic at complex junctions, identifying potential conflicts and abnormal behaviors to improve Light Rail safety and efficiency.

Ir Ng Ka Chun is the Senior Communications & Network Engineering Manager of the MTR Corporation. All members, including Mr So Tin Ching, Miss Ng Chak Lam Rica and Mr Chan Wai Ching, are MTR home-grown engineers from the Operations Innovation Hub.

The Merit of Sub-category I went to Ir Ho Man Hoi, Ir Law Tsz Wai, Ir Cheung Pik Sin Carry, and Mr Ho Kin Tung Tony (Submission: GOOD Grab (“Generative AI Object-Oriented Debris” Grab)); and Ir Kwok Wang Mo Thomas, Mr Chow Pak Hong, Ir Chan Lung Wai Chris, and Mr Wong Wai Lam (Submission: Smart Antifouling Seawater Screen for Cooling System in Hong Kong).

The Merit of Sub-category II went to Ir Lai Kam Hung Steven (Submission: ATAL Multi-Stages Flocculation Sedimentation III (AMSFS III) x AlgoWater); and Ir Iu Pun Yan (Submission: A revolutionary technological approach in Mountain Search and Rescue Operations).

Besides, the Merit of Sub-category I (Young Member Group) went to Mr Cheng Yau Chung (Submission: Distributed Real-time Autonomous-optimization-based Feedback Control in Microgrids); and the Merit of Sub-category II (Young Member Group) went to Ir Leung Kin Fung Calvin (Submission: Mass Deployment of AI-based Chiller Energy Optimisation using Semantic AI Approach and Large Language Model (LLM)).

The Merit of Industrial Category went to Dr Yang Haokun (Submission: High-Strength

Steel Intelligent Process Database Based Pre-programmed Multi-Point Positioning Arc-welding Technology).

The HKIE Grand Award 2024 - Infrastructure Category

Awardees: Ir Leung Chung Lap Michael and Ir Tsang Hing Kai Ivan

Submission: Tseung Kwan O - Lam Tin Tunnel

Tseung Kwan O - Lam Tin Tunnel provides a new trunk road for Tseung Kwan O, connecting Kowloon East and the Eastern Harbor Crossing. It is also the eastern section of the future Route 6 that will serve as an express link between Kowloon East and West.

Completed during an extremely challenging time, the project successfully overcame various difficulties. The tunnel design incorporated many innovative elements to enhance sustainability and overall project benefits. These include locating the ventilation building partially in caverns, applying the “single site, multiple use” concept to turn a landscaped deck into the Tseung Lam Highway Garden for public enjoyment, etc.

The new tunnel has significantly improved the traffic conditions of Tseung Kwan O and its environs, shortening the journey time to Kowloon East by 20 minutes during the morning peak hours. The notable infrastructural improvement, to which people’s livelihood is closely related, enhances their sense of blissfulness, as well as promotes the continuous development of Tseung Kwan O.

Besides, the Certificate of Merit went to Ir Yan Chun Ho, Ir Cheung Kin Wai Chris, and Mr Ho Siu Wai (Submission: Tung Chung New Town Extension - Reclamation and Advance Works); and Ir Choy Man Yee, Ir Liu Lik Hang Rex, and Ir Wong Fai (Submission: Enhancement works for Kwun Tong sewage pumping station).

This Session's award recipients have demonstrated engineering excellence that has significantly advanced Hong Kong society. They have set a new pinnacle for engineers through their innovative work, leadership, and dedication to serving the community.

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Ir Dr Barry C H Lee, the HKIE's President, delivering his Address



The Hon Andrew Leung Kwan-yuen, President of the Legislative Council of the HKSAR, delivering his Address as the Principal Guest



Ir Prof Lau Ching Kwong (L), the HKIE Honorary Fellow 2024, with the President



Ir Edmund Leung Kwong Ho (R), the HKIE Honorary Fellow 2024, with the President



Ir Prof Naemullah Hussain (L) being presented The HKIE Gold Medal 2024 by the President



Ir Szeto Ka Sing (R) being presented with the President's Award 2024 by the President



Ir Dr Kwok Tai Wai (R) being presented with Young Engineer of the Year Award (YEYA) 2024 by the President



HKIE President Ir Dr Barry C H Lee (6th left) with Grand Prize awardees of The HKIE Grand Award