

# THE 21<sup>ST</sup> ANNUAL POWER SYMPOSIUM 2023

15<sup>th</sup> September 2023

Sheraton Hong Kong Hotel & Towers

## Sustainable Energy and Technology Development for Smart Liveable City



Organised by  
Power & Energy Section, The Institution of Engineering and Technology Hong Kong

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# Past Symposiums

No	Year	Symposium Theme	Chairman	Area
1 <sup>st</sup>	2001	Traction Development in Hong Kong	David TW CHAN	N/A
2 <sup>nd</sup>	2002	Modern Building Electrical Systems Status Quo & Issues	Thomas KC CHAN	Building
<i>2003 Symposium cancelled due to the outbreak of SARS</i>				
3 <sup>rd</sup>	2004	Power Supply Network in the Digital Era	TK CHIANG	Power
4 <sup>th</sup>	2005	Green Energy & Utilisation – Reality or Idealism	KK LI	Energy
5 <sup>th</sup>	2006	Conquering the Height – Challenge to Electrical Technology in Skyscrapers	Albert TO	Building
6 <sup>th</sup>	2007	The Ever-Changing Electricity Market – Challenges from Generation through Delivery to Utilisation	SK HO	Power
7 <sup>th</sup>	2008	Engineering A World Class City – The Role of Leading Edge Technology	Norman TSE	Power
8 <sup>th</sup>	2009	Hong Kong in the next Decade Infrastructure and Technological Development	WS TAM	Building
9 <sup>th</sup>	2010	Energy Generation, Utilisation and Recovery – Confronting the Challenge on Climate Change	MS KWAN	Energy
10 <sup>th</sup>	2011	How Smart is Smart Grid? – Challenges and Opportunities	CN LEUNG	Power
11 <sup>th</sup>	2012	Road to Zero Carbon Building – How applicable in Hong Kong?	CY CHUNG	Building
12 <sup>th</sup>	2013	Engineering for Cable-Neutral World? – Built Environment Technology for Cosmopolitan Hong Kong	Roy MUI	Energy
13 <sup>th</sup>	2014	Dynamic & Flexible Response of Today's Power Network Operation to the Changing Environment	Keith CHAN	Power
14 <sup>th</sup>	2015	A Global Pursuit for Zero Carbon Building: Challenges and Solutions – The Hong Kong Story	Peter LEUNG	Building
15 <sup>th</sup>	2016	Energy Saving – A Challenge? – Opportunities and Technologies	Cathen HO	Energy
16 <sup>th</sup>	2017	What it takes to Digitize the Operations of a Power System?	Jacky HUNG	Power
17 <sup>th</sup>	2018	Zero Carbon Building within a Smart Cosmopolitan City in Greater Bay Area – The Hong Kong Approach on Global Platform	Enzo WONG	Building
18 <sup>th</sup>	2019	Energy Refined in The Era of The Internet and The Renewables	Alex CHAN	Energy
<i>2020 Symposium cancelled due to the outbreak of COVID-19</i>				
19 <sup>th</sup>	2021	Challenges for Future-Proof Power Systems in the Digital Era – Planning, Operation and Maintenance	Edmond LEUNG	Power
20 <sup>th</sup>	2022	Building the Carbon Neutral Future – Challenges and Opportunities	Alfred LEE	Building

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## Message from Chairman of Power and Energy Section The Institution of Engineering and Technology Hong Kong

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Welcome to the 21<sup>st</sup> Annual Power Symposium – our annual flagship event organised by the Power and Energy Section (PES) of the Institution of Engineering and Technology (IET) Hong Kong.

This year's theme is "Sustainable Energy and Technology Development for Smart Liveable City". Smart Liveable City is an emerging trend that optimises resource utilisation, enhances the quality of life and reduces environmental impact by incorporating the latest technologies and innovative solutions. One of the key aspects is sustainable energy and technology development, which plays a vital role in realising carbon neutrality and energy conservation, bringing numerous benefits to smart city, such as reduced energy consumption, lower greenhouse gas emissions, improved air quality and enhanced economic growth.

Our symposium provides an excellent platform for stakeholders to share how an intelligent technology can be integrated into daily life, and foster exchange among participants from different sectors. We are thrilled to see an exciting lineup of presentations covering a wide range of subjects related to smart city development.

We are honoured to have Ms Diane Wong, Under Secretary for Environment and Ecology, HKSAR Government, deliver the opening remarks, followed by keynote presentations from Mr Paul TOMLINSON, Chief Operating Officer of CLP Power Hong Kong Limited; Ir Eric PANG, JP, Director of Electrical and Mechanical Services Department, HKSAR Government; and Prof. Jerry YAN, Chair Professor of Energy and Buildings of The Hong Kong Polytechnic University.

There will also be a diverse mix of presentations shared by academia, government, power utilities and industry sectors. Topics including AI optimisation, EV charging and grid integration, decarbonization, gas dehumidification, hybrid wind-tidal technology, robotic, and more. We are confident that you will find these presentations engaging and informative.

Finally, I would like to extend my warmest congratulations to all members and helpers of the Organising Committee, led by Ir Kan IP, the Chairman of the 21<sup>st</sup> Power Symposium Organising Committee, for organising this successful forum. I hope that you enjoy this symposium and take away valuable insights that will contribute towards the development of smart liveable city.

*Alfred LEE*

*Chairman, Power & Energy Section*

*The Institution of Engineering and Technology Hong Kong*

## Message from Chairman of Organising Committee, The 21<sup>st</sup> Annual Power Symposium

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On behalf of the Organising Committee, it is my great pleasure and honor to invite all the distinguished guests, speakers and participants to the 21<sup>st</sup> Annual Power Symposium 2023.

Being a vibrant international city, Hong Kong has been facing the challenging dilemma of continuous development against minimising the impact on environment and ecology. The theme of the Symposium this year is “Sustainable Energy and Technology Development for Smart Liveable City”. We have invited industry experts and renowned scholars from the government, public utilities, engineering and technology companies, as well as universities to share us their valuable insights and experiences covering various innovative technologies and applications across the energy spectrum. Through the symposium, we endeavor to foster discussion and idea exchanges in the areas of energy sustainability and smart liveable city.

We sincerely express our gratitude to our distinguished guests, Ms Diane Wong, to deliver the Opening Remark, and Mr. Paul Tomlinson, Ir Eric PANG and Prof. Jerry YAN to present the keynote speeches. We also express our heartfelt thanks to all the technical papers’ authors and speakers, as well as our event sponsors and supporting organisation to make the event successful. Furthermore, special thanks to the Organising Committee members, helpers and advisors. Your selfless dedications have painted the event with flying colors.

Lastly, please join me to give a big applause to all of you as the event guests and participants. Your presence and unfailing support have made this flagship event fruitful and meaningful for over two decades. May I appeal your continuous participation in the future, and together let’s engineer a better, smarter, more sustainable and liveable world!

*Kan IP*

*Chairman, on behalf of the Organising Committee*

*The 21<sup>st</sup> Annual Power Symposium*

# Acknowledgements

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## **Special Acknowledgements**

*The Power and Energy Section of the IET Hong Kong would like to extend its sincere gratitude to*

### **Construction Industry Council**

*for their support to the 21<sup>st</sup> Annual Power Symposium*

## **Acknowledgements**

*The organising committee would also like to express appreciations to the following organisations and companies for sponsoring the 21<sup>st</sup> Annual Power Symposium*

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Ir Alex S H CHAN	Siemens Energy Limited
Ir Cathen Y K HO	CLP Power Hong Kong Limited
Mr Jacky C K HUNG	The Hongkong Electric Company, Limited

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Committee Member	Mr Keith T M WONG	Siemens Limited
Committee Member	Ms Venus X X XU	MTR Corporation Limited

# Programme

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08:45 – 09:15	<b>Registration</b>
09:15 – 09:20	<b>Welcome Address</b> <i>Ir Alfred LEE – Chairman of Power &amp; Energy Section, IET Hong Kong</i>
09:20 – 09:40	<b>Opening Remarks</b> <i>Miss Diane Wong, JP – Under Secretary for Environment &amp; Ecology, HKSAR Government</i>
09:40 – 09:50	<b>Group Photography</b>
09:50 – 10:10	<b>Keynote Presentation - 1</b> <i>Mr Paul TOMLINSON – Chief Operating Officer of CLP Power Hong Kong Limited</i>
10:10 – 10:30	<b>Keynote Presentation - 2</b> <i>Ir Eric PANG, JP – Director of Electrical &amp; Mechanical Services Department, HKSAR Government</i>
10:30 – 10:40	<b>Souvenir Presentation to Sponsors and Supporting Organisation</b>
10:40 – 11:10	<b>Coffee break</b>
11:10 – 11:35	<b>Paper 1: Building a Sustainable Future: Improving Building Energy Efficiency for Decarbonisation</b> <i>Mr Nicky TSANG – CLP Innovation Enterprises Limited</i>
11:35 – 12:00	<b>Paper 2: An AIoT-Based Power-Saving Audio Visualiser powered up by USB Type-C with 8051/RISC-V Core for the Smart Home &amp; Electric Vehicle Applications</b> <i>Mr Steve CHIM – Hong Kong Science Park</i> <i>Mr Desui KONG – The University of Hong Kong</i>
12:00 – 12:25	<b>Paper 3: Experience Sharing of Adopting Artificial Intelligence Chiller Plant Optimisation Solution</b> <i>Ir Anthony YOW &amp; Ir Victor WONG – Electrical &amp; Mechanical Services Department, HKSAR Government</i>
12:25 – 12:45	<b>Q&amp;A for Morning Session</b>
12:45 – 14:10	<b>Lunch Break</b>
14:10 – 14:35	<b>Keynote Presentation - 3</b> <i>Prof Jerry YAN – Chair Professor of Energy and Buildings, The Hong Kong Polytechnic University</i>
14:35 – 15:00	<b>Paper 4: Innovative Energy Project in Gas Dehumidification for Improving Indoor Environmental Quality</b> <i>Ir Sammy KONG – The Hong Kong and China Gas Company Limited</i>
15:00 – 15:25	<b>Paper 5: Quantifying Flexibility through Smart City Airport Charging and Grid Integration in the UK</b> <i>Prof Xin ZHANG – University of Sheffield</i>
15:25 – 15:50	<b>Paper 6: EV Charging Solution – An Environmental Approach with Resource Sharing</b> <i>Ir Ian LEE – Schneider Electric</i>
15:50 – 16:15	<b>Coffee break</b>
16:15 – 16:40	<b>Paper 7: TRNSYS Simulation and Techno-economic Analysis of a Hybrid Wind-tidal Supported Coastal Zero-energy Community in Hong Kong</b> <i>Mr Perry LI – MTR Corporation Limited</i>
16:40 – 17:05	<b>Paper 8: Development of a New Generation of Smart Cleaner Robot for Autonomous Disinfection</b> <i>Mr CAO Yuning – University of Macau</i>
17:05 – 17:25	<b>Q&amp;A for Afternoon Session</b>
17:25 – 17:30	<b>Closing Address</b> <i>Ir Kan IP – Chairman of Power Symposium 2023 Organising Committee</i>