

Annual Report for Session 2023/2024

1. Foreword

The Electrical Division has a fruitful and successful session in 2023/2024 with the Division Committee's effort and contribution. After three years of pandemic situation, our operation is moving back to normal in full speed together with the society.

With the enlightenment of past Chairmen and great effort of the Committee, we accomplished all planned tasks successfully for the Session. We had unceasingly held eight (8) committee meetings up to April 2023 and two more meetings will be held, including the Division AGM scheduled for 3 May 2024, before the end of this Session.

A number of different technical and social events, including technical visits, technical talks, professional short course, student promotion talks, workshops, competitions and etc, were organised in this session. After four years of pandemic, the Overseas Technical Visit and Mainland Technical Visit were successfully held in July and September 2023 respectively. In addition, the Division on behalf of The HKIE successfully organized the 2023 ICEE Conference in Hong Kong.

The "Young CONNECT Sub-committee" has persistently supported numerous Divisional events and initiatives. Moreover, the sub-committee continued to support the Institution's activities and lead our Electrical Division promotion booth in the Hong Kong Engineers Week in March 2024.

Another new initiative of re-publication of the EE book was also completed in this session. With the effort of the sub-committee members, the new edition of EE book was successfully re-published in March 2024.

The success of this Session owed much to the effort of our Committee, our innovative young members and members' unreserved support.

Details of activities for this Session are summarized in the following sections.

2. 41st Annual Symposium (Chaired by Ir Mandy LEUNG)

The 41st Annual Symposium of Electrical Division was successfully held on 19 October 2023. It was held as a sole physical face-to-face event after three years of pandemic and more than 250 participants attended.

The theme of the Symposium this time was "Emerging Technologies for Sustainable Development", focused on new and innovative initiatives to be adopted for sustainable development in the field of electrical and related engineering.

The Symposium was kicked off by an Opening Address from Mr. Kevin O'Brien, Chairman of Hong Kong Business Environment Council, and the Keynote Speech by Ir Professor CY Chung, Chair Professor of Power Systems Engineering and Head of Department of Electrical and

Electronic Engineering, The Hong Kong Polytechnic University. A total of ten technical papers were presented subsequently by speakers from the public and private sectors, academic institution, power utilities and mass transit in the Symposium, covering different aspects including sustainable development goals, latest development of nuclear fusion, smart grid technologies for the future, carbon neutrality with microgrid implementation, state-of-the-art environmental friendly transformer oil, AI-driven digital twin for sustainable smart building management, AI based forecast models development for PV power system, technical initiatives of sustainable development in new railway lines, city data repository and applications development for built environment, and digital transformation in engineering and construction. All papers were well received by the audience.

Finally, the HKIE Senior Vice President, Ir Eric Ma, JP, concluded the Symposium with a Closing Address.

3. **Technical Programme Sub-committee** (Chaired by Ir Dr. K.F. WONG)

In this session, the Sub-committee organized / co-organized a total of five (5) technical seminars. There were 300 attendees on average for each event. Local and overseas experts in various areas of electrical engineering were invited to give an account on the state-of-the-art developments in the field. Various topics were discussed, ranging from latest updates on transformer analysis, BIM integration, as well as the sustainable development investment. All these sharing served to provide continuous professional development to our members with well received enthusiastic support.

Date	Topic	Speaker(s)
11 Sep 2023	Exploring the Connections and Distinctions between Building Information Modeling (BIM), Information Management, and Digital Twins in the Construction Industry	Ir Francis LEUNG
13 Oct 2023	The New Era of Data Industry's Top Critical Equipment: Standby Power System	Mr. King CHENG
11 Jan 2024	Exploring Sustainable Development and Responsible Investment: Understanding ESG and Its Impact on Financial Markets	Mr. Poxex LAM
23 Jan 2024	Internet of Things (IoT) Development and Application in Hong Kong	Mr. Harris CHAN
11 Mar 2024	The importance of Dissolved Gas Analysis (DGA) on Transformer Maintenance and How to Use it	Mr. Serge Gutieres

4. **Membership Drive Sub-committee** (Chaired by Ir Ian LEE)

In this Session, the Sub-committee organized six membership drive / career talk presentations in physical or online mode for students of University of Hong Kong (HKU), the Hong Kong Polytechnic University (PolyU), School of Professional Education and Executive Development (SPEED), City University of Hong Kong (CityU), Royal Melbourne Institute of Technology

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University (RMIT) and the Hong Kong Institute of Vocational Education (IVE) in Chai Wan, Tsing Yi and Haking Wong. The details of membership drive / career talk presentations were summarised as below:

Date	Institution	Speakers	No. of Participants
8 Nov 2023 1830 – 2030	University of Hong Kong (HKU)	Ir Ian LEE Ir Simon CHUNG Ir Eric LUN Ms. Gloria WONG Mr. Henry KWOK	15
13 Nov 2023 1730 – 1930	Hong Kong Institute of Vocational Training (Haking Wong/Chai Wan/Tsang Yi)	Ir Ian LEE Ir Tim LEUNG Ir Ben LAM Ir Eric LUN Ms. Gloria WONG	95
25 Jan 2024 1200 – 1500	City University of Hong Kong (CityU)	Ir Ian LEE Ir Tim LEUNG Ir Ben LAM Ir Eric LUN Ms. Gloria WONG	36
30 Jan 2024 1900 – 2100	Royal Melbourne Institute of Technology University (RMIT)	Ir Ian LEE Ir Tim LEUNG Ir Ben LAM Ir Eric LUN Ms. Gloria WONG	42
27 Feb 2024 1830 – 2030	School of Professional Education and Executive Development, PolyU (SPEED)	Ir Ian LEE Ir Simon CHUNG Ir Tim LEUNG Ir Eric LUN Ms. Gloria WONG	56
16 Mar 2024 1500 – 1700	Hong Kong Polytechnic University (PolyU)	Ms. Gloria WONG Mr. Henry KWOK	48

The presentations included an introduction on the HKIE and the HKIE Electrical Division, career opportunities in the sectors of Government, public utilities, suppliers, consultants and contractors, as well as the needs and pathway in joining membership of the HKIE. Many questions from students about career path planning and the upcoming opportunities in the industry and emerging technologies in the electrical engineering like BIM-AM, MiMEP, DfMA, VR application and data analytics were well answered. The image of professional engineers has been uplifted where the students were enthusiastic about the nowadays construction technology comparing to their knowledge on traditional methods, and keen to have more in-depth understanding by joining the industry after their graduation.

5. **Energy Innovation for Smart City Competition 2023/2024** (Chaired by Ir Kit CHAN)

The programme has been sponsored by CLP Power Hong Kong Limited and has been organised annually since 2009 for higher form secondary students. It aims to provide an opportunity for the students to propose and implement innovative projects on energy efficiency initiatives and promote energy efficiency to the community. It was firstly launched as the “Energy Innovation Project Competition” and was subsequently re-named “Energy Innovation for Smart City Competition” to give more weight on smart use of energy in a modern city.

There was a total of 78 teams, taking part in the competition where each team struck their best to develop innovative ideas into project. The screening session was held on 20 Apr 2024 while judging panel session will be conducted on 18 May 2024, and a prize presentation ceremony on 27 June 2024.

6. **Electrical Model Design Contest** (Chaired by Ir Stephen YIP)

For the past 12 years, the Division has been organizing a contest for lower form secondary school students with an aim to promote electrical engineering, enhance the knowledge and awareness of renewable energy, and encourage low carbon living. The event was supported by the Education Bureau and City University of Hong Kong in 2023/2024 session. Overwhelming responses were received from 120 lower form secondary school students that formed a total of 26 teams. The contest will be conducted at the University Concourse in City University of Hong Kong on 5 May 2024

7. **International Council on Electrical Engineering (ICEE) Conference**
(Led by Ir Prof. Henry CHUNG)

The ICEE Conference is an event jointly organised by the HKIE, the Chinese Society for Electrical Engineering (CSEE), the Institute of Electrical Engineers of Japan (IEEJ) and the Korean Institute of Electrical Engineers (KIEE) to offer a very good and precious opportunity for electrical engineers from all over the world with various specialties to meet, inspire each other and share vision towards our sustainable future.

ICEE Conference 2023 was successfully held from 2 to 6 July 2023 at the University of Hong Kong. More than 450 delegates from eight regions gathered in Hong Kong to share their experiences and debate new ideas. We received a total of 170 submissions, out of which 140 papers were accepted for presentation, resulting in an acceptance rate of 82.3%. Additionally, 40 papers (23.57% of the total submissions) were specially invited for submission as post-conference journal papers, indicating their significant contribution to the field and 12 authors (7% of the submissions) were accepted to submit their work as post-conference journal papers, showcasing their work. The next ICEE Conference will be hosted by the Institute of Electrical Engineers of Japan in Kitakyushu, Japan from 1 July to 4 July 2024.

8. **Professional Short Course in Electrical Engineering** (Chaired by Ms. Ting Ting SUEN)

The professional short course with four classes on the theme of “Empower a Smarter Living” was held in March 2024. Experienced engineers and industry practitioners from public utility companies and academics were invited to enrich our members with the latest knowledge of electrical systems under rapid development and active exploration. It was encouraging that over 40 participants in average attended each class of the course.

Date	Theme	Speaker	No. of Participants
5 March 2024	Smart Grids and Artificial Intelligence	Ir Prof. C.Y. CHUNG, Head of Department and Chair Professor of Power Systems Engineering, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University	58
8 March 2024	Introduction to Distribution Protection Systems in Hong Kong	Mr. Tony HUANG, Protection Engineer, CLP Power Hong Kong Limited; and Mr. Brian CHAN, Protection Engineer, The HK Electric Company Limited	54
12 March 2024	How a New Integrated Digital Twin Platform Accelerates Digitization Across the Entire Lifecycle of Power Systems?	Mr. Junshen CHEN, Head of the Southern District, ETAP China	40
15 March 2024	Direct Wireless Power Conversion – A New Generation of Power Conversion Technology	Ir Prof. K.T. CHAU, Chair Professor of Electrical Energy Engineering, Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University	46

9. **Annual Dinner** (Chaired by Ir Andrew YAN)

The Electrical Division held its Annual Dinner on 5 May 2023 Friday at Sheraton Hotel, immediately after the Division AGM.

Supports from organizations to the Annual Dinner were very encouraging, with more than 300 guests and members attended. We were delighted to have Ir Dr. Hon. W.K. Lo, JP, member of Engineering Constituency, the Legislative Council, to play music with his saxophone. A group of young engineers also gave a performance on sand painting with a theme in promoting environmental protection and sustainability, through a story outlined with pictures drawn in sand. In addition, a ceremony was held during the Annual Dinner to present prizes to all the winners of the Electrical Division professional short course held in March 2023.

10. **Local Technical Visit Sub-committee** (Chaired by Ir Keith WONG)

The Sub-committee organized three technical visits to places of technical interests up to end Apr 2024, CLP Low Carbon Energy Education Centre at City University, LV Switchboard and 11kV Switchgear Manufacturing at Dongguan Keiyp and Daya Bay Nuclear Power Station. Another visit to BYD Electric Vehicle Engine Plant in Dongguan will be held in June 2024. Response for each visit conducted was very encouraging, each with about 25 attendees in average.

Date	Place of Technical Visit/ Theme
9 September 2023	CLP Low Carbon Energy Education Centre at City University <i>/ Showcases the importance low low carbon energy in addressing climate change</i>
16 December 2023	LV Switchboard and 11kV Switchgear Manufacturing at Dongguan Keiyp <i>/ To understand the fabrication of low voltage and 11kV assemblies, the latest digital solution by technologies</i>
24 February 2024	Daya Bay Nuclear Power Station <i>/ To understand the nuclear power generation and safe operation of Daya Bay</i>
22 June 2024 (Tentative)	BYD Electric Vehicle Engine Plant in Dongguan <i>/ To facilitate the understanding of the latest Electric Vehicle technology</i>

11. **Overseas Technical Visit Sub-committee** (Chaired by Ir Edward YEUNG)

An overseas technical visit to Scotland and England of UK was carried out from 15 to 26 July 2023. 3 technical visits had been organized and successfully completed for visiting a cable factory in Glenrothes near Edinburgh, a transformer & rectifier factory in Guildford and the new Elizabeth Line depot & workshop at the Old Oak Common in London. 36 participants joined the visit.

12. **Mainland China Technical Visit Sub-committee** (Chaired by Ir Perry PUN)

From 10 to 18 September 2023, 32 participants attended the 9 days Mainland Technical Visits to Xinjiang (新疆), PRC. This was the first Mainland Technical Visit since our last tour to Xiamen, Fujian in 2019 after three years of pandemic situation. The objectives of visit aimed to focus on Xinjiang's electrical technology advancement in power supply system and its sustainable development of natural resources. During the tour, power supply control centre of 'State Grid Xinjiang Electric Power Corporation', smart power distribution system in 'Xinjiang International Grand Bazaar', and 'Urumqi Sewage Treatment Project' were visited.

13. **YOUNG Connect Sub-committee (Chaired by Ir Vincent LEUNG)**

The Young CONNECT Sub-committee has been diligently working to foster a vibrant network for young engineers within the HKIE Electrical Division, with the overarching goal of enhancing their sense of community. The Sub-committee, led by a dynamic group of young members, has been instrumental in promoting active involvement in the Institution's affairs. In the 2023/24 session, the Sub-committee spearheaded several initiatives, including the "Inspire the Next" workshop. This workshop aimed to equip young members with a thorough understanding of the Corporate Membership application process, shedding light on the assessment criteria and key points to consider during the assessment interview. It served as a platform to arm them with practical techniques while bolstering their confidence to actively participate in the HKIE. As a conduit between the Division and young members, the Sub-committee also marked its presence at the 30th Inauguration Ceremony of The Engineering Students' Union of the Hong Kong University of Science and Technology Students' Union, demonstrating our unwavering support for the upcoming generation of engineers.

Moreover, the Sub-committee organized leisure and cultural activities under the "Enjoy the Balance Series", including the Cocktail Workshop and the Hong Kong Style Milk Tea Workshop in October 2023 and March 2024 respectively. These activities were designed to broaden the members' horizons beyond their professional realm. The Sub-committee also lent its support to HKIE events such as the HKIE Football Tournament 2023 and Hong Kong Engineers Week Carnival 2024. At the Carnival, the Sub-committee led a team of young engineers to design an innovative booth that offered the public a glimpse into the future of mobility. Participants had the opportunity to experience electric vehicles firsthand by driving a remote-control electric vehicle equipped with AR technology through a challenging obstacle course. This provided an immersive learning experience about how EV motors, batteries, and controls work in harmony to provide clean, quiet transportation.

In conclusion, the Young CONNECT Sub-committee is committed to creating a nurturing and inclusive environment for young electrical engineers. Through its diverse range of activities, it not only aids in their professional development but also encourages them to explore personal interests, thereby enhancing their overall engagement with the Institution and the Corporate Membership application process.

14. **Republication of EE Book Sub-committee (Chaired by Ir Alex FU)**

The first issue of the "EE Book" was initially published in 2006, which means it has been approximately 18 years since its release. However, due to the considerable passage of time, the original source file is no longer available for reprinting. Recognizing the need to reproduce the book and facilitate digital transformation, the "EE Book" reprint working group was established in 2023. The primary objective of this group was to convert the "EE Book" into a digital version and make it accessible to a wider audience. The book was reprinted in four volumes and interested individuals can acquire the book by downloading it from the Division website.

The second edition of the "EE Book" was reprinted in March 2024, consisting of 500 copies. This edition specifically targets middle school students, with the aim of fostering their interest in the field of electrical engineering and encouraging their future involvement in the industry. We firmly believe that the republication of EE Book will not only provide readers with a wealth of knowledge and a deeper understanding, but also deliver a more interactive and diverse reading experience. Simultaneously, it will inject fresh vitality into the industry's development, contributing to its continuous growth and innovation.

15. **The HKIE Boards and Committees**

The Division actively supported and participated in the work of the HKIE and had representation/ex-committee members in the following Boards and Committees:

- Learned Society Board (represented by the Chairman, Ir Andrew YAN)
- Public Service Committee (represented by the Deputy Chairman, Ir Banson LAM)
- Council (represented by Ir W.S. TAM)
- Discipline Representative (represented by Ir Tony YEUNG)
- Continuing Professional Development Committee (represented by Ir Hugo CHAN)

16. **Learned Society Board (LSB) (Represented by the Chairman, Ir Andrew YAN)**

Ir Andrew YAN represented the Division to participate in the LSB to coordinate learned society activities and provide recommendation to the Council at strategic level in upholding and enhancing the integrity and status of the HKIE, representing the profession to the public, and promoting and advancing the science and practice engineering.

17. **Public Service Committee (PSC) (Represented by Ir Banson LAM)**

The Public Service Committee is responsible to the Learned Society Board for the reinforcement of the HKIE's public image and promotion of the professional image of engineers. Electrical Division has been actively participating various programmes / activities like those under the categories of "Promotion to Schools" and "Publicity Activities". In which, total of 4 members from Electrical Division nominated as school ambassadors under the school ambassadors programme. There will also be members from Electrical Division joining the activity of "reconnecting with district councils" commencing from May 2024 to help fostering good relations with local communities. An article with title of "Greater Cross-Border Integration and Higher Mobility of Talents in the Greater Bay Area (GBA): Collaborative Efforts towards Carbon Neutrality" prepared by Ms Jenny LIN of our division was published in Classified Post on 19 March 2024. As usual, there are also members from different sectors in Electrical Division serving on external boards/committees in this session 2023/2024.

18. **Council (Represented by Ir W.S. TAM)**

Ir W.S. TAM represented the Division in the HKIE Council for the Session 2023/2024 to update

the latest development, policy, and direction to be implemented by the Council to Division members.

19. **Discipline (Represented by Ir Tony YEUNG)**

Ir Tony YEUNG is the Discipline Representative who chairs the Electrical Discipline Advisory Panel. Being responsible to advise on aspects in relation to Qualifications and Professional Membership, there were major tasks of the Discipline in Session 2023/2024 including establishment of supplementary arrangement between the Electrical Discipline and the Guangdong Society of Electrical Engineers on mutual recognition, participation in the trial application of professional qualification with the Mainland China, review of Minimum Core Subjects Areas (MSCA) to match with the latest requirements of the discipline in Hong Kong, forming of task force in collaboration with the HKIE HQs to streamline membership application process etc.

20. **Continuing Professional Development Committee (CPD) (Represented by Ir Hugo CHAN)**

Ir Hugo CHAN represented the Division in the CPD Committee providing update to Division members on all matters relating to CPD requirements.

21. **Publication and Communication with Members (Chaired by Ir Yani KO)**

Ir Yani KO served as the authorized representatives of the Division to coordinate the publication and communication for the Division covering divisional events, event reports and newsletters, via the HKIE eNewsletters system, the Team-up Calendar, the journal of the HKIE (Hong Kong Engineer) as well as the divisional website (<http://el.hkie.org.hk>).

22. **Concluding Remarks**

The year of 2023 have been a remarkable year, while we have been overcoming the pandemic situation, our city has also experienced the extreme weathers of super typhoon and 500 year-once rainstorm which both happening in September 2023. We, electrical engineers, have demonstrated the highest resilience to support our city to overcome these extreme situations. Despite that, the Committee organized and successfully carried out various technical events, including the Annual Symposium, technical visits, technical seminars/webinars, and professional short courses. These initiatives aimed to enhance the technical knowledge of our members and keep them updated with the latest technologies. In July and September 2023, we resumed the Technical Visits to Overseas and the Mainland, which allowed our members to stay abreast of the latest developments in electrical engineering in China and other overseas countries. Furthermore, professional talks for universities and higher education institutions were one of our highlights, by sharing our member's working experiences across different sectors of the electrical industry, it helps to inspire the younger generations with insightful achievement of what electrical engineers do in Hong Kong.

The Division has been actively supporting and participating in the initiatives and events organized by the HKIE, particularly the prestigious events of the Session, such as the ICEE Conference held in July 2023 and Hong Kong Engineers Week 2024. These events have not only enhanced the Institution's reputation and public image locally but also in other Asian countries. As always, our Division continues to nominate members to join various External Boards and Committees, thereby promoting high professional standards in the electrical industry.

The EE Book, which is the official publication of the Electrical Division and was first published in 2006, has undergone some updates to its content. With the goal of promoting electrical engineering to secondary students and igniting their interest in the field, we have divided the book into four smaller volumes. Additionally, we are in the process of publishing a new volume by the end of 2024, which will cover new topics related to electrical engineering such as high-speed rail, data centers, smart grids, EV charging, IoT, carbon neutralization, and electricity safety.

As the Chairman of this Session, I perceived that leading the Division to be successful has always been challenging. Therefore, I would like to express my gratitude to the Past Chairmen and Committee Members for their invaluable guidance, dedication, contribution, and commitment to the Division. Their unfailing support is a remarkable encouragement. I take great pride in being an electrical engineer and being a part of this remarkable team. I would also like to extend my sincere thanks to our members, supporters, and sponsors for their continuous support in our Division's activities.

Last, but not least, I am confident that the Electrical Division will maintain its momentum in serving the electrical engineering industry and promoting professional development in the upcoming sessions.



(Ir Andrew YAN)

Chairman, Electrical Division Session 2023/2024
25 April 2024

Electrical Division Committee Session 2023/2024

Chairman	Ir Andrew YAN	
Immediate Past Chairman	Ir Mandy LEUNG	
Deputy Chairman	Ir Banson LAM	
Honorary Secretary	Ir Tim LEUNG	
Honorary Treasurer	Ir Y.K. CHU	
Members	Ir Kit CHAN	Ir Hugo CHAN
	Ir Alex FU	Ir Stephen YIP
	Ir Steve CHAN	Ir Raymond SZE
	Ir Ian LEE	Ir Vincent LEUNG
	Ir Ben LAM	Ir Keith WONG
	Ir Dr. K.C. WONG	Ir Yani KO
	Ms. Ting Ting SUEN	Mr. Stan MOU
Ex-officio Members	Ir W.S. TAM	(Council Member (Division))
	Ir Tony YEUNG	(Discipline Representative)
	Mr. Indi WONG	(AMC Representative)
	Mr. Arthur WAN	(YMC Representative)
	Ir Victor TSE	(SSC Representative)
Co-opted Members	Ir Kevin LEUNG	
	Ir Perry PUN	
	Ir Prof. Henry CHUNG	
In Attendance	Ir C.F. CHAN	Past Chairman as advisor
	Ir Dr. F.C. CHAN	Past Chairman as advisor
	Ir Simon CHUNG	Past Chairman as advisor
	Ir Dr. Edward LO	Past Chairman as advisor
	Ir S.K. HO	Past Chairman as advisor
	Ir K.T. CHIANG	Past Chairman as advisor
	Ir Geoffrey CHAN	Past Chairman as advisor
	Ir C.L. LEUNG	Past Chairman as advisor
	Ir Y.H. LEUNG	Past Chairman as advisor
	Ir Edward YEUNG	Ir Dr. K.F. WONG
	Ir Perry PUN	Ir C.L. WONG
	Ir Joseph LEUNG	Ir Simon TSUI

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	Ir W.I. HO	Ir Edmund LAU
	Ir Eric CHIN	Ir Dennis LEUNG
	Ir Kelvin LI	Ir Stanley LEUNG
	Ir W.K. LEE	Ir Andy KWAN
	Ir Henry CHAN	Ir Sherman TONG
	Ir Dr. Simon TANG	Ir Edmund LAU
	Ir Dr. Sam LAM	Ir Gordon WOO
	Ir Dr. Albert LEE	Ir Eric LUN
	Ir Ricky POON	Ir S.S. TANG
	Ir Franky WONG	Mr. Ryan CHAN
	Ms. Jenny LIN	Mr. Patrick LI
	Ms. Gloria WONG	