

主辦單位：  
Organizer



AEEMM  
澳門機電工程師學會  
Associação dos Engenheiros Eletrónicos e Mecânicos de Macau  
The Macao Institution of Electrical and Mechanical Engineers

協辦單位：  
Co-organizers



機電工程署  
EMSD



# 探討澳門特區在「重新校驗」 道路上助力國家十四五規劃中的 “30·60”雙碳目標

Exploring the roadmap of Retro-Commissioning (RCx)  
in Macao SAR achieving the National 14<sup>th</sup> Five-Year  
Plan's “30·60” Decarbonization Goal

30 · 09 · 2022



# 探討澳門特區在「重新校驗」道路上 助力國家十四五規劃中的“30·60”雙碳目標

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## 研討會簡介：

為應對氣候變化，推動溫室氣體減排，2021年國家推出《十四五規劃》，明確提出二氧化碳排放力爭於2030年前達到峰值，努力爭取2060年前實現碳中和。實現碳達峰、碳中和顯然已成為經濟社會一場廣泛而深刻的全球性系統變革。為配合國家《十四五規劃》發展，精準落實規劃中的“30·60”雙碳目標，澳門機電工程師學會早在2018年已與國內及香港的專業團體及技術專家共同簽訂合作協議，促進「重新校驗」技術在粵港澳大灣區三地的工程及建築業界推廣及應用，學會特此舉辦相關研討會及論壇。

澳門機電工程師學會將於2022年09月30日下午二時至六時三十分，假澳門科學館會議廳舉辦名為“探討澳門特區在「重新校驗」道路上助力國家十四五規劃中的“30·60”雙碳目標”技術研討會。是次會議在工程業界得到正面的回應，學會現已成功邀請多名來自國內、香港及本澳的專家學者、本澳娛樂及博彩業界代表及工程業界的專業人士出席，透過線上及線下參與方式，共同就本次主題作出專題演講，報告及經驗分享，並學習及吸收粵港澳大灣區三地經驗，積極協助本澳推動節能減排。希望藉著舉辦是次研討會，集思廣益，凝聚社會各專業領域的智慧，以更廣闊的視野、更專業的意見，為澳門走在雙碳道路上貢獻力量。



# 探討澳門特區在「重新校驗」道路上助力 國家十四五規劃中的“30·60”雙碳目標研討會

## 籌備委員會名單

**主席：理事長**  
馮德祥工程師  
Mr. Philip Fung

### 重新校驗專業小組組長

朱嘉傑工程師  
Ir CHU Kar Kit, Gary  
RCx Pro, BEAM Pro, CMVP®, PMVA™, CEM®, CEA®, CAP™, CBCP®

### 重新校驗專業小組：

**統籌：理事兼小組成員**  
李燕南先生  
Mr. Lennon Lei

### 副理事長兼小組成員

蘇詩鋒工程師  
Mr. Kenny Sou

### 副理事長兼小組成員

梁啟康工程師  
Mr. Aaron Leong

### 理事兼小組成員

鍾建輝工程師  
Mr. Terren Zhong

### 小組成員

何小敏小姐  
Ms. Mon Ho

### 會長

束承靖工程師  
Mr. Stephen Chok

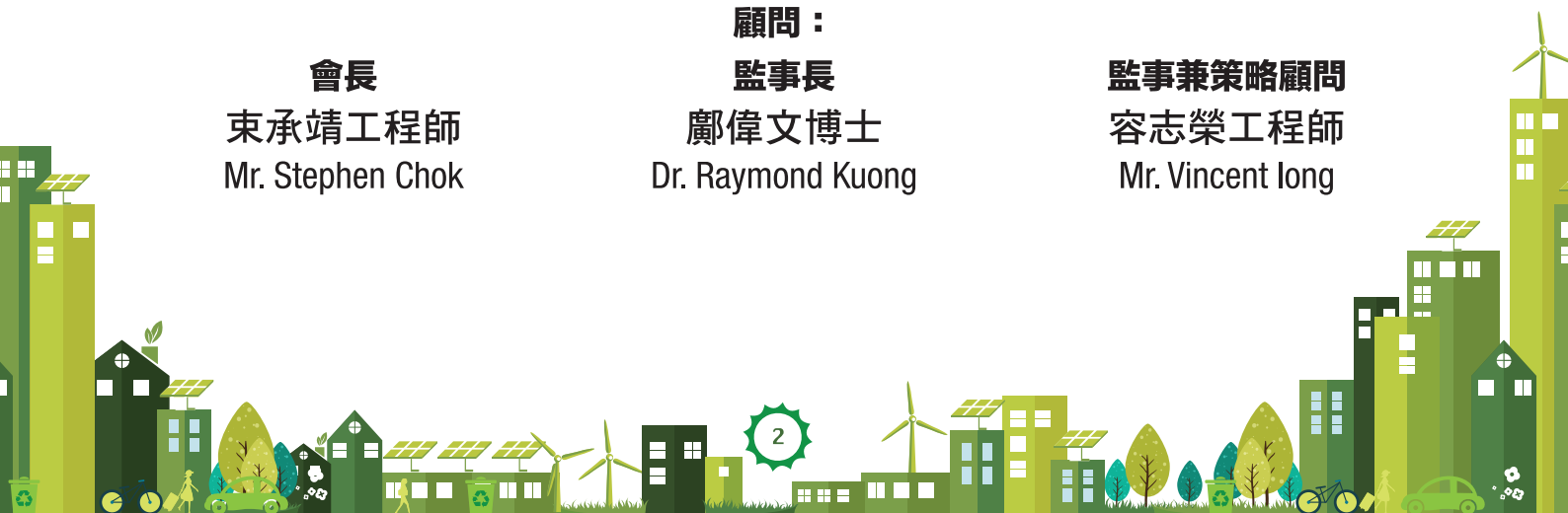
### 顧問：

#### 監事長

鄺偉文博士  
Dr. Raymond Kuong

#### 監事兼策略顧問

容志榮工程師  
Mr. Vincent Iong



# 探討澳門特區在「重新校驗」道路上 助力國家十四五規劃中的“30·60”雙碳目標

Exploring the roadmap of Retro-Commissioning (RCx) in Macao SAR achieving  
the National 14<sup>th</sup> Five-Year Plan's "30·60" Decarbonization Goal

Details 詳情：

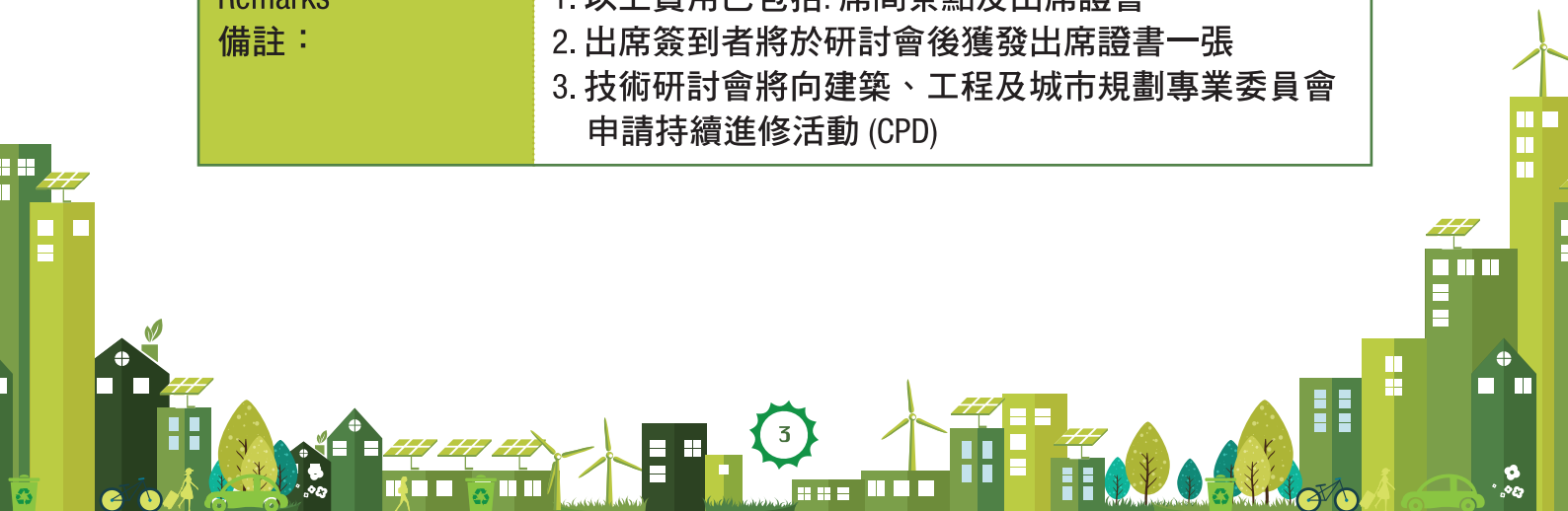
Date 日期：	30 <sup>th</sup> Sep 2022 (Friday) / 2022年09月30日 (星期五)
Time 時間：	14:00 - 18:30 (4.5 hours) / 14:00 - 18:30 (4.5小時)
Venue 地點：	Macau Science Center, Convention Hall / 澳門科學館，會議廳
Seats 座位：	200 seats, limited places / 200人，名額有限
Language 語言：	Cantonese and English / 中文及英文
Audience 對象：	Electrical Engineers; Electrical and Mechanical Engineers; Mechanical Engineers; Designers 電機工程師、機電工程師及機械工程師及設計顧問

On line registration Q.R Code 網上報名二維碼：  
截止日期：2022年09月20日



Fee & Payment 費用及付款方法：

Member of AEEMM AEEMM會員：	MOP 100
Others & Non-Member 其他及非會員：	MOP 200
Remarks 備註：	1. 以上費用已包括: 席間茶點及出席證書 2. 出席簽到者將於研討會後獲發出席證書一張 3. 技術研討會將向建築、工程及城市規劃專業委員會 申請持續進修活動 (CPD)



# 探討澳門特區在「重新校驗」道路上 助力國家十四五規劃中的“30·60”雙碳目標

Fee & Payment 費用及付款方法：

Payment 付款方法：	透過本會戶口進行轉帳： 1. 過數易 / EASY TRANSFER 系統識別碼 / FPS ID: 12657938 2. Mpay (*支援聚易用 Support Simple Pay) 3. 中銀智慧付 BOC Pay (*支援聚易用 Support Simple Pay) 4. 大西洋銀行戶口 (號碼：9008987130) 5. 中國銀行戶口 (號碼：18 5000 0088 2789 3)	 
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Contact 聯絡方式：

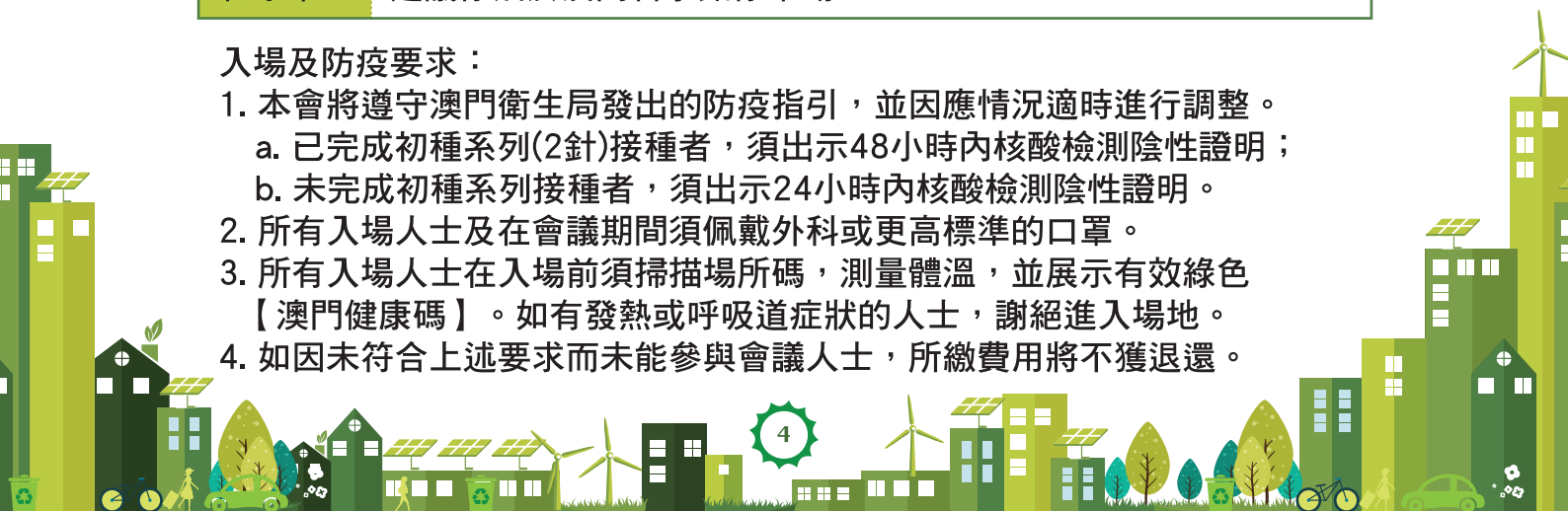
Contact Person 聯絡人：	梁先生 或 李先生
Contact Number 聯絡電話：	66668123 或 6299 6500
Email 電郵：	pro.training@aeemm.org.mo
Website 網頁：	www.aeemm.org.mo

Transportation 交通：

Motorcycle 電單車：	Suggest car parking at Macau Science Center 建議停泊於澳門科學館停車場
Private Car 私家車：	Suggest car parking at Macau Science Center 建議停泊於澳門科學館停車場

入場及防疫要求：

1. 本會將遵守澳門衛生局發出的防疫指引，並因應情況適時進行調整。
  - a. 已完成初種系列(2針)接種者，須出示48小時內核酸檢測陰性證明；
  - b. 未完成初種系列接種者，須出示24小時內核酸檢測陰性證明。
2. 所有入場人士及在會議期間須佩戴外科或更高標準的口罩。
3. 所有入場人士在入場前須掃描場所碼，測量體溫，並展示有效綠色【澳門健康碼】。如有發熱或呼吸道症狀的人士，謝絕進入場地。
4. 如因未符合上述要求而未能參與會議人士，所繳費用將不獲退還。



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Program of Seminar & Panel Discussion 研討會及論壇流程：

時間	議程
14:00-14:30	Registration 註冊登記
14:30-14:40	Welcome Address and Opening Speech 歡迎及開幕詞 Mr. FUNG Tak Cheung, Philip, Council President of AEEMM 馮德祥理事長，澳門機電工程師學會
14:40-14:50	Souvenirs Presentation & Group Photograph - Taking 致送紀念品及大合照
14:50-15:05	Presentation #1 - 魏慶芃副教授，清華大學 Topic: AI輔助建築和系統再調適助力大灣區實現雙碳目標
15:05-15:20	Presentation #2 - Ir KONG Ka-wah / Ir LAM Kin Wai, 香港特別行政區機電工程署 Topic: 香港特區政府建築物重新校驗(再調適)工作的最新發展 Latest Development of Retro-commissioning Programme for Government Buildings in Hong Kong SAR
15:20-15:35	Presentation #3 - Ir Dr. Cary Chan, 香港綠色建築議會 Topic: The key to achieving carbon neutrality by 2050 - Retro-Commissioning and Retro-fitting
15:35-15:50	Presentation #4 - Mr. Felix Chan, 奧雅納 Topic: Energy management through data-driven approach for Hong Kong commercial buildings
15:50-16:05	Presentation #5 - 閻軍威教授，華南理工大學 Topic: 智慧能源及碳排放管理決策與調控體系研究
16:05-16:20	Presentation #6 - Ir CHAN Nai Kin, Steven, 香港屋宇設備運行及維修行政人員學會 Topic: Drive Retro-commissioning (RCx) to Strive towards achieving goal on Carbon Neutrality

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Program of Seminar & Panel Discussion 研討會及論壇流程：

時間	議程
16:20-16:35	Presentation #7 - Ir CHU Kar Kit, Gary, 澳門機電工程師學會 Topic: 運用「重新校驗」技術推動澳門綠色轉型並邁向國家「十四五」規劃中的雙碳目標
16:35-17:00	Tea Break 茶點時間
17:00-18:00	Panel Discussion 論壇： 論壇主持： Mr. SIO Hon Pan, General Assembly Secretary of AEEMM 邵漢彬會員大會秘書長，澳門機電工程師學會  澳門機電工程師學會代表： Ir CHU Kar Kit, Gary, 重新校驗專業小組組長  出席嘉賓： 魏慶芃副教授，清華大學建築學院建築技術科學系 閻軍威教授，華南理工大學節能技術研究院 Ir LAU Kwok Wai, Johnson, 香港屋宇設備運行及維修行政人員學會 Ir Dr. Cary Chan, 香港綠色建築議會 Ir WONG Kin Lun, Philip, 奧雅納 Mr. CHAN Ka Ching, Sam, 澳門銀河娛樂集團
18:00-18:20	Q & A 答問環節
18:20-18:30	Closing Speech 閉幕詞 Mr. CHOK Seng Cheng, Stephen, President of AEEMM 束承靖會長，澳門機電工程師學會



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演講者姓名：魏慶芃

Speaker Name: Qingpeng WEI

演講者職稱：副教授

Speaker Title: Associate Professor

任職單位：清華大學

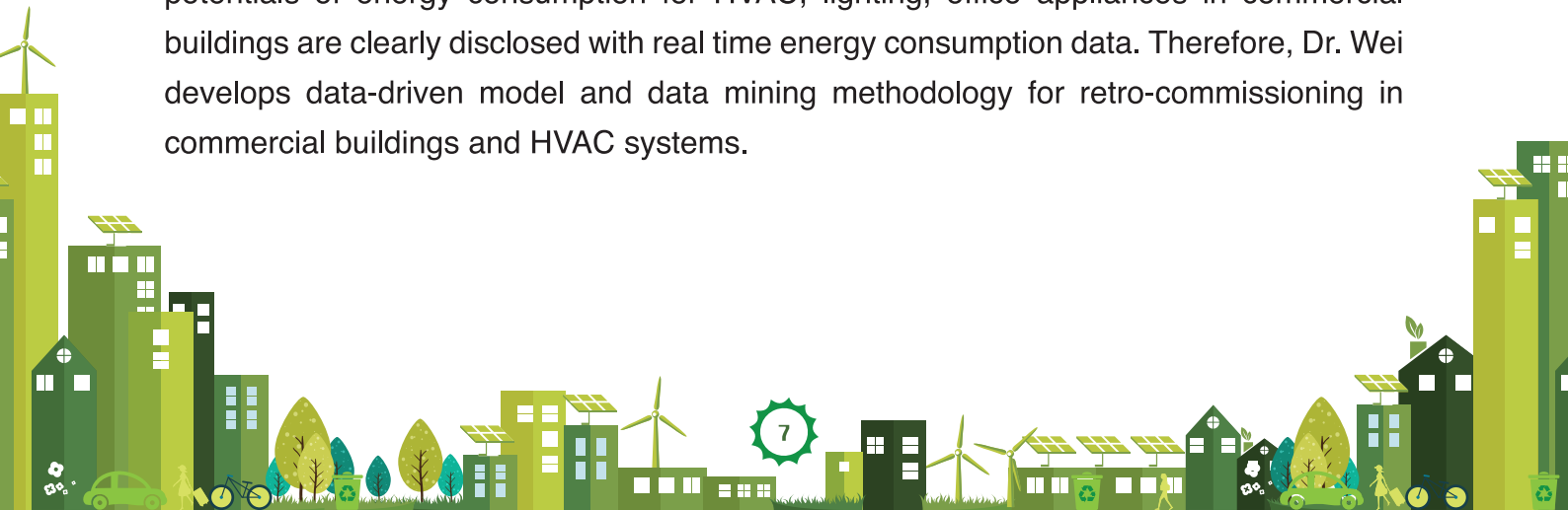
Company / Association: Tsinghua University

## 演講者背景資料：

魏慶芃，清華大學建築學院建築技術科學系副教授，清華大學建築節能研究中心公共建築節能研究團隊負責人。長期專注公共建築及暖通空調系統節能及社區零碳能源系統研究。研究建立大型公建能耗分項計量與即時分析系統，完成中南海、人民大會堂等20家中央國家機關辦公建築，以及北京、上海、廣州、深圳、香港、美國、日本等地共500餘座、2000余萬平米各類公共建築和空調系統節能診斷，涵蓋公共機構、辦公、酒店、商業綜合體、機場航站樓、醫院、學校、以及區域能源站、冷熱電聯供系統、多種電驅動熱泵供熱系統等，在示範工程中實現系統調適和優化運行節能30%，獲得省部級以上科技獎勵12項；參與創建青島奧帆中心社區零碳能源系統，參與西寧機場三期及長沙機場三期零碳機場設計建設，我國建築和城市領域零碳轉型主要推動者。

## Speaker Background Information:

Dr. Qingpeng Wei received his B.Sc., M.Sc., and Ph.D. degrees in building services engineering from Tsinghua University. As the team leader on energy efficiency in commercial buildings research, Dr. Wei established an on-line energy monitoring and benchmarking system of commercial buildings through detailed metering data. By this monitoring and benchmarking system, current situation, characteristics and saving potentials of energy consumption for HVAC, lighting, office appliances in commercial buildings are clearly disclosed with real time energy consumption data. Therefore, Dr. Wei develops data-driven model and data mining methodology for retro-commissioning in commercial buildings and HVAC systems.



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演講者姓名：江嘉華

Speaker Name: Ir Kong Ka Wah

演講者職稱：高級工程師

Speaker Title: Senior Engineer

任職單位：香港特別行政區機電工程署

Company / Association: Electrical and Mechanical Services Department,  
HKSAR Government

## 演講者背景資料：

江嘉華於香港特別行政區機電工程署任職高級工程師，他過去曾參與多項政府工務工程，在屋宇裝備設計和項目管理方面擁有超過 20 年相關經驗。近年來，他積極參與重新校驗技術指引的發展，把重新校驗和提升建築物能源效率益的好處推廣到各持份者。

## Speaker Background Information:

Ir KW Kong is a senior engineer of EMSD, HKSAR Government. He has over 20 years experience in building services design and project management of a wide variety of government premises. Ir Kong has been actively involved in the development of technical guidelines on retro-commissioning and promotion of retro-commissioning and its benefit of enhancing building energy efficiency to stakeholders.



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演講者姓名：林健威

Speaker Name: Ir Lam Kin Wai, Ray

演講者職稱：工程師

Speaker Title: Engineer

任職單位：香港特別行政區機電工程署

Company / Association: Electrical and Mechanical Services Department,  
HKSAR Government

### 演講者背景資料：

林健威工程師任職於香港特別行政區機電工程署，有超過8年屋宇裝備相關工作經驗。林工程師現時主要負責帶領團隊為超過200幢主要政府建築物進行重新校驗(再調適)的工作，以改善政府建築物的能源效益表現及推廣重新校驗(再調適)以減少碳排放，致力達至碳中和目標。他亦策劃各項宣傳工作，並將建築物能源效益及重新校驗(再調適)推廣至各持份者及公眾。

### Speaker Background Information:

Ir Ray LAM is an engineer with EMSD, HKSAR Government. He has over 8 years' experience in building services discipline. Mr. LAM is currently leading a team to implement retro-commissioning for more than 200 nos. of major government buildings in order to improve energy efficiency of government buildings and promote retro-commissioning for reducing carbon emission to strive towards attain carbon neutrality. He is also engaged in publicity work in promotion of building energy efficiency and retro-commissioning to stakeholders and public.



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Speaker Name:

Ir Dr. Cary Chan, JP

Speaker Title:

Executive Director

Company / Association:

Hong Kong Green Building Council

### Speaker Background Information:

Ir Dr. Cary Chan, JP is a professional engineer and is currently the Executive Director of Hong Kong Green Building Council with the vision of driving the green building agenda for Hong Kong.

Cary is regarded as an expert on building energy efficiency by the industry. Cary has carried out a lot of researches relating to the enhancement of building energy efficiency. Up to now, a number of his work have won international awards.

Over the years, Cary was active members of over 10 advisory councils and committees of the Government of HKSAR and he was appointed Justice of the Peace (JP) by the government in 2017 with his immense contribution to Hong Kong community. Cary was awarded Honorary Doctorate by University College of Estate Management (UK) in December 2019 due to his outstanding contributions to the industry on sustainability.

Cary has been playing a leadership role in sustainable buildings within Hong Kong and abroad. He played a key role in establishing Hong Kong's Green building assessment tool back in 1995. In 2019, he has put "Advancing Net Zero carbon emission" as one of HKGBC's main focuses. His strategy is well recognised and welcome by the local industry and the World Green Building Council. He's been nominated as WGBC APN Chair on 1 July 2021.



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Speaker Name:

Felix Chan

Speaker Title:

Senior Consultant

Company / Association:

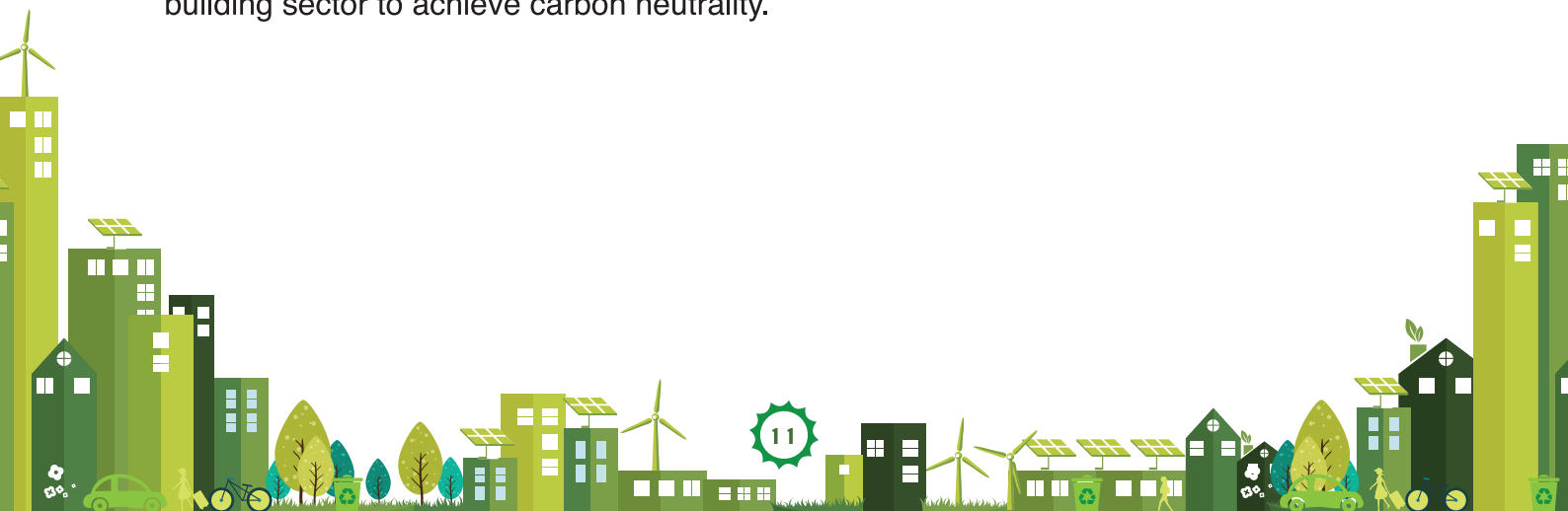
Arup

### Speaker Background Information:

Felix Chan is experienced in sustainable building design, building energy simulation and building energy management.

Mr. Felix Chan joined Arup in 2012 and is now a Senior Consultant in Arup Sustainability Group. He is specialized in sustainable design and energy efficient design and has participated in various Grade A commercial projects in Hong Kong. Felix is an energy and carbon expert. He has been involved in portfolio building energy analysis and opportunities for major property owners/developers in Hong Kong. He also works on projects to help major developers to develop corporate decarbonization roadmap. Felix has recently participated in zero carbon building feasibility study for historical properties in China.

Felix is interested in innovation. He offers smart green and innovative ideas and solutions integrating with green building design. His innovative technology “Neuron Health” has earned various local and global recognitions and awards. He also works on projects to healthy building and wellness design. His disinfection system design for residential units has obtained patent in Hong Kong. Recently, he and his team’s entry “The Living Lab” was the winner of the Existing Building” category in “Advancing Net Zero” Ideas Competition organized by HKGBC and Swire Properties. Felix is ambitious to make influence to the building sector to achieve carbon neutrality.



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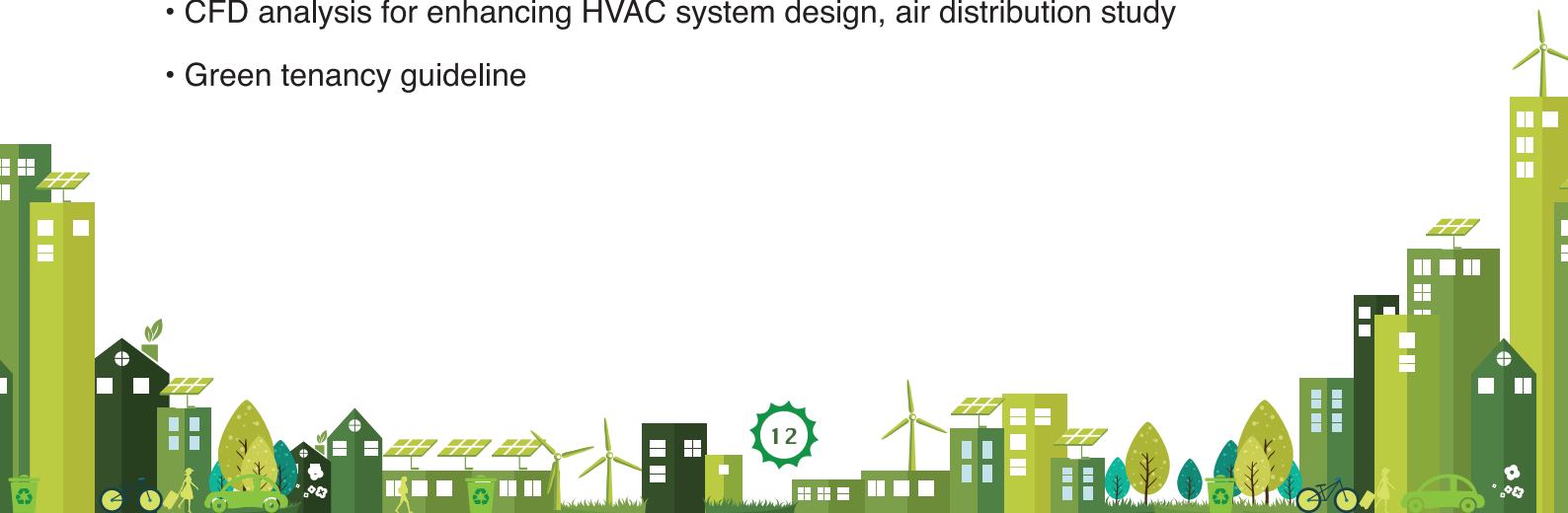
Project experience:

Ove Arup and Partners Hong Kong Limited (11/2012 - Present)

Senior Consultant

Responsible for the design and coordination of energy management, sustainable system and building design including:

- Big data analytic
- IoT and Digital Transformation
- Building energy management / Retrofit commissioning
- Ventilation analysis
- Solar control strategies
- HVAC system design
- Green building assessment and certification
- Parametric Facade study
- Sustainable building design
- Daylight and wind microclimate study
- CFD analysis for enhancing HVAC system design, air distribution study
- Green tenancy guideline



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演講者姓名：

閔軍威 Junwei Yan

演講者職稱：

教授級高工

任職單位：

華南理工大學節能技術研究院

演講者背景資料：

華南理工大學教授、博導，國家專精特新重點「小巨人」企業廣州遠正智慧科技股份有限公司董事長，華南理工大學節能技術研究院副院長、廣東省城市空調節能與控制工程技術研究開發中心主任，國家住建部、教育部、國家機關事務管理局等多部委特聘節能專家。



# 探討澳門特區在「重新校驗」道路上助力國家十四五規劃中的“30·60”雙碳目標

Exploring the roadmap of Retro-Commissioning (RCx) in Macao SAR achieving the National 14<sup>th</sup> Five-Year Plan's "30·60" Decarbonization Goal



Speaker Name: Ir Chan Nai Kin, Steven 陳迺堅

Speaker Title: Director

Company / Association: Green Energy Engineering Consultancy Limited  
BEng(Hons.) MSc, MBA

RCx Pro, CEng. MHKIE, MIET, MCIBSE, MASHRAE, MBSOMES

BEAMPro, CAP, REA, GB Faculty (EU & IEQ), PSC

屋宇裝備工程學(榮譽)/工程碩士/工商管理碩士/重新校驗專才/

英國特許工程師/香港工程師學會 會員/英國電機工程師學會 會員/

英國屋宇裝備工程師學會 會員/美國供暖製冷及空調工程師學會 會員/

綠建專才/碳審計師/註冊能源效益評核人/綠色建築專家/

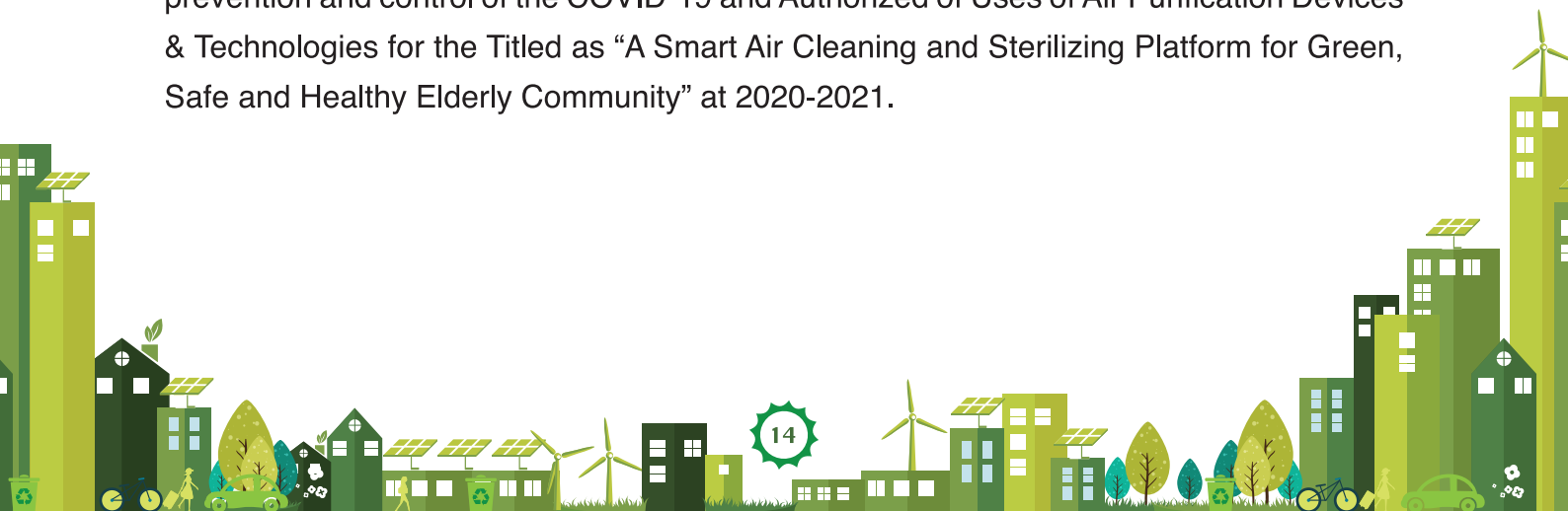
香港工程師學會公共服務委員會

## Speaker Background Information:

Ir Steven Chan Nai Kin - Director of Green Energy Engineering Consultancy Limited and also serving a Public Service Committee (PSC) and Hon. Secretary (Gas & Energy) of the Hong Kong Institution of Engineers and Chairman of RCx Chamber of BSOMES and Director of HAESCO and Hong Kong Fuel Cell and Hydrogen Energy Association (HKFCHEA).

Ir Chan is a BEng(Hons.) Building Services Engineering Degree Holder and Chartered Building Services Engineer, Registered Energy Assessor and Registered Professional Engineer with proven track records of leading and motivating the team of consultants and construction BEAM & RCx professionals. His areas of expertise in building services system design & building energy consultancy including Building Services Systems, Indoor Environmental Quality, Building Energy Efficiency and Sustainable Building.

He is the project supporter of Public Sector Trial Scheme (PSTS) project under ITC for the prevention and control of the COVID-19 and Authorized of Uses of Air Purification Devices & Technologies for the Titled as “A Smart Air Cleaning and Sterilizing Platform for Green, Safe and Healthy Elderly Community” at 2020-2021.



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演講者姓名：

朱嘉傑 Ir CHU Kar Kit, Gary

演講者職稱：電機工程師

演講者專業：電機、能源及環境管理項目

BSc, MPhil, MHKIE, MAEE, MIEEE, MIET,

PMVA™, CMVP®, CEM®, CEA®, CAP™, CBCP®,

LEED® Green Associate,

RCx Pro, BEAM Pro (NB, EB, BI, NDC, EDC)

演講者背景資料：

朱嘉傑工程師於1993年畢業於澳門大學科技學院，取得電機及電子工程學士學位；其後於2000年取得香港理工大學工程學院電機工程系哲學碩士 - 電機工程專業。

他取得學士學位後，加入澳門電力股份有限公司生產部，及後晉升為執行維護電廠設備工程師主管(職能範疇包括機械、電機、自動控制及儀錶)，專責執行維護及安裝電廠設備，管理約70人的團隊。累積超過12年之管理經驗後，於2005至2007期間他投身澳門特別行政區政府 - 能源業發展辦公室擔任技術顧問，專責電力及天然氣相關項目之技術研究、分析及法規研究等工作。

現時，他作為獨立顧問，同時擔任國內及港澳多家機構之工程技術顧問及工程監理協調職務，包括於澳門公共及私人機構提供電力系統設計及各機電工程項目之顧問、管理、籌劃及監督等工作，並擁有相關的專業資格：

- 澳門執業註冊電機工程師
- 香港工程師學會會員 (MHKIE)
- 香港綠色建築議會(HKGBC) - 協作會員(專業)
- 中國城市科學研究會 - 綠色建築與節能專業委員會委員 (2017/3/21至今)



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再者於國內及香港提供能源管理之服務，包括：能源審計、能源數據分析、定立基準線、核算節能效果、第三方節能檢測及能源項目設計顧問等。同時也提供能源管理方面的專業培訓(美國能源工程師學會 - 國際認可課程導師 - CEM®, CBCP® 及 CAP™, 能效評價組織 (EVO) - EVO Level 3 國際認可導師 - TI201930)，而他擁有能源及綠色建築方面的多個專業認證，包括：

- 香港綠色建築議會 (HKGBC) - 重新校驗專家 - RCx Pro
- 香港綠色建築議會 (HKGBC) - 綠建專才 - BEAM Pro (NB, EB, BI, NDC, EDC)；
- 能效評價組織 (EVO) - Performance Measurement and Verification Analyst (PMVA™)
- 美國綠建築委員會 (USGBC)
  - 能源和環境設計領先認證專業資格 (LEED® Green Associate)；
- 美國能源工程師學會 (AEE)：
  - Carbon Auditing Professional (CAP™)
  - 認可能源經理 Certified Energy Manager (CEM®)
  - 認可能源審計師 Certified Energy Auditor (CEA®)
  - Certified Building Commissioning Professional (CBCP®)
  - 註冊能效評估師 Certified Measurement & Verification Professional (CMVP®)
- 中國綠色建築與節能(澳門)協會 - 綠色建築經理

