機電工程署研討會 EMSD Symposium 2024

高質量發展 領綠色未來

Empowering High-quality Development for a Green Future

16 - 18 Dec 2024

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KEYNOTE

Overview of China's New Energy Storage, Hydrogen Energy Technology and Industry Development

中國新型儲能、氫能技術和產業發展概況

Mr. BIAN Guangqi 邊廣琦先生

Deputy Director of Energy Conservation and Technology Equipment Division, National Energy Administration

國家能源局 節能與科技裝備司副司長

ABSTRACT

The presentation provides an overview of the development of new energy storage and hydrogen energy technologies and industries in China to attain its "Dual Carbon" goals. It highlights advancements in energy storage technologies, emphasising their role in integrating renewable energy into the grid and the progress in hydrogen production, storage, transportation, and utilisation. The presentation will outline China's policy support, market trends, and technological innovations driving these industries while addressing challenges. This comprehensive overview underscores the strategic importance of these technologies in achieving China's energy transition goals, fostering industrial growth, and contributing to global carbon neutrality efforts.

BIOGRAPHY

Mr. Bian Guangqi is currently deputy director of Energy Conservation and Technology Equipment Division, National Energy Administration. He worked in the Ministry of Water Resources and the State Electricity Regulatory Commission, and was engaged in rural hydropower management and energy supervision. Currently, he is in charge of energy storage, hydrogen energy industry management and energy standardization.

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KEYNOTE

China's Railway Development Achievements and Future Prospects

中國鐵路發展成與未來展望

Mr. XIE Xiaodong 謝曉東先生

Director General of Planning and Standard Research Institute, National Railway Administration

國家鐵路局 規劃與標準研究院院長

ABSTRACT

China Railway, serving as the main artery of the national economy and the backbone of the integrated transport system, stands as a strategic, pioneering and critical major infrastructure of the country. The presentation provides an overview of China Railway's achievement over the past two decades, highlighting the rise of high-speed rail (HSR) from nothing to something, from exploration to breakthrough, from manufacturing to creation, and from catching up to leading. The presentation will also share the future planning, outlook, and inspiration of China's Railway Development.

BIOGRAPHY

Mr. Xie Xiaodong is the director general of the Planning and Standard Research Institute of the National Railway Administration, professor-level senior engineer, recipient of the Zhan Tianyou Achievement Award, and an important member of the mid-long term railway planning decision-making.

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KEYNOTE

Research and Application of the Low Carbon Urban Flexible Energy System

低碳城市柔性能源系統研究與示範

Prof. LIN Borong 林波榮教授

Deputy Dean, School of Architecture,
Tsinghua University

清華大學建築學院副院長

ABSTRACT

The presentation highlights the research and application of low-carbon urban flexible energy systems under the Dual Carbon Strategy. Prof. Borong Lin, Deputy Dean of Tsinghua University's School of Architecture, presents innovative solutions to address extreme climate impacts and urban energy challenges. The discussion emphasises key focus areas, including Zero-carbon power and heating systems, Flexible energy technologies, and Integrated source-grid-load-storage systems. Through case studies, such as a zero-carbon airport and low-carbon business districts, the presentation demonstrates scalable strategies for enhancing energy efficiency, reducing carbon emissions, and improving urban sustainability. This interdisciplinary approach aims to advance intelligent, low-carbon urbanisation through design, operation, and policy innovations.

BIOGRAPHY

Prof. Lin is the Changjiang Scholar Distinguished Professor, and specializes in innovative technologies for low-carbon buildings. He was selected as Highly Cited Chinese Scholars and the World's Top 2% Scientists, and was the winner of NSFC Distinguished Young Scholar, Xplorer Prize, and the 2nd National S&T Progress Award.

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Parallel Session: Intelligent E&M

Smartgrid and Innovation

Mr. Tony KWOK

Associate Director - Smartgrid & Innovation,
CLP Power Hong Kong Limited

ABSTRACT

The presentation delves into the smart grid and innovation journey that CLP has been going through to provide clean and reliable energy to customers amid adverse weather and the proliferation of renewable energy and electric vehicles. It will also cover the core elements of a smart electricity grid and other innovation initiatives to support a more reliable and flexible grid.

BIOGRAPHY

Mr. Tony Kwok is the Associate Director of Smartgrid & Innovation at CLP, overseeing the Smartgrid development journey and the introduction of innovative technologies to the grid operations that provide electricity supply to over 2.7 million customers in Hong Kong. His experience spanned across grid management, customer services and digital technologies. Over the years, he has been leading key transformation initiatives in supporting the company's vision as the Utility of the Future, driving complex and strategic initiatives such as the smart metering program and the development of the intelligent distribution grid to improve customer services, enhance operation efficiency and support the on-going energy transformation.

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Parallel Session: Intelligent E&M

Shaping the Future Labs

Prof. HUANG Jianyu

Chief Scientist, Institute of Architecture Design and Research, Chinese Academy of Sciences

ABSTRACT

The 4th Industrial Revolution is reshaping society, with applications in the laboratories represented by Smart Laboratory. The ISO/TC 336, the International Organization for Standardization Technical Committee on Laboratory Design, has accurately identified global trends in laboratory technology and is fully committed to advancing the standardization of this disruptive innovation. The presentation will share a case study to introduce smart laboratory technologies, design concepts, application scenarios, standards development, and the impact on the future.

BIOGRAPHY

Mr. Jianyu HUANG is the Committee Manager of the International Organization for Standardization (ISO) Technical Committee on Laboratory Design (ISO/TC 336). He holds a distinguished professorship at Tsinghua University and serves as the Chief Laboratory Design Scientist at the Institute of Architectural Design, Chinese Academy of Sciences.

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Parallel Session: Intelligent E&M

Accelerating Data-driven and Intelligence-led Smart City and Smart Healthcare

Mr. WU Bin, Robin

Chief Healthcare Industry Digitalization Expert, Huawei

ABSTRACT

The presentation examines the transformative impact of data-driven intelligence on urban development, focusing on smart cities and health care. It covers the trend of innovation driven by data and led by intelligence, accelerating data-driven and intelligence-led smart cities, and accelerating data-driven and intelligence-led smart healthcare. Through this comprehensive exploration, the presentation aims to demonstrate how leveraging data and intelligence can drive significant advancements in urban living and healthcare services.

BIOGRAPHY

Mr. Wu, Bin (Robin), Chief Healthcare Industry Digitalization Expert from Huawei Global Government and Public Utilities Dept, MBA, TOGAF9 Certified Enterprise Architect in 2010. More than 25 years of work experience, including over 10 years on global business and over 20 years of work experience in government and public utility industries such as digital government, smart city, healthcare, public security, transportation, and energy; previously served as Assistant Vice President of USTC Iflytek, HP Global Enterprise Service Bus ESB Development Manager, and NTT Dimension Data Asia Pacific Key Account Consulting and Delivery Executive.

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Parallel Session: Intelligent E&M

The Standard for Green Intelligent Technologies and Artificial Intelligence for Building Electrical and Mechanical Systems in the Greater Bay Area

Ms ZHOU Quan

Deputy Chief Engineer, Guangdong Provincial Academy of Building Research Group Co., Ltd

ABSTRACT

The presentation explores the collaborative efforts in establishing standards for building electrical and mechanical systems within the Greater Bay Area. It covers the background of these standards development, the current status of the re-commissioning standards, and the integration of AI data standards. The presentation concludes by proposing strategic recommendations for advancing technological standardization throughout the Greater Bay Area.

BIOGRAPHY

Ms. Zhōu committed to research and technical services on building energy conservation, low-carbon citiess, and green construction. She has participated in the compilation of more than ten national standards, industry standards, or local standards, and obtained 2 invention patents.

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Parallel Session: New Energy

Develop Green Energy to support Carbon Neutrality

Ir Don CHENG

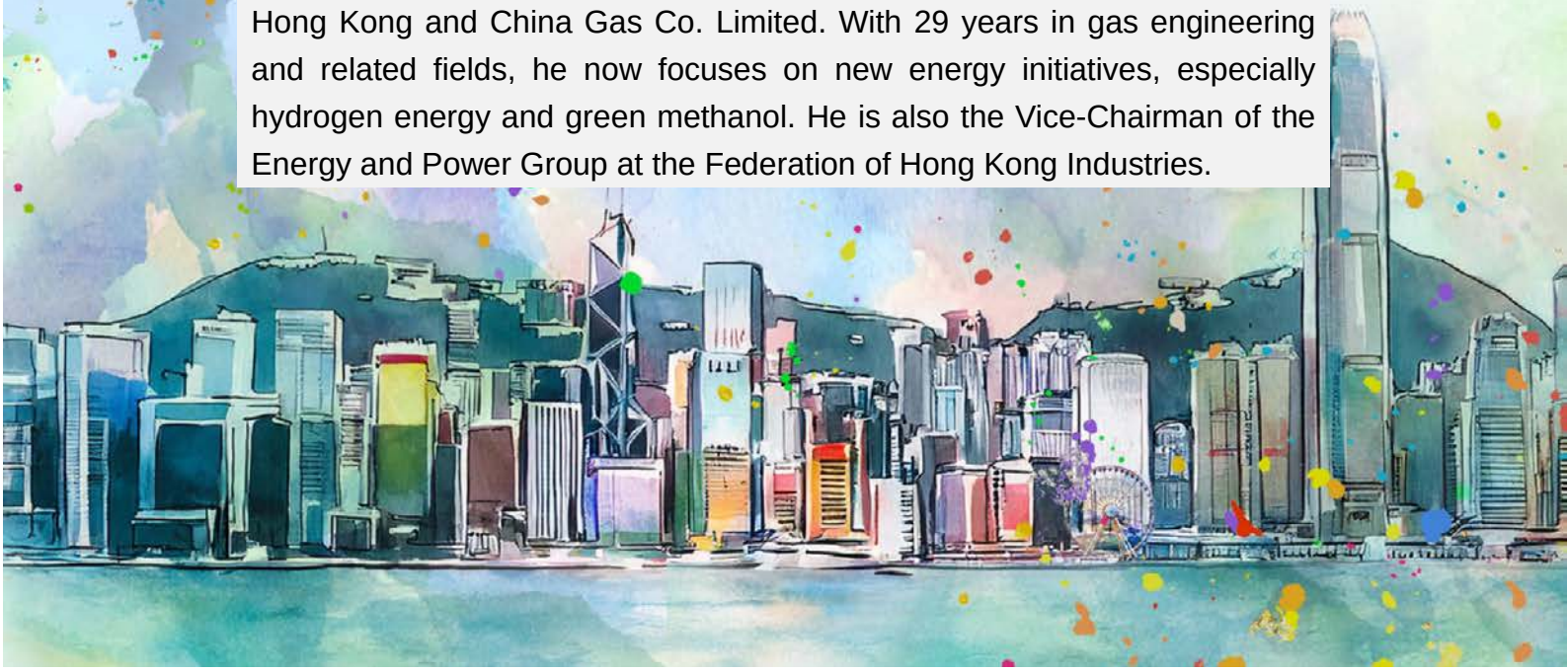
Chief Operating Officer – HK Business,
Hong Kong & China Gas Co. Ltd

ABSTRACT

The world is facing the challenge of climate change, and governments around the globe are committed to reducing carbon emissions and accelerating the energy transition. While maintaining its core business of providing safe and reliable clean energy, the presentation highlights Towngas's strategically expanded into new energy ventures. This expansion encompasses the supply of green methanol, hydrogen, and sustainable aviation fuel (SAF) for maritime, land, and aviation as well as industrial applications, helping various sectors achieve carbon neutrality.

BIOGRAPHY

Ir Don Cheng is the Chief Operating Officer - Hong Kong Business of the Hong Kong and China Gas Co. Limited. With 29 years in gas engineering and related fields, he now focuses on new energy initiatives, especially hydrogen energy and green methanol. He is also the Vice-Chairman of the Energy and Power Group at the Federation of Hong Kong Industries.



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Parallel Session: New Energy

Introduction to Renewable Energy Development and Energy Transition in North China Region

Mr. LIU Hanwei

Director, Division of Sector Regulation, North China Energy Regulatory Bureau of National Energy Administration

ABSTRACT

The North China region is strategically positioned as a vital energy base and economic hub in China. It is crucial in ensuring national energy security and shaping economic development. The presentation provides a brief overview of renewable energy development in North China since the 13th Five-Year Plan, analyzing the efforts made by energy regulatory agencies and other sectors to promote renewable energy growth. It summarizes the progress in energy transition and constructing a new energy system while offering insights into future initiatives and directions for continued advancement.

BIOGRAPHY

1999 July: Graduated with a Master's degree from Tsinghua University, Department of Hydraulic and Hydropower Engineering

1999-2005: China Datang Power Generation Group,（China National Water Resources & Electric PowerMaterials & Equipment Group Co.Ltd）

2005-2013: North China Energy Regulatory Bureau of National Energy Administration ,Division of sector Regulation

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. Parallel Session: New Energy

Nuclear Power for a Green Future

Prof. PAN Chin

CLP Power chair professor of nuclear engineering and head of the Department of Mechanical Engineering, the City University of Hong Kong

ABSTRACT

Nuclear power with its low carbon nature will play a significant role for carbon neutrality in 2050-2060. It is projected that nuclear power will play a significant role like other renewables in China contributing about 18% of electricity at that time. The amount of nuclear power installation may be sixfold of the current installation of 56 units accounting for 54 GWe. The presentation explores nuclear safety, efficient use of nuclear fuels, and the minimization of high-level nuclear waste. Enhancing nuclear safety can be achieved through innovative passive system designs, such as natural circulation to warrant the cooling of reactor core and containment under any situation. The use of nuclear fuels will be much more effective with the development of next-generation nuclear fission power technology integrated with a closed fuel cycle. The technology may recycle the fissile fuels converted from the spent fuels and reduce the nuclear wastes simultaneously.

BIOGRAPHY

Professor PAN Chin is CLP Power chair professor of nuclear engineering and head of the Department of Mechanical Engineering at City University of Hong Kong. Prof. Pan's research focuses on multi-phase flow and boiling heat transfer. He published a book titled "Boiling Heat Transfer and Two-phase Flow" in Chinese in 2001 and has published more than 120 journal papers. He received an outstanding research award in 1998 from the NSC of Taiwan.

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Parallel Session: New Energy

ENERGY MARKET AUTHORITY
Our Clean Energy Future

Mr. Jesse CHIN

Director of Market Development & Surveillance Department, Energy Market Authority of Singapore

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Parallel Session: High-Performance Buildings

Green Building Initiatives in HK Electric

Mr. K.T. HUNG

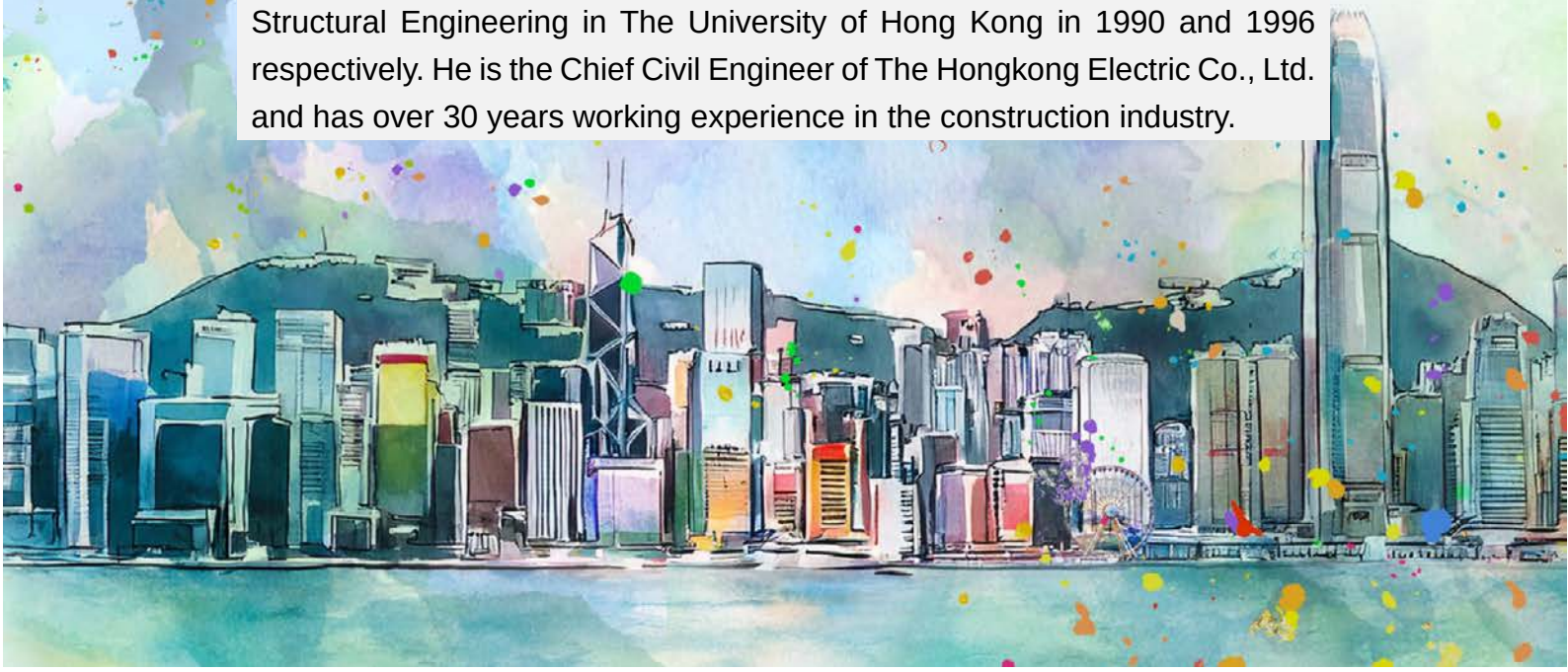
Chief Civil Engineer,
The Hongkong Electric Co., Ltd.

ABSTRACT

The presentation highlights HK Electric is committed to providing a world-class electricity supply to Hong Kong and strives to operate its business sustainably with a view to protecting the environment. HK Electric has included “green elements” in its projects for decades ago to reduce the environmental impacts of new buildings and enhance the health and well-being of occupants. These also lead to lower operating costs due to reduced energy and water consumption and combating climate change by reducing carbon footprint. The presentation will also showcase HK Electric’s green initiatives and efforts to promote “green” in its building projects.

BIOGRAPHY

Mr K.T. HUNG obtained his bachelor and master degree in Civil and Structural Engineering in The University of Hong Kong in 1990 and 1996 respectively. He is the Chief Civil Engineer of The Hongkong Electric Co., Ltd. and has over 30 years working experience in the construction industry.



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Parallel Session: High-Performance Buildings

High-Quality Development: Right Here, Right Now, With You

Ir MA Siu Cheung Eric

President,

The Hong Kong Institution of Engineers

ABSTRACT

As the world grapples with the challenges of climate change, urbanization, and population ageing, Hong Kong stands as a beacon of hope, demonstrating its ability to balance progress with preservation. The presentation explores the city's remarkable transformation from a modest trading hub to a global financial centre, highlighting its innovative spirit and dedication to high-quality development. From the iconic Hong Kong-Zhuhai-Macao Bridge to the pioneering seawater District Cooling System, Hong Kong's compactness has driven the development of innovative engineering concepts, sustainable urban mobility solutions, and pioneering smart city technologies. The presentation will illustrate how Hong Kong is poised to lead the way in setting benchmarks for high-density urban environments, ensuring a resilient, efficient, and sustainable future for generations to come.

BIOGRAPHY

Ir Eric MA is the President of The Hong Kong Institution of Engineers. He was an Executive Director and the CEO of New World Development Company Limited, an Executive Director and the CEO of NWS Holdings Limited, the Acting CEO of Hong Kong-Shenzhen Innovation and Technology Park Limited and Principal Consultant of the Hong Kong Science & Technology Parks Corporation. Ir Ma was previously the Secretary for Development of the HKSAR Government, overseeing policy areas ranging from urban planning to heritage conservation and addressing the supply-demand imbalance in land and housing. He was the Executive Vice President, Civil & Infrastructure, Asia Pacific, of AECOM prior to joining the HKSAR Government.

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Parallel Session: High-Performance Buildings

Smart Building of the Future

Ir Prof. Thomas HO

Chairman,
Construction Industry Council

ABSTRACT

The Smart Building of the Future should incorporate the Design for Safety from the planning stage, ensuring robust protection and resilience. The presentation highlights the utilization of the Modular Integrated Construction (MIC) and Modular Integrated Mechanical, Electrical, and Plumbing (MIMEP) systems, which streamline and enhance the efficiency of the construction process. The presentation will also share the Smart Facility Management System application to oversee building operations, optimizing energy use and maintenance and the robotics to enhance daily operations, boosting efficiency and safety. The presentation will illustrate through these discussions that the holistic approach improves operational performance and achieves significant social outcomes, such as increased accessibility, sustainability, and occupant well-being.

BIOGRAPHY

Ir Prof. Thomas HO is the Chairman of the Construction Industry Council (CIC). The mission of CIC is to CONNECT, LEAD and EXCEL. He possesses over 40 years of experience in construction industry. He has been dedicated to spearheading project management and general management, safety initiatives, sustainable development and innovation excellence in the construction industry. He is recognised by the industry as the figurehead in promoting excellence in construction management, safety leadership, as well as sustainable and quality construction. After joining CIC, he promoted Mi-Infinity, Integrated Common Data Environments and holistic Robotic Construction, he also insisted Design for Safety, High Productivity and Sustainability in the future of Construction. Livability and Well-being will be the ultimate game. In recognition of his advanced mindset in advocating innovative and green construction initiatives, Ir Prof. HO received the Outstanding Achievement Award from Hong Kong Institute of Construction Managers in 2018. He was appointed as a Fellow Member of the Hong Kong Academy of Engineering Sciences.

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Parallel Session: High-Performance Buildings

Energy Storage Technologies in Modern Grids: Overview, Engineering Applications, and Challenges

Prof. CHUNG Chi Yung

Head of Department and Chair Professor of Power Systems Engineering, the Hong Kong Polytechnic University

ABSTRACT

The energy storage system is crucial in modern grids, enhancing flexibility and facilitating renewable energy integration. The presentation comprehensively analyses various energy storage technologies within the context of modern grids, including their classification, applications, challenges, and potential solutions. From traditional pumped-storage hydroelectricity to emerging vanadium redox flow batteries, the aim is to deepen understanding of the similarities and differences among these technologies, ultimately promoting their implementation in Hong Kong.

BIOGRAPHY

Prof. C.Y. Chung is the Head of Department, Chair Professor of Power Systems Engineering and Founding Director of Research Centre for Grid Modernisation in the Department of Electrical and Electronic Engineering at the Hong Kong Polytechnic University (HKPolyU), Hong Kong, He is the 2024-2025 IEEE PES President-Elect and 2026-2027 IEEE PES President.

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Parallel Session: Green Mobility

Driving Green: Sustainable Approaches to Railway Development and Operations

Ms Jessica CHAN

Head of Sustainability,
MTR Corporation

ABSTRACT

With the purpose of “Keep Cities Moving”, MTR Corporation is committed to embedding sustainability principles into its business and operations to create long-term value for all stakeholders. MTR has identified three key focus areas to advance its environmental and social objectives. The presentation will elaborate MTR’s sustainability strategy for environmentally conscious railway systems, focusing on the integration of sustainable practices in railway construction and operations. It involves enhancing energy efficiency, reducing emissions, and promoting eco-friendly operations. By highlighting the importance of green initiatives in the railway sector, this discussion aims to showcase the pivotal role of sustainability in shaping the future of transportation infrastructure.

BIOGRAPHY

Ms Jessica is a seasoned sustainability professional with over 25 years of experience in environmental and corporate sustainability. She serves on various international and local sustainability-related committees, acts as an advisor for two sustainability-related master courses at The Chinese University of Hong Kong and Lingnan University, and is a member of the Board of Examiners for HKMA’s Hong Kong Sustainability Award.

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Parallel Session: Green Mobility

Carbon-Neutral Aviation – The Importance of Sustainable Aviation Fuel

Ms Grace CHEUNG

General Manager Sustainability,
Cathay Pacific Airways Limited

ABSTRACT

Aviation is a hard-to-abate sector because of the use of carbon intensive jet fuel. At the same time, to support global decarbonisation efforts, all major international airlines, including Cathay Pacific, have committed to carbon neutrality by 2050. Significant challenges lie ahead in reducing the carbon footprint of international aviation without sacrificing its role in facilitating international tourism, trade, and providing the only means to rapidly travel long distances across the globe. The presentation will explore the challenges faced by this hard-to-abate sector and the critical role that Sustainable Aviation Fuel plays.

BIOGRAPHY

Ms Grace Cheung, General Manager Sustainability at Cathay Pacific, leads the Group Sustainability Department. Under her leadership, Cathay Pacific aims for net zero carbon emissions by 2050, with mid-term targets for sustainable aviation fuel and carbon intensity improvement. She also spearheaded efforts in circular economy, reducing single-use plastics. Grace represents Cathay in industry groups, chairs the oneworld alliance's Environment & Sustainability Board, and is Vice Chair of IATA's Sustainability & Environment Advisory Council.

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Parallel Session: Green Mobility

On the Journey to Green and Diversified Development

Mr. ZHANG Defu

Deputy Director-General of Transport Department,
China State Railway Group Co., Ltd.

ABSTRACT

The presentation provides a comprehensive overview of the development of railways in China from four key aspects: the overall status of railway operations, green railway construction, diversified business development, and passenger services. It will cover railway network, train operation, e-tickets, face-ID, internet meal orders, rail-air connection, tourism trains, high-speed express delivery, transport for public benefit and other interesting topics. Through this multifaceted exploration, the presentation aims to illustrate the dynamic evolution of China's railway system and its commitment to sustainability, innovation, and enhanced passenger experience.

BIOGRAPHY

Mr. Zhang Defu, Deputy Director-General and Senior Engineer of Transport Department of China State Railway Group Co., Ltd. (CR), has been engaged in railway operation and management for a long time. With a spirit of innovation and exploration, he has deep insight especially in railway transportation organization.

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Parallel Session: Green Mobility

Technological Innovation and Practice of Vehicle Intelligent Safety Testing and Evaluation

Mr. TANG Yu

Deputy Director of Intelligent Driving and Active Safety Department, China Automotive Engineering Research Institute Co., Ltd.

ABSTRACT

The presentation highlights the rapidly evolving landscape of Intelligent Connected Vehicles (ICVs) and their impact on the automotive industry. The presentation delves into three key areas: The development trend of ICV industry, including policy formulation, market scale, standards and regulations, and integration of vehicle-road-cloud; the Development trend of ICV technology, including the integration of artificial intelligence and intelligent driving, as well as the security challenges brought about by it; and Innovation and Practice of CAERI: Facing the new common industry requirements for intelligent safety testing and verification of automobiles, CAERI has made technological innovations and applied practices in the construction of China's characteristic scenario library, evaluation methods and standards, testing tools and equipment, etc.

BIOGRAPHY

Mr. TANG has been engaged in research in the field of ICV testing and evaluation technology, focusing on multi-pillar testing of intelligent driving in complex environments, typical scenario construction, and anthropomorphic evaluation. He has been authorized 12 invention patents and published 8 academic papers. He has won the first prize of China-SAE Science and Technology Award, the first prize of ITS-China Science and Technology Award，the first prize of the BRICS Industrial Innovation Contest, the Gold Medal at the International Exhibition of Inventions Geneva.

中華人民共和國成立七十五周年
75th Anniversary of the Founding of the People's Republic of China

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16.12.2024
研討會
Symposium

香港西九文化區M+
M+, West Kowloon Cultural District, HK

9am - 6pm

17.12.2024
區域供冷系統開放日
District Cooling System Open Day

香港九龍啟德
Kai Tak, Kowloon Bay, HK

10am - 12nn

18.12.2024
參觀大亞灣核能科技館
Site Visit to the Daya Bay Nuclear Power Science and Technology Museum

~~名額已滿~~
~~Quotas filled~~

廣東
Guangdong

8:30am - 6pm

活動網址
Event Website
http://www.emsd.gov.hk/en/emsd_symposium_2024/