



# **The 7th International Conference on Utility Management & Safety 2025(The 7<sup>th</sup> ICUMAS 2025)**

**AND**

# **The 16th International Conference on Pipelines and Trenchless Technology (ICPTT 2025)**

**Event Report**

**Theme: Green, Low-Carbon, Safe, and High-Quality Development  
of Urban Underground Infrastructure**

**主題：城市地下基础设施绿色、低碳、安全、高质量发展**

**2025**

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# The 7<sup>th</sup> International Conference on Utility Management & Safety (ICUMAS)

&

# The 16th International Conference on Pipelines and Trenchless Technology (ICPTT)

## POST-CONFERENCE REPORT

### A. Introduction and Summary

The 7th International Conference on Utility Management & Safety (ICUMAS) and The 16th International Conference on Pipelines and Trenchless Technology (ICPTT) took place in Hyatt Regency Shenzhen Airport, Shenzhen, CHINA, from 05<sup>th</sup> to 08<sup>th</sup> November 2025.

To further advance the exchange of innovative research, cutting-edge technologies, and best engineering practices in pipeline and utilities management, this event brought together experts and practitioners focused on the rehabilitation and modernization of urban underground infrastructure. Jointly organized by **International Institute of Utility Specialists (IIUS)**, and supported by **Hong Kong Institute of Utility Specialists (HKIUS)**, the conference served as a high-level platform for academia, industry, and stakeholders to share knowledge, explore practical solutions, and foster international collaboration.

Through keynote presentations, technical sessions, and focused discussions, the event aimed to support the sustainable development, safety, and resilience of urban underground pipeline systems worldwide.

#### Sessions

- Coastal Water Infrastructure Resiliency Research Colloquium
- Trenchless rehabilitation and renewal for water supply and drainage pipelines
- Smart Construction of Underground Lifeline
- Intelligent management and safety control of water supply and drainage networks
- Construction of Resilient Pipeline Network Systems
- Submarine Pipeline
- Construction of Quality Evaluation System for Trenchless Rehabilitation
- Technical Demonstrations and Site Visits

## B. Conference Agenda

After the whole day registration on 5<sup>th</sup> November, the day concluded with an **experts' dinner**, offering invited experts and organizers an opportunity for informal discussion and networking.





The **opening ceremony** was held on the morning of 6 November, featuring speeches delivered by multiple academicians and leading experts from the utility industry. They collectively highlighted the latest developments and emerging trends in the field, underscored the importance of cross-disciplinary collaboration, and emphasized the need for continuous innovation to address current and future challenges. Their remarks not only set the tone for the rest of the event, but also provided valuable perspectives that inspired meaningful discussion among participants.



*Hundreds of participants from different countries and organizations attended the opening ceremony to witness this significant milestone, creating a vibrant and engaging atmosphere. Their presence demonstrated the event's broad international recognition and strong institutional support, and further highlighted its role as an important platform for dialogue, collaboration, and future cooperation.*



*Opening speech by Prof. Samuel Ariaratnam -  
Academician of Canadian Academy of Engineering, the U.S. National Academy of Construction/ the European  
Academy of Science and Art, Professor at Arizona State University, Honorary President of International  
Institute of Utility Specialists (加拿大工程院院士，美国建筑科学院院士，欧洲科学与艺术学院院士，亚  
利桑那州立大学教授，國際管綫專業學會榮譽會長)*





*Opening speech by Ir MA Siu-cheung, Eric, GBS, JP (馬紹祥教授、工程師、金紫荊星章、太平紳士) - Former Secretary for Development Bureau, HKSAR, Founding President of International Institute of Utility Specialists (香港特別行政區政府發展局原局長，國際管綫專業學會創會會長)*

The opening ceremony and the entire conference featured large screens displaying real-time subtitles and simultaneous interpretation, fully demonstrating the conference's strong emphasis on accessibility and inclusivity. These arrangements ensured that participants from diverse linguistic and professional backgrounds could follow the proceedings with ease, thereby enhancing overall engagement and facilitating more effective communication and exchange.



*Opening speech by Prof. Ma Baosong (马保松教授) -*

*Professor at Sun Yat-sen University, Director of China-U.S. Joint Center for Trenchless R&D, President of the International Trenchless Research Institute, Honorary Fellow of International Institute of Utility Specialists (中山大学教授, 中美联合非开挖工程研究中心主任, 国际非开挖技术研究院院长, 國際管綫專業學會榮譽會士)*



We were pleased to have several representatives of the HKSAR Government to the conference, including Ir WONG Yan Lok, Roger, JP (黃恩諾工程師, 太平紳士) - Director of Water Supplies Department, HKSAR, Honorary Fellow of International Institute of Utility Specialists (香港特別行政區政府水務署署長, 國際管綫專業學會榮譽會士); Ir CHAN Chi Ho, Johnny, JP (陳志豪工程師, 太平紳士) - Deputy Secretary (Works 2) for Development Bureau, HKSAR (香港特別行政區政府發展局副秘書長 (工務) 2); Ir CHAN Ka Ho, Benjamin, JP (陳家豪工程師, 太平紳士) - Project Mgr (W) of Civil Engineering and Development Department, HKSAR, Honorary Fellow of International Institute of Utility Specialists (香港特別行政區政府土木工程拓展署西拓展處處長, 國際管綫專業學會榮譽會士); Ir HUI Wing Koon, Joe (許榮觀工程師) - Ch Engr/Gas Standards A of Electrical and Mechanical Services Department, HKSAR (香港特別行政區政府機電工程署總工程師/氣體標準 A), whose presence signaled a strong commitment to deepening collaboration between the HKSAR and mainland China. Their attendance not only underscored the strategic importance of closer policy and professional exchanges, but also reflected a shared willingness to explore new opportunities for long-term, mutually beneficial cooperation.



*Ir WONG Yan Lok, Roger, JP (黃恩諾工程師, 太平紳士) - Director of Water Supplies Department, HKSAR, Honorary Fellow of International Institute of Utility Specialists (香港特別行政區政府水務署署長, 國際管綫專業學會榮譽會士)*



Ir CHAN Chi Ho, Johnny, JP (陳志豪工程師，太平紳士) – Deputy Secretary (Works 2) for Development Bureau, HKSAR(香港特別行政區政府發展局副秘書長（工務）2)



Ir CHAN Ka Ho, Benjamin, JP (陳家豪工程師，太平紳士) - Project Mgr (W) of Civil Engineering and Development Department, HKSAR, Honorary Fellow of International Institute of Utility Specialists (香港特別行政區政府土木工程拓展署西拓展處處長，國際管綫專業學會榮譽會士)





Ir HUI Wing Koon, Joe (許榮觀工程師) - Ch Engr/Gas Standards A of Electrical & Mechanical Services Department, HKSAR(香港特別行政區政府機電工程署總工程師/氣體標準A)



Group photo



## C. IIUS Inauguration Ceremony (2026-2030)

Immediately following the opening ceremony, the **Inauguration Ceremony for IIUS (2026–2030)** was held, during which certificates were presented to the newly appointed IIUS Council Members and Honorary Members, in recognition of their outstanding contributions and continued dedication to advancing utility management and safety worldwide. This symbolic moment not only acknowledged their professional achievements, but also reaffirmed the Institute's commitment to fostering global best practices, knowledge exchange, and long-term international collaboration in the utility sector.



*Welcome speech by Ir Dr. King WONG (黃敬 博士工程師)- Executive President of International Institute of Utility Specialists (國際管綫專業學會執行會長)*

After the welcome speech by Ir Dr King WONG, the presentation segment commenced, and the IIUS Council Members were invited to the stage one by one. As each member proceeded to the front, their roles and contributions were briefly introduced, showcasing the diverse expertise and leadership supporting the Institute. This orderly and ceremonious arrangement not only highlighted the strong governance structure of IIUS, but also reinforced the collective commitment of the Council to advancing utility management, safety, and innovation at both regional and international levels.



Ir WONG Yan Lok, Roger, JP, Director of the Water Supplies Department of the HKSAR Government (香港特别行政区政府水务署署长黄恩诺工程师、太平绅士); Ir CHAN Chi Ho, Johnny, JP, Deputy Secretary (Works) 2 of the Development Bureau of the HKSAR Government (香港特别行政区政府发展局副秘书长(工務)2 陈志豪工程师、太平绅士); and Ir CHAN Ka Ho, Benjamin, JP, Project Manager (West) of the Civil Engineering and Development Department of the HKSAR Government (香港特别行政区政府土木工程拓展署西拓展处处长陈家豪工程师、太平绅士), jointly presented the Founding Commemorative Gold Medal to Prof Ir MA Siu-cheung, Eric, GBS, JP (马绍祥教授、工程师、金紫荆星章、太平绅士), and the Appointment Certificate to Ir Dr King WONG (黄敬博士工程师).





*Ir Prof. MA Siu-cheung, Eric, GBS, JP (馬紹祥教授、工程師、金紫荊星章、太平紳士) and Ir Dr King WONG (黃敬博士工程師) jointly presented the Honorary President appointment certificates to Prof. Samuel Ariaratnam — Academician of the Canadian Academy of Engineering, the U.S. National Academy of Construction, and the European Academy of Sciences and Arts, and Professor at Arizona State University (加拿大工程院院士、美國建築科學院院士、歐洲科學與藝術學院院士、亞利桑那州立大學教授) — and to Prof. WANG Fuming (王復明院士), Academician of the Chinese Academy of Engineering, Director of the Yellow River Laboratory, and Dean of the School of Civil Engineering at Sun Yat-sen University (中國工程院院士、黃河實驗室主任、中山大學土木工程學院院長).*

IIUS's Council Members are all internationally recognized pioneers and experts from around the world, reflecting the Institute's strong professional foundations and diverse executive composition. Their collective expertise and leadership not only enhance the credibility and influence of IIUS at the global level, but also ensure that its strategic direction, academic activities, and industry collaborations are guided by the highest standards of practice, innovation, and international best practice.





*Appointment Certificates were presented to IIUS' new Vice President from different areas*



*A group photo was taken after all the certificates had been presented, capturing this memorable moment and symbolizing the shared commitment of all honourees and guests to advancing the development of the utility industry*

A full list of IIUS honoraries and committee can be viewed from [www.iius.org.hk](http://www.iius.org.hk).

## D. Presentation

The Keynote speech was held on 7<sup>th</sup> November. Our speakers' details as below :

### **Ir Prof. Cheng Chin-pang, Jack 鄭展鵬教授工程師**

Ir Prof. Cheng is Professor and Associate Head in the Department of Civil and Environmental Engineering at the Hong Kong University of Science and Technology (HKUST). He also serves as Associate Director of the GREAT Smart Cities Institute and Director of the Construction Innovation Laboratory.

His research focuses on Building Information Modelling (BIM), digital twins, artificial intelligence, and construction robotics. He has published over 400 papers, with more than 20,000 citations, and is widely recognized as a leading scholar in digital construction and smart city development.

Prof. Cheng holds a number of key industry positions, including Chair of the Building Information Modelling (BIM) Committee of the Construction Industry Council in Hong Kong. He has been listed among the world's top 2% of scientists in Stanford University's 2024 global ranking, and has received multiple international invention exhibition gold awards and various academic honours.

#### **Presentation Topic:**

**AI Flooding Monitoring (人工智能洪水監測)**

### **Ir Pfor. Lai Wai Lok, Wallace 賴緯樂教授工程師**

Ir Prof. Lai is Professor and Associate Head (Teaching) in the Department of Land Surveying and Geo-Informatics at The Hong Kong Polytechnic University. His research focuses on non-destructive testing (NDT) technologies such as ground-penetrating radar and infrared thermography for underground utilities and civil infrastructure.

He established Hong Kong's first dedicated underground utility detection laboratory and led the design and development of the Q-Leak Underground Water Leakage Detection Centre to address the city's complex subsurface utility challenges. Dr Lai has led the development of multiple utility surveying standards and spearheaded the world's first certification scheme in this field, helping to train and accredit international professionals.

In parallel, he applies geospatial technologies to study Second World War landscapes and heritage. He has published over 90 academic papers and has led more than 50 research and consultancy projects.

#### **Presentation Topic:**

**Acoustic Leak Detection Using Bwell "Tethered Snake" (使用必威帶纜式內窺鏡進行声学检漏)**

### **Dr. Ridwan Taiwo**

Dr. Ridwan Taiwo is a Postdoctoral research fellow at the Hong Kong Polytechnic University with over 6 years of experience in civil infrastructure engineering, specializing in sustainable and digital infrastructure with AI applications. His academic credentials include a First-Class BEng from Federal University of Technology, Akure, an MEng with distinction from University of Cape Town (QS ranked 150th), and PhD from Hong Kong Polytechnic University (QS ranked 54th). His remarkable scholarly productivity includes 34 peer-reviewed journal publications, with 25 in JCR Q1 journals and 12 as first author, plus 4 conference papers. His appointment as an editorial board member for Nature Scientific Reports demonstrates international recognition of his expertise. Additionally, his role as International Program Committee Member for the 1st International Conference on

Agentic and Generative Techniques in Intelligent Computational Systems (AGENTICS 2025) highlights his leadership in cutting-edge AI research domains.

**Presentation Topic:**

**AI-driven Water Pipelines Management (基于人工智能的水管道管理)**

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**Dr. Rongsheng LIU 刘榕昇博士**

Dr Liu is a PolyU postdoctoral researcher in Prof. Tarek's research team, specializing in AI-driven acoustic leak detection for smart water infrastructure, with extensive fieldwork in Hong Kong's water distribution networks and active participation in projects with utilities and industry. He has published eight SCI-indexed papers on pipeline leak detection (H-index of 9; 265 citations).

**Presentation Topic:**

**Smart Acoustic Leak Detection System for Water Distribution Networks (用于供水网络的智慧声学漏水检测系统)**

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**Ms TAM Ka-Yan 譚家欣**

Ms TAM Ka-yan is a Civil Engineer at the Water Supplies Department of the Government of the Hong Kong Special Administrative Region, with nine years of professional experience. She has contributed to a range of important projects, including the construction of pressure management and district metering installations in major fresh water supply zones, as well as studies on runoff and evaporation, overflow and yield, crisis management, remote village water supply, water balance, leakage management and the digitalisation of water services.

Drawing on her diverse project experience and her current role, she is well-placed to share valuable insights and strategies for reducing water loss and enhancing the sustainability of Hong Kong's water resources management.

**Presentation Topic:**

**Strategy to Tackle Water Loss in Hong Kong, China (中国香港应对失水的策略)**

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**Mr. Kazaf WONG 黄遠斌**

Mr. Kazaf WONG is an Engineer at the Drainage Services Department (DSD) of the Government of the Hong Kong Special Administrative Region of the People's Republic of China, actively engaged in strategic rehabilitation planning and innovative digital solutions for Hong Kong's underground drainage systems. With over ten years of expertise in civil engineering and infrastructure innovation, Kazaf has contributed to the development of smart city solutions.

Commencing his professional career in 2015, he worked on large-scale infrastructure projects, gaining skills in planning and smart solutions to support urban development. A Member of the Institution of Civil Engineers since 2019 and the Hong Kong Institution of Engineers since 2020, he is a strong advocate for digital transformation in infrastructure. Since taking up his



role at the DSD in 2022, he spearheaded the Smart Pipeline Condition Assessment using AI-driven Visual Language Models, developed 3D underground drainage network models with hybrid photogrammetry and 3D laser scanning, and implemented web-based solutions for CCTV condition surveys. His work is pivotal in advancing Hong Kong's roadmap for intelligent pipeline management, significantly improving operational efficiency and public safety.

**Presentation Topic:**

**Digitalization of Underground Pipeline (地下管道數位化)**



Ir Pfor. Lai Wai Lok, Wallace 赖伟乐教授工程师 – Associate Head (Teaching) & Professor, Hong Kong Polytechnic University



Ir Prof. Cheng Chin-pang, Jack 郑展鹏教授工程师 - Associate Head and Professor, Hong Kong University of Science and Technology (HKUST)



Dr. Ridwan Taiwo - Postdoctoral Research Fellow, Hong Kong Polytechnic University



Ms TAM Ka-Yan 譚家欣 - Engineer of Water Supplies Department



Mr. Kazaf WONG 黃遠斌 - Engineer of Drainage Services Department



Dr. Rongsheng LIU 刘榕昇博士 - Postdoctoral Research Fellow, Hong Kong Polytechnic University

The presentations highlight a comprehensive, technology-driven transformation of Hong Kong's water and drainage infrastructure. They collectively cover the use of artificial intelligence, acoustic sensing, digital twins, and advanced inspection tools to improve the monitoring, management, and sustainability of water and underground utility systems. The speakers address flooding prediction, leak detection from both inside and outside pipelines, AI-based pipeline condition assessment, and government strategies to reduce water loss. They also present digitalisation efforts for underground drainage networks, including 3D modelling and AI-assisted analysis. Overall, the combined message is a coordinated push toward smart, data-driven, and resilient water infrastructure.

## E. Conference Supporters

We are extremely grateful for the support of various organisations received throughout the planning of the conference. The full overview of supporting supporters in a range of category is listed below :

### ORGANIZERS 主辦單位:

1. International Institute of Utility Specialists
2. Central South University
3. China Petroleum Pipeline Engineering Co., Ltd.
4. Dalian University of Technology
5. Dam and Road Engineering Hospital
6. China University of Geosciences (Wuhan)
7. Shenzhen University
8. Sun Yat-sen University
9. Shenzhen Weite Environmental Technology Co., Ltd.
10. Tongji University
11. Yangtze Ecology and Environment Co., Ltd.
12. Zhejiang University
13. Zhengzhou University

### CO-ORGANIZERS 協辦單位:

1. Beijing Thermal Engineering Design Co., Ltd.
2. Beijing Underground Pipeline Association
3. Beijing University of Technology
4. Beijing North Drainage Construction Co., Ltd.
5. Beijing Municipal Engineering Design and Research Institute Co., Ltd.
6. CCCC Second Highway Consultants Co., Ltd.
7. Central South University
8. Changsha Urban Planning and Design Institute Co., Ltd.
9. China University of Petroleum (East China)
10. China Petroleum Pipeline Research Institute Co., Ltd.
11. The Fourth Branch of China Petroleum Pipeline Engineering Co., Ltd.
12. China Railway Shanghai Engineering Bureau Group Municipal Environmental Protection Engineering Co., Ltd.
13. China Municipal Engineering North China Design and Research Institute Co., Ltd.
14. China State Construction Engineering Corporation Technology Center
15. Chongqing University
16. Dalian University of Technology
17. Department of Architecture and Civil Engineering, City University of Hong



Kong

18. Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology
19. Dongguan Water Group Co., Ltd.
20. Ecological Municipal Institute of Beijing Company, China Urban Planning and Design Institute
21. Faculty of Engineering, The University of Hong Kong
22. Faculty of Construction and Environment, The Hong Kong Polytechnic University
23. Foshan Water Environment Protection Group Co., Ltd.
24. Guangdong Urban Water Supply Association
25. Guangzhou Urban Drainage Co., Ltd.
26. Guangzhou University
27. Guangzhou Municipal Group Co., Ltd.
28. Harbin Institute of Technology
29. Harbin Water Affairs Development and Construction Group Co., Ltd.
30. Hunan Urban Planning and Design Institute Co., Ltd.
31. Macao Water Supply Co., Ltd.
32. National Testing Center for Chemical Building Materials
33. National Energy Conservation Center for Cement Products
34. North University of China
35. Northeastern University
36. Nanjing University
37. Pipeline Inspection and Trenchless Rehabilitation Committee of Guangdong Municipal Industry Association
38. Shanghai Urban Construction Design and Research Institute (Group) Co., Ltd.
39. Shenzhen Bomingwei Technology Co., Ltd.
40. Shenzhen Environmental Water Group Co., Ltd.
41. Shenzhen University
42. Shenzhen Water Affairs Society
43. Shenzhen Water Supply and Drainage Industry Association
44. Shandong University
45. Shijiazhuang Tiedao University
46. Southeast University
47. Southwest Petroleum University
48. Soochow University
49. Tsinghua University
50. Tianjin University
51. Utility Tunnel Technology Center, Central Research Institute of China Construction Technology Group
52. Wuhan Zhongyi IoT Technology Co., Ltd.
53. Yuehai Water Group Co., Ltd.

54. Zhejiang University
55. Zhuhai Water Affairs Association
56. Zhuhai Water Environment Holding Group Co., Ltd.
57. Zhengzhou Municipal Facilities Maintenance and Construction Co., Ltd.
58. Zhengzhou Anyuan Engineering Technology Co., Ltd.

#### **SUPPORTING ORGANIZATIONS 支持單位:**

1. Arizona State University, USA
2. Beijing Trenchless Industry Association
3. British Society for Trenchless Technology
4. Chartered Institution of Civil Engineering Surveyors (Hong Kong)
5. Chartered Institute of Logistics & Transport in Hong Kong
6. China Petroleum Pipeline Engineering Co., Ltd.
7. China Urban Heating Association
8. Chongqing Municipal Pipeline Dredging Association
9. Development Bureau, The Government of the Hong Kong Special Administrative Region of the People's Republic of China
10. Facility Renewal and Rehabilitation Professional Committee, China Urban Water Supply and Drainage Association
11. German Society for Trenchless Technology
12. Hong Kong Institute of Utility Specialists
13. Hong Kong Construction Association
14. Hong Kong Institution of Engineers
15. Hong Kong Institution of Engineering Surveyors
16. Hong Kong Institution of Highways and Transportation
17. Housing Bureau, The Government of the Hong Kong Special Administrative Region of the People's Republic of China
18. Institution of Gas Engineers & Managers - Far East District Section
19. Intelligent Monitoring Branch of Geology and Geotechnical Engineering, Chinese Society for Rock Mechanics and Engineering
20. International Society for Trenchless Technology
21. Louisiana Tech University, USA
22. Macao Institute of Utility Specialties
23. Plastic Pipe Professional Committee, China Plastics Processing Industry Association
24. Pipeline Structure Committee, China Association for Engineering Construction Standardization
25. Pipeline Trenchless Crossing Technology Professional Committee, China Petroleum Engineering Construction Association
26. Pipeline Inspection and Rehabilitation Professional Committee, China Municipal Engineering Association
27. Queen's University, Canada
28. Ruhr University Bochum, Germany
29. Science and Technology Committee, China Urban Water Supply and Drainage Association
30. The Association of Consulting Engineers of Hong Kong





31. University of Alberta, Canada
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