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Technical Seminar on Hydrogen Economy in Hong Kong

15 June 2019 (Saturday)

The Energy Institute Hong Kong and the Ability R&D Energy Research Centre of City University of Hong Kong jointly organize a half-day **Technical Seminar on Hydrogen Economy in Hong Kong** with support from the Power Assets Holdings Ltd., Northern Gas Networks, The Association of Energy Engineers (Hong Kong Chapter), Building Services Operation and Maintenance Executives Society, Engineers Australia - HK Chapter, The Hong Kong Association of Energy Engineers, The Hong Kong Institution of Engineers - Building Services Division, The Hong Kong Institution of Engineers - Logistics & Transportation Division, The Hong Kong Institution of Engineers - Mechanical, Marine, Naval Architecture & Chemical Division, Institution of Gas Engineers & Managers - Far East District Section and The Institution of Mechanical Engineers (Hong Kong Branch) on 15 June 2019 (Saturday) for their members. Others interested professionals in this event are also welcome.

About the Event

With the increasing public awareness for the climate change and global warming arising from fossil fuels,

researchers and policy makers have already put their focus on the development of clean and renewable energy sources. Remarkable advancements of the renewable technologies are made in recent years while new systems with better efficiency and lower cost are developed to compete with the fossil fuel. However, the renewable energy productions are usually site specific, intermittent, and thus not reliable for instantaneous supply. Hydrogen is identified as one of the potential energy carriers for future energy supply which can resolve the limitation for renewable energy production. Hydrogen is clean, renewable and harmless during the entire production and disposal cycle. In the technical talks, some oversea and local speakers are invited to share their area of excellence in hydrogen economy while their insights in application of the emerging technologies will be discussed.

Topic 1 – Latest Development in the UK Green Hydrogen (by Professor Phil Taylor, Head of the School of Engineering, Siemens Professor of Energy Systems, Newcastle University)

Hydrogen has a significant role to play in the decarbonisation of many industries. Whilst there are a number of methods to create hydrogen, those at true scale tend to be derived from fossil fuels, such as natural gas, and therefore require carbon sequestration to reduce the carbon emission potential. There are however several technologies that allow green sustainable hydrogen to be produced and these are often linked to the electricity system. Considering Whole Energy Systems solutions supports this system coupling to amplify the benefits of green hydrogen production, providing decarbonisation solutions to both electricity and gas and also increasing the resilience and flexibility of both.

Topic 2 – Driving the decarbonisation of the GB gas networks, the role of research, industry and government (by Mr Mark Horsley, CEO, Northern Gas Networks)

In response to the global threat of climate change, GB research programmes such as H21 and Hy4Heat are gathering the evidence required to support the transition of GB gas infrastructure to 100% hydrogen. In tandem with this research, industry is now working more closely than ever before with regulators and government to create the environment necessary to carry out such a significant change programme. In his talk Mark will highlight the challenges and opportunities to deliver this change whilst continuing to provide customers with a low cost, clean and then green energy solution for heat.

Topic 3 – Hydrogen safety research; establishing the safety case for hydrogen in the GB gas networks and cross cutting issues into transport (by Miss Catherine Spriggs, Senior Project Manager, Science Division, Health & Safety Executive

The foundation for any transition to hydrogen in the GB gas network will be underpinned by detailed scientific research and supporting demonstration to understand the behaviours of hydrogen in context of the existing gas infrastructure, connected appliances and existing safety case. Catherine will provide insight into the role of the Health and Safety Executive and what is needed to support a move to 100% hydrogen deployment in the GB gas infrastructure. Catherine will also touch upon cross cutting issues such as hydrogen in transport to provide a rounded view of the GB position.

Topic 4 – Industrial Perspective on Hydrogen and Hydrogen Fuel Cell (by Mr Alfred Wong, Managing Director, Asia Pacific, Ballard Power System)

Hydrogen is gaining recognition as the ultimate clean energy that could revolutionize the transportation sector. Driven by a global movement on decarbonization and addressing climate change, the commercialization of hydrogen fuel cell vehicles is accelerating, particularly in applications where long range, heavy payload, and high utilization requirements cannot be adequately satisfied by pure battery solutions. In this presentation Alfred will discuss the compelling value proposition of fuel cells for medium and heavy-duty motive applications, as well as review examples of some recent commercial deployments.

Topic 5 – Advanced Technologies for Clean and Renewable Hydrogen Production (by Ir Prof Michael KH Leung, Past Chairman, Energy Institute Hong Kong / Professor, School of Energy and Environment, City University of Hong Kong)

Clean and renewable production of hydrogen plays an important role in the development of sustainable hydrogen economy. Renewable hydrogen can be directly produced by using solar energy for

thermochemical water splitting to dissociate water into hydrogen and oxygen. However, it is not the most efficient approach. With continual research efforts, we have successfully developed more advanced hydrogen generation technologies, including water electrolysis, electrocatalysis, photocatalysis, etc. These promising technologies can generate hydrogen fuel at not only high energy efficiency but also low or even zero carbon emission. In this presentation, the speaker will present the mechanisms of these technologies and discuss their advantages and limitations.

Moderator

Ir Prof Dennis Leung, Honorary Advisor, Energy Institute Hong Kong
Ir Paul Lee, Immediate Past Chairman, Energy Institute Hong Kong

Speakers

Professor Phil Taylor, Deputy Pro-Vice Chancellor SAgE Faculty, Head of School of Engineering, New Castle University

Phil is Deputy Pro Vice Chancellor (SAgE Faculty), Head of the School of Engineering and Siemens Professor of Energy Systems. He has worked in the field of Energy Systems for 25 years, in industry and academia, joining Newcastle University in April 2013. Phil leads an integrated School of Engineering with 500 staff and approximately 3200 students. The School carries out world leading research in a number of areas including Energy, Cities, Transport and Biomedical Engineering. Prior to becoming Head of School Phil was Director of the Institute for Sustainability at Newcastle University where he led the developments on Newcastle Helix regarding Digitally Enabled Urban Sustainability.

Phil is Director and Principal Investigator for the EPSRC funded £20M National Centre for Energy Systems Integration (CESI) and the newly formed £10m EPSRC Supergen Energy Networks Hub, working collaboratively with NREL and EPRI, Danish Technological University among others. Phil is a visiting Professor at Nanyang Technological University in Singapore and UNITEN University in Malaysia.
He was also founding member of The Faraday Institution, a £42m Industrial Strategy Challenge Fund initiative focusing on battery storage for the automotive sector. Phil was the academic lead for the £54m Low Carbon Networks Funded project Customer Led Network Revolution carried out with Northern Powergrid and British Gas.

In recent years he has provided consultancy and advice to many organisations including: Enercon, Singapore Energy Markets Authority, Malaysian Ministry of Science Technology and Innovation, BEIS, Norwegian, Swedish and Dutch governments regarding power systems, energy storage and renewable energy.
Details of Academic Profile can be found here:

https://www.ncl.ac.uk/engineering/staff/profile/philtaylor.html#research
National Centre for Energy Integration: https://www.ncl.ac.uk/cesi/
Faraday Institution: https://faraday.ac.uk/

Mr Mark Horsley, CEO, Northern Gas Networks

Mark Horsley has been Chief Executive Officer of Northern Gas Networks (NGN) since 2011. He has over 40 years of experience in the energy sector. In the seven years since Mark joined NGN, the company has transformed its approach to customer service, securing 12 national accolades for customer and employee experience including a National Business Award for Customer Focus.

Mark has held a number of senior appointments in the industry including Equity Partner and Head of Power Distribution at EC Harris, an international built asset consultancy, Strategy and Central Programmes Director at Scottish Power and President and Chief Operating Officer at CE Electric UK. Mark held the post of Chairman of the UK Energy Networks Association from 2004 to 2006, and was Chairman of the Energy Innovation Centre (EIC) from 2014 until 2017.

Miss Catherine Spriggs, Senior Project Manager, Science Division, Health & Safety Executive

Catherine is a Chartered Civil Engineer and Member of the Association of Project Managers with over 20 years' experience of working on complex projects in the business, science and construction sectors. She

has experience of working on projects varying in value from tens of thousands of pounds to hundreds of millions of pounds. Since joining the Health and Safety Laboratories in 2012 she has worked on a range of research and consultancy projects for commercial clients predominantly in the energy, aerospace and defence sectors. Catherine has taken an interest in the future of energy since completing her Masters Degree in Leadership for Sustainable Development in 2000 and has combined her project management experience and technical background enabling her to effectively lead the work of the laboratory on the technical and safety challenges associated with the future of energy debate.

Catherine is currently managing the HSE's technical input to a number of high profile hydrogen projects including H21, HyDeploy, Hy4Heat IGEM Standards, H2 in the NTS and H100.

Mr Alfred Wong, Managing Director, Asia Pacific, Ballard Power System
Mr Alfred Wong is the Managing Director of Asia Pacific for Ballard Power Systems Inc. (NASDAQ/TSX: BLDP), a leading provider of hydrogen fuel cell solutions for motive and stationary power applications. Based in the China Greater Bay Area, Mr. Wong is responsible for the company's subsidiary and joint ventures in China, as well as the development of emerging opportunities in the rest of APAC. In his 19-year career at Ballard, Mr. Wong has held leadership positions in R&D, product development, sales, and business & corporate development. He is a licensed Professional Engineer (Canada) and holds B.A.Sc. and M.Eng. Degrees in Mechanical Engineering from The University of British Columba, an MBA from Simon Fraser University, and has completed executive education training from Stanford University.

Ir Prof Michael KH Leung, PhD, CEng, MEI, RPE, MHKIE, is the Past Chairman of Energy Institute Hong Kong. He is also Professor of School of Energy and Environment of City University of Hong Kong. The main areas of his teaching and research are energy efficiency, renewable energy and building services engineering. He is also experienced in energy audit and carbon audit.

Time & Date	0910 - 1300; 15 June 2019 (Sat)	***Venue***	Tin Ka Ping Lecture Theatre (Lecture Theater 1, LT-1), 4/F, Yeung Kin Man Academic Building, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong
Fee	Free of charge	***CPD***	CPD attendance certificates will be issued to attendees (4 hours)
Language	English		

Registration

Please register online through http://bit.ly/2JBrsT0
(copy this link and paste on the browser should it cannot be linked directly)
on or before **31 May 2019**

Tentative Rundown

0910 - 0930	Registration
0930 - 0935	**Welcoming Notes** - **Ir KF Yee**, Chairman, Energy Institute Hong Kong
0935 - 0945	**Souvenir Presentation & Photo-taking**
Moderator: Ir Prof Dennis Leung, Honorary Advisor, Energy Institute Hong Kong	
0945 - 1025	**Latest Development in the UK Green Hydrogen** - Professor Phil Taylor, Deputy Pro-Vice Chancellor SAgE Faculty, Head of School of Engineering, New Castle University, New Castle University
1025 – 1105	**Driving the Hydrogen 21 and North of England Reports** - Mr Mark Horsley, CEO, Northern Gas Networks
1105 - 1125	*Tea Break*

Moderator: Ir Paul Lee, Immediate Past Chairman, Energy Institute Hong Kong	
1125 – 1150	**Hydrogen Safety Research; Establishing the Safety Case for Hydrogen in the GB Gas Networks and Cross Cutting Issues into Transport** - Miss Catherine Spriggs, Senior Project Manager, Science Division, Health & Safety Executive
1150 - 1215	**Industrial Perspective on Hydrogen and Hydrogen Fuel Cell** - Mr Alfred Wong, Managing Director, Asia Pacific, Ballard Power System
1215 - 1240	**Advanced Technologies for Clean and Renewable Hydrogen Production** - Ir Prof Michael KH Leung, Past Chairman, Energy Institute Hong Kong / Professor, School of Energy and Environment, City University of Hong Kong
1240 - 1300	Q&A
1300	End of Event