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Innovative Climate Change Mitigation Technologies and Systems

Professor Jinyue YAN

Royal Institute of Technology and Mälardalen University, Sweden

26 August 2008 (Tuesday), 10.30 am – 12.00 noon
Engineering Auditorium, NUS Faculty of Engineering
9 Engineering Drive 1, Singapore 117576

Abstract: Technology has a critical role to play in reducing greenhouse gas emissions and increasing greenhouse gas sinks. The wider adoption of existing climate-friendly technologies and the development and deployment of demonstrated, new and improved and innovative technologies are important aspects of the response to climate change concerns. Various efforts towards CO₂ capture and storage (CCS) from fossil fuels have been the central focus of current R&D. CCS is presently an important technology under development for exploring the great potential to reduce GHG emission impacts in economically and environmentally acceptable ways. This has been intensively investigated in the electricity production sector because electric power generation represents one of the largest sources of CO₂ emissions. Reductions of GHG emissions in other sectors by technology innovations have, however, been overlooked. Realising the potential to reduce greenhouse gases emissions requires combined action in all sectors of the economy including adoption of energy-efficient technologies and practices, increased fuel switching towards lower carbon fuels, combined growth in the use of efficient gas turbines and combined heat and power systems, greater reliance on renewable energy sources, physical sequestration of CO₂, and improving the end-use efficiency of energy uses, etc. This seminar presents technically integrated options related to renewable biomass energy systems for mitigating GHG emissions, including industrial process improvement, energy optimisation and integration with advanced power generation technologies, and integration of industrial processes with carbon capture and storage (CCS). Such options could create new opportunities and possibilities for future carbon-constrained economies, and possibly result in “negative CO₂ emission” energy systems. Many people, especially in the industrial sectors have not recognised the real meaning and potential benefits of this new approach. The presentation will address the integration of CO₂ capture into large industrial processes with advanced gasification technologies. Technological methodologies with cost effective solutions for those systems will be discussed. Different possibilities with integrated energy systems will be proposed and analysed. The potential impacts of the integration of greenhouse gas mitigation technologies will also be discussed.

About the Speaker:

Professor Yan is Chair Professor of Energy Engineering at the Royal Institute of Technology (KTH) and Mälardalen University, Sweden. He came to Sweden from China in 1989 and received his PhD at KTH in 1991. From 2001 to 2005, Professor Yan was Chair Professor and Head of Energy Engineering at Luleå University of Technology, Sweden. His research interests are simulation and optimisation of advanced energy systems, including advanced power generation; climate change mitigation technologies and related issues in environment and policy; the clean development mechanism (CDM); renewable energy, especially biomass energy; and fundamental engineering thermodynamics. Professor Yan has published over 150 papers including a paper in *Science* and a special feature article in *ASME Mechanical Engineering*.

Professor Yan is Editor-in-chief of the international journal, *Applied Energy* published by Elsevier. He is Conference Chairman of the 3rd International Green Energy Conference (IGEC-III) and Conference Co-Chair of IGEC-IV, Beijing and ICAE'09, Hong Kong. He is a member of the editorial boards of the *International Journal of Energy Research*, *International Journal of Green Energy*, *Scientific Review* (China), and *Frontiers of Energy and Power Engineering in China* (Springer). He also serves as an overseas assessor for the Chinese Academy of Sciences; a roster expert to the UNFCCC CDM EB, and an advisory expert to the Asia Development Bank and other international organisations.

Registration

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Due to limited seating capacity, please register early.