

## **Renewable Hydrogen and the IPHE**

The course consisted of four consecutive presentations by Professor Thorsteinn Sigufusson, University of Iceland and Co-Chair of the Implementation and Liaison Committee of International Partnership for Hydrogen Economy (IPHE); Mr. Jón Björn Skúlason, CEO of Icelandic New Energy Ltd.; Professor Lun Jingguang, Qinghua University, Beijing; and Mr. Graham Pugh, Executive Director of IPHE Secretariat and the US Department of Energy.

Prof. Sigufusson briefly explained how hydrogen can be derived from various primary sources of energy and on its prospects as energy carrier. The final goal for developing hydrogen as an energy source is to totally obtain it from renewable energy sources at cost of 2 to 3 US dollars per gallon equivalent of gasoline. According to Prof. Sigufusson Iceland has a very unusual situation; 71% of its energy comes from renewable energy sources and the Government has the goal of creating the world's first hydrogen economy (by 2050 according to some projections). Prof. Sigufusson underscored storage and transportation as the current major challenges for producing and using hydrogen.

Mr. Skúlason stated that the first policy measures towards hydrogen were taken by the Government of Iceland in 1998, and that Iceland is currently recognized as an international platform for hydrogen research. The Government creates a favourable framework for business and research on hydrogen through tax incentives, hydrogen policy formulation, and promoting international support. The Icelandic New Energy (INE) Company, or VistOrka, is based on unique partnerships between academia, government, and private businesses. INE has a few key demonstration projects based on the application of fuel cell systems to the transport sector. These include: i) hydrogen fuel cell bus; ii) hydrogen passenger vehicles; and iii) hydrogen fishing vessel. Moreover, Iceland was the first country in the world to build a hydrogen filling station (April 2003). The promising accomplishments to date of these experimental projects include an increased level of operation of the fuel cell systems, resulting in saving more than 70,000 l of diesel, and the prevention of close to 200 tons of GHG emissions, as well as wider public acceptance towards the new fuel.

Prof. Jingguang illustrated that the use of hydrogen in fuel cell bus commercialization has been demonstrated by a fuel cell bus fleet and the construction of a hydrogen filling and maintenance station in Beijing. This project is in line with the Government goal of increasing the share of renewable energy in the energy mix from the current 7% up to 15% by 2015.

Finally, Mr. Pugh explained that the goal of the International Partnership for Hydrogen Economy (IPHE), established in 2003, is to efficiently organize and coordinate multinational research, development, demonstration, and commercial utilization of hydrogen and fuel cell technologies among participating partners, to advance the transition to a global hydrogen economy. IPHE has identified priority topics that could benefit from international collaboration, it has provided technical assessments to inform national policy decisions, and it has reviewed progress in collaborative projects encouraging multistakeholder involvement, including the private sector. IPHE's modes of operation include organizing international workshops, guidelines, concept papers, etc.