

IEA HIA NEWS

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THE IEA HIA TODAY

The IEA HIA elected a new leadership team at the **64th IEA HIA Executive Committee (ExCo) Meeting**, which was held **15-16 June, 2011 in Copenhagen, Denmark**. The new IEA HIA Chairman is Jan K. Jensen, Executive Vice-President of the Danish Gas Technology Center (DGC). There are two Co Vice-Chairs: Dr. Nikolas Lymberopoulos, Associate Director, Projects and Development of UNIDO-ICHET; and Dr. Steven Pearce, R&D Project Manager of Solid Energy New Zealand, who was reelected for a second term. After the meeting, the ExCo participated in technical tours of the world-class Risø Laboratory and the state-of-the-art Avedøre combined heat and power (CHP) plant. Copenhagen is the most environmentally friendly of cities, with a well-deserved global reputation for “quality of life.” Our thanks go out to the Danish Energy Agency for sponsoring this productive meeting.



The **65th IEA HIA ExCo Meeting** was held **13-14 October, 2011 in Fukuoka, Japan**, graciously sponsored by METI and NEDO. The Fukuoka Exchange Program took place on 12 October prior to the ExCo meeting. This informative full-day program provided an overview of the Fukuoka Hy-Life Project, which is fostering community-based hydrogen industry development in the Fukuoka prefecture. The exchange featured a technical tour of the Hydrogen Energy Test and Research Center (HyTRec) in Fukuoka, followed by a colloquium with HYDROGENIUS (AIST) at the Kyushu University (Ito Campus). The visit culminated in a site tour of the impressive HYDROGENIUS facilities and refueling station. This afforded us the opportunity to witness Fukuoka’s remarkable hydrogen progress first-hand.

IEA HIA Portfolio

The dynamic IEA HIA portfolio continues to evolve. Four tasks conclude in 2011:

- Task 23** - Small-Scale Reformers for On-Site Hydrogen Supply (SSR for H₂) (Operating Agent [OA] Dr. Ingrid Schjøberg)
- Task 24** - Wind Energy and Hydrogen Integration (OAs Dr. Luis Correias and Mr. Ismael Aso)
- Task 25** - High Temperature Production of Hydrogen (OA Dr. Francois Le Naour)
- Task 27** - Near-Market Routes to Hydrogen by Co-Utilization of Biomass as a Renewable Energy Source with Fossil Fuels (OAs Dr. Jan Erik Hanssen and Ms. Berrin Bay Engin)

Final reports for these tasks are coming soon! Seven other tasks are in progress. See Task Ink on page 3 for selected highlights of progress on current tasks.

Promotion and Outreach

The 2011 IEA HIA Individual Prize was awarded to Dr. James M. Ohi for his vision and leadership in coordinating the global development and harmonization of codes and standards that advance the safe use and market deployment of hydrogen and fuel cell technologies. The award was presented on May 17 by Mr. Nick Beck, former IEA HIA Chair and Director of Transportation Energy Technology at Natural Resources Canada, and Mary-Rose de Valladares, during the Canadian Hydrogen and Fuel Cell Conference 2011 in Vancouver, Canada.



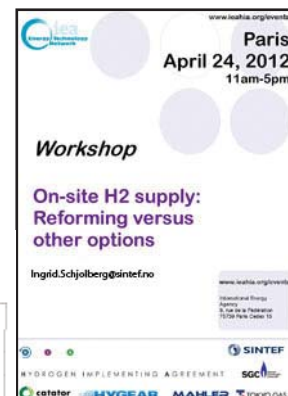
Dr. James M. Ohi

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IEAHIA NEWS

IEA HIA Promotion and Outreach efforts are slated to expand in the near future as **Task 23 - Small-Scale Reformers for On-Site Hydrogen Supply (SSR for H₂)** holds the first-ever **IEA HIA End of Task Workshop**. Entitled **On-Site H₂ Supply: Reforming versus other options**, the workshop will take place free-of-charge at IEA Headquarters in Paris on April 24, 2012 from 11 to 17. **To register, contact** Task 23 Operating Agent Dr. Ingrid Schjolberg at Ingrid.schjolberg@sintef.no.



PRESENTATION ALERT

The IEA HIA gave one or more presentations at the several significant conferences during the second half of 2011.

- At the May **Hydrogen and Fuel Cell Conference in Canada**, the IEA HIA track was named the highest rated conference session. This session included an overview on *Positioning Hydrogen for Success in the Energy Mix*, as well as presentations on Task 24 - Wind Energy and H₂ Integration (Sub-Task Leader Dr. Aaron Hoskins), Task 28 - Large Scale Hydrogen Delivery Infrastructure (OA Dr. Marcel Weeda); and Task 30- Global Analysis of Hydrogen Systems (Co OA Dr. Susan Schoenung).
- In August the IEA HIA presented *Global Directions in Hydrogen R,D&D* at the American Society of Mechanical Engineers **Sustainability and Fuel Cell Conferences in Washington, D.C.**
- At the September **World Hydrogen Technology Conference (WHTC)** in Glasgow, Scotland, the IEA HIA delivered three presentations: *A Global Perspective on Progress and Politics in R,D&D Cooperation*; and presentations on Task 22 - Hydrogen Storage, and Task 29 - Distributed and Community Hydrogen.
- Also in September, the **ICHS4** conference, endorsed by the IEA HIA, was held in **San Francisco ICHS4**. Task 31 -Hydrogen Safety OA William Hoagland chaired the plenary session. Twenty five (25%) of papers came from IEA HIA Task 31 experts.
- The inauguration of the Low Carbon Energy Summit (LCES) in China allowed the IEA HIA to engage and expanding a new audience in an all IEA HIA half day session in Dalian. IEA HIA participants were Dr. Jun Miyake, former Task 21 Operating Agent; Mr. Sam Miyashita, session co-chair and permanent Japanese representative; and Mr. Robert J. Friedman, CEO of Proton OnSite and member of Task 29; and Ms. de Valladares spoke and also chaired the session.

THE HYDROGEN SPACE IN THE MARKET

- Increased use of renewable energy is good news for hydrogen energy storage. Germany's NIP (Nationale Innovationsprogramm für Wasserstoff- und Brennstoffzellentechnologie) has funded a **one MegaWatt Electrolyzer in an industrial scale renewable energy project** called RH2-WKA in Mecklenburg Vorpommern.
- Given its renewable energy rich environment and low density communities, coupled with Scotland's 100% renewable energy electricity target by 2020, **stored hydrogen could play in important role in Scotland — not only as electricity but also as heat, combined heat and power, and fuel for transport.**
- HyTRec, the Hydrogen Energy Test and Research Center in Fukuoka, Japan, increased the number of tests implemented by 40% (from 51 to 72) from 2010 to 2011, with two months in 2011 still to go — all in preparation for meeting **the 2015 Japanese timeline for commercialization of hydrogen fuel cell vehicles.**



Mr. William Hoagland
at ICHS4

TASK INK

Task 21 - BioHydrogen (OA Dr. Michael Seibert)

- Japan will soon complete construction of a **scaled-up biohydrogen facility at the Sapporo Brewery in Brazil**. The task made progress toward milestones in several key areas: synthesis of functioning water-oxidation and H₂ production catalysts that do not contain noble metals; development and optimization of an integrated system biomass waste using zeolite absorbants; development of a new bioreactor system for algal cultivation and subsequent H₂ production based on sequential use of flat plate reactors; and improved H₂ photoproduction by genetic engineering and expression of critical genes.

Task 22 - Fundamental and Applied Hydrogen Storage Materials Development (OA Dr. Bjorn Hauback)

- Task 22 continues to thrive as 95% of all findings presented at each meeting by its ~50 experts are new to this elite group of global H₂ storage experts. • Task 22's "successor" task is now in definition, and will include applied and fundamental R&D for stationary as well as transportation applications.

THEME:
COLLABORATIVE
R, D & D

Task 26 - WaterPhotolysis (Operating Agent Dr. Eric Miller)

- Extended for one year through October 2012 to complete its information management system and final report.

Task 28 - Large Scale Hydrogen Delivery Infrastructure (OA Dr. Marcel Weeda)

- Refining approach to Subtask A – Scenarios Approach through innovation diffusion model uses ramp-up curves • Solidifying assessment of HRS (hydrogen refueling) station concepts for Subtask B • Evaluating H₂ Delivery Pathways for Subtask C • Added Subtask D on large scale storage and greening gas (e.g., pipelines). • Task 28 held its September meeting in two Berlin locations: the office of Nationale Organisation Wasserstoff und Brennstoffzellentechnologie (NOW) and the meeting room of the TOTAL hydrogen fueling station on Holzmarktstrasse.



Task 28 Meeting
- TOTAL Station Berlin

THEME:
ANALYSIS THAT
POSITIONS
HYDROGEN

Task 29 - Distributed and Community Hydrogen (DISCO H₂) - (OA Dr. Federico Villatico)

- **Subtask 2.1 Analysis and Selection – Community Identification** has completed its final report by Activity Leader Aline Rastetter of Alpeha from France. The next step is the selection of projects for evaluation and development of replicable models.

Task 30 - Global Hydrogen Systems Analysis (Co OAs Operating Agents Mr. Jochen Linssen and Dr. Susan Schoenung)

- Subtask A – Detailed Global Analysis - experts have provided data on potential demands and prices for different regions and for future projections in different regions of the world; U.S. model has been extended to global regions and preliminary results have been developed for three European countries, facilitating an answer to the question "where will the H₂ come from?" • Subtask B – a structure of the "all-technology" hydrogen has been proposed; a detailed review of IEA Mobility Model data sheets for the 10 technologies has been completed; a handbook for data management is coming soon; • Subtask C – Collaboration with IEA – reviewed 4 chapters of WEO 2011 and the outline for hydrogen chapter in 2012 ETP; extensive participation in ETP - CERT workshop • Task 30 held its September meeting at the IEA HIA office in Bethesda.



Task 30 Analysis Meeting
at IEA HIA

THEME:
H₂ AWARENESS,
UNDERSTANDING
& ACCEPTANCE

Task 31 - Hydrogen Safety (Operating Agent William Hoagland)

- Tentative plans for two end of task workshops, one at IEA headquarters in Paris and the other on the campus of the IEA HIA in Bethesda, MD, USA.



Dr. Jun Miyake at DICP

DIPLOTECH

• In late October, the IEA HIA visited the **Dalian Institute of Chemistry and Physics (DICP), Chinese Academy of Sciences**, for a formal information exchange to lay the groundwork for cooperation. The IEA HIA Team Dalian included: Dr. Jun Miyake, former Task 21 Operating Agent, who gave a guest lecture on biohydrogen; Mr. Sam Miyasita, permanent Japanese Representative, who gave an update on hydrogen in Japan; and Secretariat Mary-Rose de Valladares, who provided an overview of the IEA HIA. Under the leadership of Dr. Jun Sun, DICP gave an overview of its activities and a tour of selected laboratories at this well-established institution. • Led by Operating Agent Dr. Federico Villatico, **Task 29 - Distributed and Community Hydrogen**, met with **Scottish Energy Minister, Mr. Fergus Ewing** at its semi-annual September task meeting in Edinburgh, Scotland. (Scotland has recently announced an aggressive target of 100% renewable energy electricity by 2020.) The task was warmly welcomed to Edinburgh by the **Lord Provost of the City, Mr. George Grubb**, and hosted in the historic Edinburgh Old Council Chamber by the **Edinburgh Chief Executive, Ms. Sue Bruce**. • In a major strategic development, **Germany** announced its decision on 30 May to shut down all nuclear plants by 2011. Also in May, the **Swiss** government decided on a nuclear phase-out that will be complete in 2034. • **UNIDO-ICHET** project installations in Bozcaada, the Cook Islands, India and the Golden Horn in Istanbul are progressing well and have generated much interest internationally • In **Finland**, the Tekes Fuel Cell Programme has launched a major demonstration project called **Demo 2013**, which will showcase cross-cutting applications hydrogen and fuel cell applications, including a hydrogen refueling station in the Port of Helsinki in 2013. • **The Minister of Infrastructure and Environment for the Netherlands** announced a new hydrogen initiative at the September opening of an Eco-mobility fair. • **The Spanish H₂ and FC Technological Platform joined the Public-Private-Partnership named “ALINNE”** (Alliance for energy research and innovation) set up by the Spanish Ministry of Science and Innovation and the Spanish energy sector. In June, the French hydrogen association, **AFH₂ and the French platform HYPAC** (l’Hydrogene et les Piles à Combustible) merged to create a new association called **AFHyPAC**.

Mary-Rose de Valladares,
Dr. Jun Sun, Dr. Ping Chen,
Dr. Jun Miyake, Dr. Liwei Pan
(Photo credit:
Mr. Sam Miyasita)



Task 29 - (DISCO H₂) with
Scottish Energy Minister
Mr. Fergus Ewing in historic
Edinburgh Old Council
Chamber



MESSAGE FROM THE CHAIR

I would like to start by thanking my predecessor, Antonio G. Garcia-Conde, whose cooperation facilitated a smooth transition in the IEA HIA Chairmanship. We are all grateful to Antonio for a first class job of advancing hydrogen R,D&D and building the IEA HIA brand during his three (3) years term as chairman.

The IEA HIA had a strong showing at the invitation-only – **IEA CERT-ETP 2012 Energy Systems Workshop - Integrated Energy Systems of the Future** – held November 7-8 by the IEA Committee on Energy Research and Technology (CERT) and the Energy Technology Perspectives (ETP) division. At this conference, where I represented our five-person delegation, we had the opportunity to make a “big-picture” hydrogen presentation in the plenary session. We also participated in workshop break-out sessions on hydrogen and electricity. Kudos to Task 30 Co OA Mr. Jochen Linszen, Task 30 Subtask C Leader Ms. Kari Espegren, Task 28 OA Dr. Marcel Weeda, and Task 30 expert Mr. Clemens Trudewind for their fine contributions to this workshop – in the preparation phase as well as the delivery phase and in Paris. IEA HIA participation in the CERT-ETP workshop is an important milestone in our multi-year effort to develop **internal analytic capacity** (embodied in Task 30 – Global Hydrogen Systems Analysis and Task 28 – Large-scale Hydrogen Infrastructure Delivery) that cooperates with and contributes to IEA analytic products, notably the ETP and the WEO.

By all indications, the new year will be an active one for the IEA HIA. Hope our paths will cross early and often in 2012 as we work to advance a future with hydrogen energy technology!