MARCH, 2007

IEAHIA NEWS

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THE IEA HIA TODAY

The International Energy Agency Hydrogen Implementing Agreement (IEA HIA) Executive Committee held its 55th Executive Committee (ExCo) Meeting November 7-9, 2006 at the Institute for Energy of the Joint Research Center of the European Commission in Petten, the Netherlands. As ever, the focus of the meeting was progress and milestones in the growing IEA HIA R,D&D portfolio. The ExCo approved final reports for two closing tasks: Task 16 – Hydrogen from Carbon-Containing Materials; and Task 17 – Solid and Liquid Storage. These are discussed in the Publication Alert section. The ExCo also approved two new tasks: Task 22 – Fundamental and Applied Hydrogen Storage Materials Development; and Task 24 – Wind Energy and Hydrogen Integration. The ExCo considered Semi-Annual Reports on current tasks and approved continuing definition of two more tasks: Near-Term Routes to Hydrogen Using Biomass as a Renewable Energy Source with Fossil Fuels; and High Temperature Production of Hydrogen. For more information on specific annex activities and accomplishments, please refer to **Task Ink** on Page 6.

In other major meeting news, Germany announced that it would soon be a member of the IEA HIA. The IEA HIA is very pleased to welcome Germany to its growing ranks, which will now number 20 members including the European Commission.

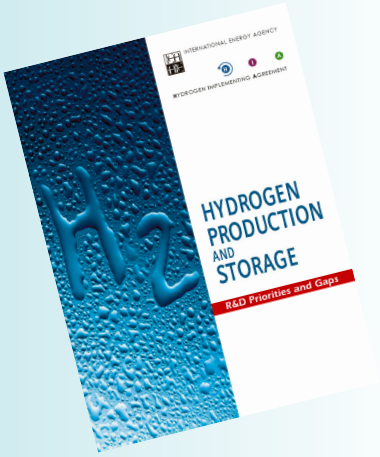
The IEA HIA had a significant presence at the June 2006 World Hydrogen Energy Conference (WHEC) 16 in Lyon, France. Chair Nick Beck of Natural Resources Canada presented a paper entitled "Three Decades of Collaborative Hydrogen R,D&D." Task 20 - Water Photolysis, led by Operating Agent Dr. Andreas Luzzi and Task 21 – Biohydrogen, led by Operating Agent Dr. Jun Miyake, held annex meetings during the conference. Four experts from Task 18 – Integrated Systems, presented papers. The IEA HIA also exhibited at the conference to better inform the greater hydrogen community about the collaboration and its achievements.

The HIA held its first Networking Dinner in Lyon during WHEC 16. The Executive Committee, Operating Agents and experts from all tasks were invited. This event afforded all HIA participants the opportunity to visit informally. It also allowed Chair Nick Beck to announce the latest HIA Angel Awards for extraordinary service to the implementing agreement. The recipients of the award were: M. Thierry Alleau of the WHEC Organizing Committee and Association française d'hydrogène; Ms. Stephanie Paysant of the Association française d'hydrogène; Dr. Marc Rousset of the Centre national de la recherche scientifique (CNRS); and Dr. Giorgio Simbolotti of the IEA.

The next IEA HIA Executive Committee meeting will be held May 22-24 in Rapperswil, Switzerland. It will be hosted by the Swiss Federal Office of Energy, which is represented by Dr. Andreas Gut, Swiss representative to the IEA HIA. The meetings will be held near the Institut für Solartechnik, the office location of Task 20 Operating Agent Dr. Andreas Luzzi.

VOLUME I, NUMBER I

IEAHIA NEWS



PUBLICATION ALERT

The IEA HIA is proud to announce recent publication reports, whose content and availability are described in this section.

From Task 16: Hydrogen from Carbon-Containing Materials (Operating Agent Elisabet Fjermestad-Hagen)

Direct thermal processing of carbon-containing materials is one of many ways to produce hydrogen. The final report from IEA HIA's Task 16 covers wide-ranging technology development and deployment aspects of three direct supply routes: large-scale integrated hydrogen production and decarbonisation; hydrogen from biomass; and small-scale reforming of hydrocarbons. To access the final subtask reports visit *http://www.ieahia.org/page.php?s=static&p=task16*.

From Task 17: Solid and Liquid Storage of Hydrogen (Operating Agent Dr. Gary Sandrock)

Advances in storage capability and materials will be crucial for hydrogen's future role as an energy source, especially for transport vehicles. Task 17 constituted the largest global collaboration ever established on hydrogen storage. Task 17's final report conveys over five years of research findings on carbon and hydride-based storage media, drawing on 45 R&D projects in participating countries. To access the final Task 17 report, go to *http://www.ieahia.org/page.php?s=static&p=task17*.

From the IEA HIA: Gaps & Priorities in Hydrogen Production and Storage

This report examines the state of the art in H_2 production and storage, detailing current, mid and long-term gaps and priorities in H_2 production and storage research. It is available free-of-charge at *http://www.ieahia.org/pdfs/Hydrogen_Gaps_and_Priorities.pdf*. The report calls for increased plant efficiency and decreased capital cost, as well as enhanced reliability and operating flexibility across the spectrum of H_2 production processes. Key findings include:

• In the near-term, water electrolysis and small scale natural gas reformers are viewed as suitable production options, using existing infrastructure of distributed power and natural gas.

• In the medium to long term, the report envisions hydrogen generation via centralized biomass based and fossil fuel based production with capture and storage of CO_2.

• Farther out on the technology adoption curve are promising early stage photo-electrolysis and biological production processes. Several high temperature processes for the splitting of water are likewise under consideration.

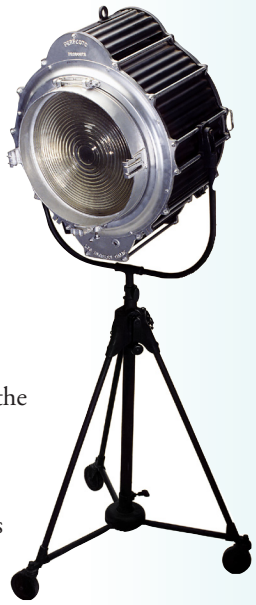
• Relative to hydrogen storage, the main focus of this report is vehicular storage for fuel cell or Internal Combustion Engine (ICE)/electric hybrid vehicles. Both compressed gas and liquid hydrogen are commercially available today.

• For compressed gas, the best current option for vehicular storage is C-fiber composite vessels; relatd technical issues focus on fracture mechanics, compression energy and volume.

• For liquid hydrogen the best option is cryogenic insulated dewars. Key liquid storage R&D issues are: more efficient liquefaction, better insulated containers, automated boil off capture (via hydrides) and re-liquefaction.

• Technical issues for solid storage, now in the development phase, include: weight, lower desorption temperatures, higher desorption kinetics, recharge time & pressure, heat management, pyrophoricity, cyclic life, container compatibility and optimization.

IEA HIA TECHNOLOGY SPOTLIGHT: TASK 18, INTEGRATED SYSTEMS EVALUATION



Task 18 At a Glance

Approved in late 2003 for a three-year term and recently extended through 2009, the overall goal of Task 18 is to provide information about hydrogen integration into society around the world. During the first three years, this annex had two major subtasks: Subtask A – Information Base Development; and Subtask B – Demonstration Project Evaluation. The Subtask A leader was Jean Dubé, Services Mij, Inc., Canada; the Subtask B leader was Øystein Ulleberg of IFE, Norway. In addition, Task 18 has overseen the preparation of case studies by Thomas Schucan. Completed case studies are posted on the HIA website www.ieahia.org and the Annex 18 public website www.port-h2.com/IEA-Annex-18/. Presently, 13 member countries comprise Task 18. It is anticipated that two more countries will join for phase two.

The second phase of Task 18 will include a new subtask. Subtask C will focus on synthesis and learning to bridge the experiences of Subtasks A and B. It will provide Lessons Learned, Benchmark Assessments and Trend Analysis.

Significant Outcomes

Subtask A: Information Base Development

Subtask A provides data and analysis to the hydrogen community and the public in the form of inventory databases and compiled summaries. The information is being used to perform trend analysis and formulate lessons learned. It includes:

1. More than 200 National Documents (roadmaps, strategies, etc.), all of which are searchable. This database may be accessed via a link on the public website, *http://www.port-h2.com/IEA-Annex18/Subtask-A/Summaries-of-National-Documents/*
2. An inventory of National Capabilities for the participating countries
3. Descriptions of National Projects
4. A Hydrogen production technologies database
5. Links to HySociety and other databases
6. Case studies

Subtask B: System Studies – Optimization for the Future

Subtask B seeks to use modeling and analysis tools to evaluate hydrogen demonstration projects or guide their design and assessment, thereby facilitating validation of models and assumptions. The table on the next page lists the complete Subtask B project portfolio (present and future), which is comprised of two major categories: H_2 refueling stations and Integrated RE/H_2-energy systems. Over half of all projects are renewables based; the remainder are fossil fuel based.

Task 18 Members

Canada
Denmark
European Commission
France
Iceland
Italy
Japan
Netherlands
Norway
Spain
Sweden
United Kingdom
United States

PROJECT PORTFOLIO UNDER EVALUATION IN SUBTASK B

Refueling Stations

Grid-Connected or Stand-Alone Power Systems

Combined Fuel and Electricity Generation

Infrastructure Demonstrations

Other Potential Phase 2 Projects

Country	Projects	Location	Modeling focus	Evaluation status
Refueling Stations				
Sweden	Hydrogen filling station (grid/electrolysis)	Malmö	System sizing	Complete
Iceland	Hydrogen filling station (grid/electrolysis)	Reykjavik	Electrolyzer performance	Complete
Canada	Hydrogen filling station (grid/electrolysis)	Vancouver	Compressor performance	In progress
Grid-connected or stand-alone power systems				
Spain	PV/MH-telecom showcase (RE)	Madrid	Storage sizing	Complete
Japan	Regenerative PEM FC-power system (grid)	Aichi	Storage thermal control	Complete
UK	RE/H_2-project	Loughborough	Economic performance	In progress
Italy	Hydrogen from the sun	Brescia	System efficiency	Phase 2
Combined fuel and electricity generation				
USA	Hydrogen energy/ refuelling station (NG)	Las Vegas	System performance	Complete
USA	Hydrogen power park (RE)	DTE or HI	Compressor and storage optimization	Phase 2
Infrastructure demonstrations				
Denmark	Natural gas / hydrogen pipeline, boiler	Copenhagen	Economics	In negotiation
Residential heat and power				
France	Building fuel cell evaluation	5 sites	Fuel cell / system performance	Case Study
Other Potential Phase 2 projects				
New Zealand	Renewable hydrogen at remote site	Totara Valley	Renewables integration	Phase 2
Spain	Renewable hydrogen for desalination plant	Canary Islands	Performance analysis	Phase 2
Australia	HART SAPS project	Cape Barren Is. (Tasmania)	Stand alone power system	Phase 2
France	Maghreb-Europe	Algeria	System optimization	Phase 2
Germany	Refueling station	Munich or Berlin	Station sizing and economics	Phase 2

On the basis of the modeling and evaluation work, the following additions or improvements have been planned for the H_2-refueling stations projects:

1. Expanded service scenario, to 100-200 buses (Malmö)
2. Expanded service, to level electrolyzer load and include more vehicles (Reykjavik)
3. Compressor / dispenser component optimization; model improvement (Vancouver)

Subtask B modeling and evaluation also resulted in optimization activities for the following Integrated RE/H_2-energy systems:

1. Metal hydride storage thermal system optimization (Japan)
2. Techno-economic system design study with optimized dispatch operation (HARI, UK)

Spin-Off Benefits

This annex is also very pleased to provide testimonials and report spin-off benefits that occurred as direct result of Task 18 activities:

1. Bilateral agreement / project between Norway and Japan on metal hydride storage and thermal control - "Wouldn't have happened if we hadn't held a meeting in Tokyo."
2. Joint project on hydrogen powered ship demonstration is being developed between Iceland and Scotland - a direct result of the Task 18 meeting in Glasgow.
3. Compressor modeling capability improved by collaboration between Norway's IFE and personnel at the U.S. DOE Sandia National Laboratories.
4. Spain: "Thanks to Spanish participation in Annex 18 of Hydrogen Implementing Agreement of IEA, we have known other countries' activities and initiatives in H_2 and FC and we have had access to technological and logistics problems that occurred in other countries' facilities. Subtask B offers us an extraordinary opportunity to simulate one of our installations and learn about it."
5. Hydrogems© and other modeling tools are becoming wide-spread among the demonstration project evaluators.
6. Due to the success of Task 18, more countries are seeking to join the Task in Phase 2.

Task 18 welcomes new country participation in their annex. For more information about Task 18 and participation opportunities, please contact Operating Agent Dr. Susan Schoenung at +1 659 329 0845 or schoenung@aol.com.

Tech Talk

Dr. Susan Schoenung enjoys her work and says her "whole career has been quite fun." She received her Ph.D. in Mechanical Engineering from Stanford University and holds a Professional Engineer (PE) license in that area. As a newly minted Ph.D., she worked for Chevron Research in their engine lab. She then moved first to Bechtel and later to W.J. Schafer, a consulting company. At W.J. Shafer she began work on analysis of hydrogen systems. Dr. Schoenung founded her own firm, Longitude 122 West, in 1995.

Her first experience with the IEA Hydrogen Implementing Agreement occurred in connection with HIA Task 13, Design and Optimization. In her role as an HIA expert, she performed cost analysis work and evaluation of hydrogen system footprints based on international fire codes. She was confirmed as Operating Agent for Task 18 in November 2003. Dr. Schoenung says that the most satisfying aspect of her Task 18 responsibilities is the opportunity to bring people together for technical cooperation. She is very proud of Task 18's track record for successful teamwork.

Dr. Schoenung also works for NASA on development of aircraft for climate and air quality monitoring. Naturally, some craft will be hydrogen powered!

When she's not working on hydrogen, Dr. Schoenung resides in the San Francisco Bay area of the U.S. with her husband Tom and son Jeffrey.

TASK INK

Hydrogen Production

Closing Acts

Task 16, Hydrogen From Carbon Containing Materials

Operating Agent Elisabet Fjermestad-Hagen

Task 16 began in 2002 and completed its final reports in 2006. The overall objective of the three-part task was to promote development of efficient and economic production processes while keeping CO_2 emissions to a minimum. The three subtasks were: A – Large-Scale Integrated Hydrogen Production; B – Hydrogen from Biomass; and C – Small Stationary Reformers for Distributed Hydrogen Production. Twelve of today's HIA members participated in various subtasks: Denmark, France, Germany, the Netherlands, Italy, Japan, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. Overall, Task 16 was distinguished by a very high level of industry participation, which added know-how and resources to the effort. Indeed, Subtask A, led by the IEA Green House Gas Programme and CCP group, consisted of 100 percent industry participants. The final subtask reports, mentioned under Publication Alerts, may be accessed at *http://www.ieahia.org/page.php?s=static&p=task16*.

Key findings relate to options for the expected infrastructure and scale of current and medium term hydrogen production:

- Electrochemical processes – distributed, small scale
- Natural gas reforming – distributed, small scale
- Natural gas reforming or coal gasification – central, medium – large scale with CO_2 handling
- Biomass to hydrogen processes - central or distributed, medium – large scale

Other important observations appear below by subtask:

Subtask A – The large-scale integrated hydrogen production process route with precombustion decarbonisation requires a large market demand. Furthermore, the process involves CO_2 deposition and requires construction of a new infrastructure for hydrogen transmission and distribution and CO_2 pipeline to storage. A transitional approach involving co-production of hydrogen and power may benefit this process route.

Subtask B – Hydrogen from Biomass is another large-scale route to hydrogen that faces scaling challenges in achieving value chain efficiency: the dispersed nature of biomass resource calls for small scale, whereas fuel production is a classic economy of scale business. Based on renewable energy sources and as such considered CO_2 neutral, biomass is the only near term pathway to hydrogen from renewable energy that can be implemented without either major R&D breakthroughs or use of electricity already generated from renewable sources. A transitional approach to biomass may also prove beneficial. Such an approach might consider co-gasification with fossil fuels and logistical solutions involving distributed processing to a secondary energy resource resulting in a "biomass carrier." Production of a "biomass carrier" could facilitate the uptake of large biomass-based feedstocks for further central processing to hydrogen or syngas.

IEA HIA Portfolio

PAST

Task 1 1977-1988
Thermochemical Production

Task 2 1977-1979
High Temperature Reactors

Task 3 1977-1980
Assessment of Potential Future Markets

Task 4 1979-1988
Electrolytic Production

Task 5 1979-1983
Solid Oxide Water Electrolysis

Task 6 1979-1988
Photocatalytic Water

Subtask C – Despite significant progress over the past few years, small-scale reformers must still address R&D issues. Some issues are technology specific while others pertain to incomplete systems solutions and the challenges of fueling station operations. In order to meet long-term cost targets, plant cost must be reduced by a factor 2.5-3. To close the commercialization gap, systems integration and simplification are needed. It bears mention, however, that small-scale reformers are now competitive with on-site electrolysis, and in some regions are even competitive with trucked-in hydrogen.

Task 16 will be succeeded by two new tasks: Task 23 – Steam Reformers for On-Site Hydrogen Supply (SSR for Hydrogen); and another task still in definition called Near-Markets Routes to Hydrogen by Co-utilization of Biomass as a Renewable Energy Source with Fossil Fuels (working title). These new tasks will be based on the recommendations of Subtasks B and C.

Current Acts

Task 20, Water Photolysis Operating Agent Dr. Andreas Luzzi

The very promising, recent research results on materials (e.g., nanostructured Fe_2O_3 surfaces) need to be complemented by the benefits from fractal substrates (e.g., nanorod structures) with theoretical modelling ("why do some materials work well and other similar ones not") as well as dedicated analytics (impedance spectroscopy, micro-RAMAN, XPS, etc.)

To secure future funding support, European experts from this annex are currently preparing a joint photoelectrochemical (PEC) R&D program submission to the EU Framework Program 7.

Task 21, Biohydrogen Operating Agent Dr. Jun Miyake

Around the world and notably in Asia, the topic of biohydrogen is attracting growing attention. The overall objective of Task 21 is not only to advance the basic and applied science in this area but to evaluate the economic and sociological aspects of biohydrogen. The annex has four tasks. Subtask A, Biohydrogen Systems, seeks to increase the achievable H_2 production from substrates above currently achievable yeids (e.g., 3--4 moles H_2/mole of glucose. Subtask B, Basic Studies For Biohydrogen Production seeks to demonstrate potentially practical processes for conversion of water or organic substrates to H_2 via solar energy. Subtask C, Bio-Inspired Systems, seeks to identify promising applications of enzymes and biologically-inspired processes for hydrogen productoin and fuel cells. Finally, Subtask D, Overall Analysis, will examine the socio-ecconomic implications of adoption of biohydrogen in the coming hydrogen society.

Opening Acts

Task 23, Small-scale Reformers for On-site Hydrogen Supply (SSR for Hydrogen) Operating Agent Dr. Ingrid Schjølberg

Task 23, approved in June 2006 by the Executive Committee at the 54th ExCo meeting in Lyon, France, now has an Operating Agent: Dr. Ingrid Schjølberg of Sintef. This annex, created as a follow-up to the findings and recommendations of Task 16, has three subtasks: Harmonized Industrialization; Sustainability and Renewable Sources; and Market Studies. Task 23 will focus on development of reformer technologies and distributed on-site hydrogen supply systems based on reforming.

Task 7 1983-1992

Storage, Conversion and Safety

Task 8 1986-1990

Technical and Economic Assessment of Hydrogen

Task 9 1988-1993

Hydrogen Production

Task 10 1995-1998

Photoproduction of Hydrogen

Task 11 1995-1998

Integrated Systems

Task 12 1995-2000

Metal Hydrides for Hydrogen Storage

Task 13 1999-2001

Design and Optimization

Task 14 1999-2004

Photoelectrolytic Production

Task 15 1999-2004

Photobiological Production

Task 16 2002-2005

Hydrogen from Carbon Containing Materials

Task 17 2001-2006

Solids and Liquid State Storage

CURRENT

Task 18 2004-2009

Integrated Systems Evaluation

Task 19 2004-2007

Hydrogen Safety

Task 24, Wind Energy and Hydrogen Integration

Operating Agents Dr. Luis Correas and Mr. Fernando Tamayo Madurga

The Executive Committee approved the new four-year Wind Energy and Hydrogen Integration Task at the 55th ExCo meeting in Petten subsequent to a November 7 scoping meeting hosted by the European Commission in Brussels. The task objectives are:

- To explore in detail all possible issues (technical, economical, social, environmental, market and legal) related to hydrogen production using electrolysis with wind energy.
- To explore in detail possible applications for hydrogen produced by electrolysis using wind energy, with special emphasis on full wind and hydrogen integration by means of hydrogen storage and electrical conversion that balances the original wind energy production, allowing an approach to demand that closes the gap with conventional energies.
- To establish an international collaborative midterm R&D program among entities belonging to the whole wind-to-H_2 production chain, as well as the wind-to-profits chain: project financiers, engineering and contractors, market regulators, grid operators and distribution companies.

Task 24 participants will pursue these objectives in four subtasks: Subtask A – State of the Art; Subtask B – Needed Improvements and System Integration; Subtask C – Business Concept Development; and Subtask D – Applications with emphasis on wind energy management.

Coming Attractions

Near-Term Market Routes to Hydrogen by Co-Utilization of Biomass as a Renewable Energy Source with Fossil Fuels

This new annex will build on the results and recommendations of Task 16 – Hydrogen form Carbon Containing Materials, Subtask C. It is expected to have four subtasks:

- Subtask A - Co-gasification of biomass with fossil fuels - will identify and evaluate the most attractive and realistic process pathways towards a large-scale demonstration of biomass co-gasification with fossil fuels.
- Subtask B - Near term stand-alone biomass gasification - will evaluate the most attractive ways of utilizing stand-alone biomass gasification technology in near-to-medium-term hydrogen markets.
- Subtask C - Hydrogen market facilitation based on distributed processing of biomass to new tradable intermediates - will establish the potential for a renewable-based hydrogen supply chain based on the distributed production of a ”biomass carrier,” its commercial transport and use in centralized gasification plants.
- Subtask D - Roadmap – development and verification - will develop a business-oriented roadmap for hydrogen produced with biomass as a renewable source.

High Temperature Processes for Hydrogen Production

Operating Agent Gilles Rodriguez

This new annex aims to produce massive amounts of hydrogen from high temperature production via solar and nuclear energies. Research will focus on high temperature electrolysis, thermochemical

cycles and innovative processes. The overarching objective is to share worldwide existing knowledge on HTPs and to develop objective expertise on global assessment on the HTPs to be integrated in Hydrogen Production Road Mapping. The specific objectives are:

- To identify and classify the HTPs and establish different and coherent criteria for each family of HTPs identified, based on a Scientific / Technological approach
- To identify and classify key issues and key technologies depending of the process and search synergies with others technological fields
- To establish the state of the art and investigation of the existing knowledge, programs, projects on HTPs and other innovative ideas for massive Hydrogen production

The draft scope of work includes four subtasks: Subtask A – State of the Art; Subtask B – Methodology Approach of HTPs; Subtask C – HTP R&D and future industrial deployment; and Subtask D – Information Dissemination. This scope of work will be refined at a late January 2007 scoping meeting.

Hydrogen Storage

Closing Act

Task 17, Solid and Liquid State Storage Operating Agent Dr. Gary Sandrock

The world's largest collaboration in hydrogen storage, a key challenge in the implementation of H_2 fuel and the creation of the Hydrogen Economy, concluded its work this past May. Created in 2001, Task 17 focused for five years on solid-state hydrogen storage materials such as metal hydride absorbents and high surface area adsorbents. Task 17 was the successor to Task 12 (Metal Hydrides and Carbon for Hydrogen Storage), which was completed in 2000 and summarized in the Final Report available on the IEA HIA website. Task 17 consisted of a series of 36 R&D projects in three categories: 20 Hydride (H), 4 Carbon (C) and 12 combined Hydride + Carbon (HC). Task 17 had 13 national participants and 45 official experts. The 13 national participants were Australia, Canada, the European Commission, Finland, Italy, Japan, Lithuania, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States.

This annex made significant progress on promising new compounds, like alanates, amides/imides systems, borohydrides and metastable Mg-based compounds. An improved basis for evaluation of nanoporous materials was also developed. Over 800 publications, presentations and patents are attributable to Task 17.

The following three targets informed the Task 17 projects:

1. Develop a reversible hydrogen storage medium with >5 wt. % H_2 recoverable at < 80° C and 1 bar absolute pressure, with charging and discharging rates suitable for practical use in a fuel cell or internal combustion engine H_2 fueled vehicle.

2. Develop a low-cost, reversible hydrogen storage medium that can be rapidly charged and discharged at near-ambient temperatures, is tolerant to impurities in the H_2 used, and discharges hydrogen of ultra-high purity for use directly in a PEM fuel cell.

3. Develop the fundamental and engineering understanding of hydrogen storage by advanced

Task 20 2004-2007

Hydrogen from Waterphotolysis

Task 21 2005-2008

Biohydrogen

Task 22 2007-2009

Fundamental and Applied H_2 Storage Materials Development

Task 23 2007-2009

Small-Scale Reformers for On-site Hydrogen Supply (SSR for H_2)

Task 24 2007-2009

Wind Energy and Hydrogen Integration

storage media that have the capability of meeting Targets 1 and 2.

In terms of annex operations, the "Grove-style" workshops were a notable success. This format successfully mixed formal technical sessions with unscheduled time that allowed participants more freedom of interaction. The Task 17 Final Report, which contains summaries of every project, is now available at http://www.ieahia.org/page.php?s=static&p=task17.

Task 17 experts recommended formation of a new annex to continue the crucial storage effort. This annex will be known as Task 22.

Opening Act

Task 22, Fundamental and Applied Hydrogen Storage and Materials Development Operating Agent Dr. Bjørn Hauback

In Petten, the Executive Committee gave final approval to Task 22 which began operations on December 1, 2006 and will continue through 2009. Task 17 had made significant progress toward realization of a solution for hydrogen storage, but further efforts are needed to meet international goals. As liquid and compressed gas storage options cannot achieve these goals, solid materials become the preferred storage medium. Task 22 will research the new solid storage materials needed to meet this challenge.

There are three primary annex targets. The first target focuses on development of a reversible or regenerative hydrogen storage media that function according to international goals for hydrogen storage. The second target entails pursuit of fundamental and engineering understanding of hydrogen storage by various hydrogen storage media that have the capability of meeting the first target. The last target is the development of hydrogen storage materials and systems for use in stationary applications.

As the annex begins, 15 HIA countries are expected to participate in some 43 projects. Project types include: experimental; engineering; theoretical; modeling (scientific or engineering); and safety aspects of hydrogen storage materials. The following classes of H-storage media will be researched: Reversible metal hydrides; Regenerative hydrogen storage materials; chemical hydrides; nanoporous materials; and rechargeable organic liquids and solids.

Dr. Bjorn Hauback will succeed Dr. Gary Sandrock, Task 17 Operating Agent, as the Operating Agent for Task 22. Dr. Hauback is Deputy Department Head of the Physics Department at the Institute for Energy Technology (IFE), Kjeller, Norway and Adjunct Professor at University of Oslo.

FUTURE

High Temperature Production of Hydrogen

Near-Term Market Routes to Hydrogen by Co-Utilization of Biomass as a Renewable Energy Source with Fossil Fuels

Analysis, Safety and Economics

Current Acts

Task 18, Integration Systems Evaluation Operating Agent Dr. Susan Schoenung

In Petten, the HIA Executive Committee voted to continue Task 18 through 2009. Task 18 is featured in this issue's HIA Spotlight.

Task 19 Hydrogen Safety Operating Agent William Hoagland

This three part safety annex reports progress on Subtask A, Risk Management, which will produce a public report that surveys Quantitative Risk Assessment (QRA) methodologies on hydrogen safety. The report is intended for use by industry professionals and is expected to be published in October 2007. A comparative analysis of risk assessment methodologies use will also be completed in October 2007 and made publicly available after internal review.

Results of the Subtask B Testing and Experimental Program, now underway, will be compiled in the private Hydrogen Testing and Experimental Database (HYTEX) beginning in 2007. In addition, an inventory of planned or existing testing and experimental projects and facilities will be collected in a dedicated public database whose working title is HY PRO (Hydrogen performed, ongoing or planned projects). That database is expected to be active early summer 2007.

For Subtask C, Information Dissemination, the following hydrogen safety stakeholder groups have been identified: permitting officials; insurance providers; system developers; equipment manufacturers; and early adopters of technology.

DIPLOTECH

The G8 heads of government addressed the challenge of global climate change, clean energy and sustainable development at the Gleneagles Summit of the G8 nations in July 2005. The G8 nations asked the IEA to be a partner in this dialogue in six broad areas:

- Alternative energy scenarios
- Energy efficiency in buildings, appliances, transport and industry
- Clean fossil fuels
- Carbon capture and storage
- Renewable energy
- Enhanced international co-operation

The IEA HIA offered to contribute its expertise and experience in R&D and analysis as well as its outreach skills and capabilities to the IEA G8 Work Plan. This Work Plan was developed to support the G8 initiative by advising them on alternative energy scenarios and strategies aimed at a "clean, clever and competitive" energy future. To help activate dynamic worldwide networks for energy technology research and development as part of their pledge to the G8, the IEA has created the Network of Expertise in Energy Technology (NEET). At the launch of the NEET Initiative on May 3, 2006 in New York City, Chair Nick Beck made a presentation on the IEA HIA to key stakeholders. Dr. Paul Lucchese, the French representative to the HIA, gave a presentation on the IEA HIA at the February 2007 NEET workshop in Johannesburg, South Africa. The IEA HIA looks forward to supporting the G8 Initiative through NEET.

IEA HIA Members

Australia
Canada
Denmark
European Commission
Finland
France
Iceland
Italy
Japan
Korea
Lithuania
The Netherlands
New Zealand
Norway
Spain
Sweden
Switzerland
United Kingdom
United States

IEAHIA NEWS

The IEA HIA News is published twice a year by the International Energy Agency Hydrogen implementing Aggreement (IEA HIA) whose vision for a hydrogen future is based on a clean, sustainable energy supply that plays a key role in all sectors of the economy.

Chairman
Nick Beck

Secretariat Manager
Mary-Rose de Valladares

MESSAGE FROM THE CHAIR

The IEA HIA is very pleased to offer the inaugural issue of the IEA HIA NEWS. This biannual publication is intended to keep readers up to date on the progress of the IEA HIA research portfolio and its related activities. The newsletter will contain regular features: the IEA HIA Today, Publication Alert, Technology Spotlight, Task Ink, DiploTech and a Message from the Chair. It will appear on our website at www.ieahia.org under *News & Views* in the *HIA at a Glance* section.

We welcome your feedback. Contact IEA HIA Secretariat Manager Mary-Rose de Valladares at mvalladares@ieahia.org or +1 301 634 7423 with questions and comments. Thank you for your interest in the IEA HIA and the prospects for a hydrogen energy future.

Sincerely,

Nick Beck

Nick Beck

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