

*Annual
Awards
Program*

2006 **IPHE** **6**

The year '2006' is rendered in a large, dark blue, stylized font. The '0' is particularly large and ornate. In the center of the '0', the letters 'IPHE' are written in a bold, blue, sans-serif font. Behind the 'IPHE' text is a circular globe with a white grid and a blue sky with white clouds. The '6' is also large and stylized, matching the '200'.

*International
Partnership
for the
Hydrogen
Economy*

IPHE
Excellence
in
Leadership
Award

Recipients:

*Jeremy B. Bentham,
President, Global Business
Environment, Royal Dutch Shell*

*Donald L. (Don) Paul,
Vice President and Chief
Technology Officer, Chevron*

IPHE
Technical
Achievement
Award

Recipients:

*CUTE-ECTOS-STEP-Beijing
HYFLEET Demonstration
Projects*

*Japan Hydrogen & Fuel Cell
Demonstration Project (JHFC)
Project HYDROSOL*

2006 marks the inaugural edition of the Annual Awards Program of the International Partnership for the Hydrogen Economy (IPHE). The IPHE Awards Program has been established to formally recognize and honor noteworthy international hydrogen and fuel cell achievements that fulfill the objectives of the IPHE.

The IPHE was established in 2003 as an international institution to accelerate the transition to a global hydrogen economy. The IPHE Partners include Australia, Brazil, Canada, China, European Commission, France, Germany, Iceland, India, Italy, Japan, Republic of Korea, New Zealand, Norway, Russian Federation, United Kingdom, and the United States.

The purpose of the IPHE is to provide a mechanism for partners to organize, coordinate and implement effective, efficient, and focused international research, development, demonstration and commercial utilization activities related to hydrogen and fuel cell technologies. The IPHE provides a forum for advancing policies, and common technical codes and standards that can accelerate the cost-effective transition to a hydrogen economy; and it educates and informs stakeholders and the general public on the benefits of, and challenges to, establishing the hydrogen economy.

Two categories of awards have been established: the IPHE Excellence in Leadership Award and the IPHE Technical Achievement Award.

*The IPHE Excellence
in Leadership Award*

honors individuals or organizations from government, the private sector or non-government organizations that have demonstrated outstanding achievement in increasing awareness of the potential benefits of, and special requirements for, the global hydrogen economy.

*The IPHE Technical
Achievement Award*

recognizes individuals, organizations, or international projects from the public or private sector that have significantly accelerated the transition to the international hydrogen economy and through technology, increased the knowledge of the hydrogen economy among policymakers and the general public.

*IPHE Excellence in Leadership Award***JEREMY B. BENTHAM**

Jeremy B. Bentham is an inaugural recipient of the 2006 IPHE Excellence in Leadership Award. His selection by the IPHE Award Committee affirms his leading international role in promoting a global vision of the hydrogen economy and in marshalling the resources and international partnerships necessary to accelerate the transition to the hydrogen economy.

A graduate of Oxford University and MIT, Mr. Bentham serves as the Vice President of Global Business Environment at Royal Dutch Shell. Prior to his current appointment, Mr. Bentham served as Vice President of Royal Dutch Shell's Global Hydrogen Business, and as chief executive of Shell Hydrogen, where he was a constant champion of the hydrogen and fuel cell policies, projects, regulations, and codes and standards necessary to support the hydrogen economy at both the national and international levels.

As an executive of a leading global energy company, Mr. Bentham excels in marshalling resources and forming international partnerships to deploy hydrogen and fuel cell technology in innovative projects designed to demonstrate the safety and transformative potential of these technologies in real world settings.

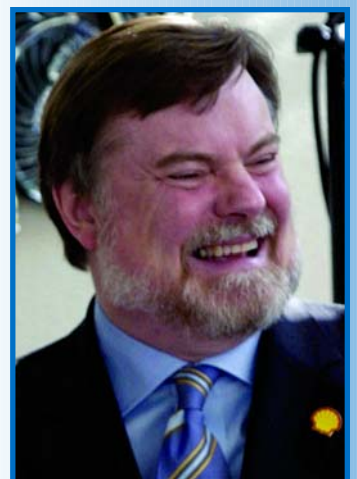
- In Europe, under Mr. Bentham's direction, Shell opened the world's first publicly-accessible Shell-branded hydrogen station in Reykjavik, Iceland in 2003. This was followed by support to hydrogen filling stations in Luxemburg and Amsterdam built as part of European Commission's ECTOS and CUTE projects, which bring the reality of the hydrogen economy closer to the every day lives of millions of European citizens.
- In the United States, Mr. Bentham has been a strong supporter of the FreedomCAR and Freedom Fuel Partnership initiatives, and the California Fuel Cell Partnership, having actively participated on their Steering Committees. In 2004, he led Shell's collaboration with General Motors to build and operate North America's first combined hydrogen/gasoline operation at a normal public retail filling station, located in Washington DC.
- In Japan, Mr. Bentham and Shell Hydrogen have strongly supported the steps taken by the Ministry of Economy, Trade and Industry to enable hydrogen and fuel cell developments. Shell led an international partnership to build and operate the Ariake hydrogen station in Tokyo, in collaboration with the Tokyo Metropolitan Government, Iwatani International Corp. and Showa Shell Sekiyu. Today it is the most utilized station in the Japan Hydrogen Fuel Cell program.
- In China, Mr. Bentham recently signed an agreement to help develop Shanghai's first public hydrogen station for fuel cell vehicles which is due to be completed later this year.

Mr. Bentham is also recognized for his leading role as Chair of the European Hydrogen and Fuel Cell Technology Platform Advisory Council, where he was instrumental in developing stakeholder consensus and mobilizing resources in support of the Platform's innovative research, development and demonstration program.

IPHE proudly bestows its inaugural Excellence in Leadership Award to Jeremy Bentham in recognition of his vision and leadership in accelerating the transition to the global hydrogen economy.

"In recognition of extraordinary corporate leadership in the global transition to the hydrogen economy as exemplified by his accomplishments in:

- Bringing hydrogen closer to public acceptance through Shell's innovative fleet of fueling stations designed to inform the public and policy makers on the clean, safe and efficient use of hydrogen as an energy carrier; and
- Facilitating stakeholder consensus and public/private partnerships in support of collaborative international research as Chair of the European Hydrogen and Fuel Cell Technology Platform Advisory Council
- Consistently promoting innovative approaches to partnerships, venture capital, and lighthouse projects to bring research forward into the emerging reality of hydrogen as a commercially attractive component of the future mix of fuels."



*IPHE Excellence in Leadership Award***DR. DONALD L. PAUL**

"In recognition of his global leadership and vision for accelerating the transition to the global hydrogen economy through outstanding achievements in:

- Cultivating multinational and strategic public/private partnerships that leverage resources to research and deploy innovative technologies throughout the hydrogen and fuel cell value chain;
- Developing community based projects that integrate hydrogen production, storage and end- use technologies in a way that demonstrates the potential of the hydrogen economy to the general public in real world settings; and
- Informing global policy makers of the potential benefits of, and special requirements for, the widespread use of hydrogen through the "Practical Hydrogen" theme."

Dr. Donald L. (Don) Paul is an inaugural recipient of the IPHE Excellence in Leadership Award. His selection by the IPHE Awards Committee is a testament to his vision and leadership in stewarding the global transition to the hydrogen economy. A graduate of the Massachusetts Institute of Technology, Dr. Paul serves as Vice President and Chief Technology Officer of Chevron Corporation. In this capacity, he directs Chevron's global development and deployment programs.

As an officer of one of the world's largest and most technologically innovative energy companies, Dr. Paul is a leading advocate of the transformative potential of hydrogen and fuel cell technologies.

Through his "Practical Hydrogen" theme, Dr. Paul has charted a business oriented, common sense pathway toward the hydrogen economy and has employed this theme to inform policy makers at the international, national and local levels of the benefits of, and special requirements for, the deployment of hydrogen and fuel cell technology.

Dr. Paul serves on the Advisory Council of the U.S. FreedomCar and Fuel Partnership initiative. His contributions to this collaborative program involving the U.S. Department of Energy (DOE), the U.S. Council for Automotive Research (USCAR), and five major energy companies serves to guide research that will enable the vision of a clean and sustainable transportation energy future.

As a leader in the industry, Dr. Paul mobilizes Chevron's corporate resources to cultivate international public/private partnerships designed to showcase and demonstrate the safety and potential value of hydrogen and fuel cell technologies in community based settings. In March 2006 with Dr. Paul's leadership Chevron inaugurated the HYRoad demonstration project in Oakland, California. This demonstration project is a comprehensive consortium of 28 public and private organizations designed to develop and deploy three zero emission hybrid electric fuel cell buses, a fleet of 10 Hyundai/Kia fuel cell automobiles and a Chevron energy fueling station that integrates state-of-the art technologies to reform natural gas into hydrogen. The project brings hydrogen and fuel cell technology into the daily lives of the citizens of Oakland through hydrogen buses that are used throughout the city while providing invaluable opportunities to test and validate innovative technology solutions.

IPHE is proud to bestow its inaugural Excellence in Leadership Award to Dr. Don Paul in recognition of his drive and vision in accelerating the transition to the global hydrogen economy.



IPHE Technical Achievement Award

CUTE (Clean Urban Transport for Europe), ECTOS (Ecological City Transport System), STEP (Sustainable Transport Energy for Perth), Beijing CUTE and HyFleet CUTE Projects

The CUTE-ECTOS-STEP-BEIJING CUTE and HyFLEET:CUTE projects are joint selections to receive the inaugural 2006 IPHE Technical Achievement Award. Their selection by the IPHE Awards Committee recognizes the substantial role the projects play in advancing the global public and commercial acceptance of hydrogen fuel cell transportation systems.

The tremendous global impact of these projects directly corresponds with the mission of the IPHE to organize and implement effective, efficient, and focused international research, development, demonstration and commercial utilization activities that advance the transition to a global hydrogen economy.

The projects involve 36 hydrogen fuel cell powered buses that provide regular public transportation in 12 metropolitan areas in the European Union (Amsterdam, Barcelona, Hamburg, London, Luxembourg, Madrid, Porto, Stockholm, and Stuttgart), Iceland (Reykjavik), West Australia (Perth) and Beijing (China). Each city has also erected the corresponding infrastructure required to regularly supply hydrogen and to maintain the buses.

The projects have been highly successful in clearly demonstrating that an emission-free and low-noise public transportation system can be achieved. The buses have set world-records by driving more than one million km with over 90 percent availability. The durability of the fuel cells has been demonstrated by accumulating more than 77, 000 hours of operation, averaging two thousand hours per fuel cell. The buses have been refueled more than 10,000 times with more than 220,000 kg of hydrogen substituting for more than 600,000 liters of diesel fuel.

The projects have led to technology improvements including fuel cells with longer life-times; the advent of small-scale steam reformer facilities for local hydrogen production; improved methods to handle impurities in the hydrogen supply chain, and an affordable hydrogen safe garage system.



The 2006 IPHE Technical Achievement Award is proudly presented to the CUTE, ECTOS, STEP, Beijing CUTE and HyFleet CUTE Projects in recognition of their overwhelming success and the continuing role they will have in the transition to the global hydrogen economy.



“In recognition of their leadership in forging international partnerships to deploy and test environmentally friendly hydrogen and fuel cell transportation technology in urban based demonstration projects serving millions of citizens around the world

IPHE Technical Achievement Award
**Japan Hydrogen and Fuel Cell
 Demonstration Project**

"In recognition of the international partnership it has forged among 23 public and private organizations to develop a leading technology demonstration program designed to:



- Test the compatibility and performance of 60 fuel cell vehicles using hydrogen manufactured from a variety of feedstocks and reforming processes; and
- Enhance public awareness of environmentally friendly hydrogen and fuel cell vehicles through educational programs, tours and technology demonstrations for over 6,500 visitors at its JHFC Park"

The Japan Hydrogen and Fuel Cell Demonstration Project (JHFC) is an inaugural recipient of the 2006 IPHE Technical Achievement Award. The selection by the IPHE Awards Committee affirms the outstanding impact the JHFC has had in advancing the global hydrogen economy.



The JHFC brings together twenty-three companies in an ambitious international demonstration project to test various hydrogen production and reforming technologies in combination with innovative fuel cell automotive technology. Based in Kanagawa, Japan the project provides opportunities for policymakers, media, and the public to experience and learn about hydrogen and fuel cell technologies in a controlled and safe environment.

The project embodies the international collaborative goals of the IPHE, with many of the world's largest automobile manufacturers participating, including DaimlerChrysler, General Motors, Hino Motors, Honda, Mitsubishi Motors, Nissan, Suzuki, and Toyota. Collectively, these companies have supplied over 60 fuel cell vehicles for research at the project site.

The JHFC Project constructed 12 refueling stations to study various hydrogen production and supply technology options. The stations provide data and operating experience on a variety of refueling methods, including deliveries of liquid hydrogen generated elsewhere; on-site electrolysis, and on-site reformation of different fuels.

The JHFC Project also achieves the communication and educational objectives of the IPHE through its JHFC Park, which is located in Yokohama, Japan. This educational facility is open to the general public and serves to enhance the public understanding of the benefits of hydrogen and fuel cell vehicles through educational programs, tours and technology demonstrations. Over 6,500 people have visited the Park since its creation in 2003.

The IPHE proudly bestows the 2006 Technical Achievement Award to the Japan Hydrogen and Fuel Cell Demonstration Project in recognition of its outstanding achievements in advancing the global hydrogen economy and its successful embodiment of the IPHE goals and objectives.

Japan Hydrogen & Fuel Cell Demonstration Project

9-1 Daikoku-cho, Tsrumi-ku

Yokohama-shi, Kanagawa 230-0053 Japan

Telephone: +81 (0) 45 504 3933 Fax:+81 (0) 45 504 3934

www.jhfc.jp

*IPHE Technical Achievement Award***HYDROSOL Project**

Project Hydrosol is an inaugural recipient of the 2006 IPHE Technical Achievement Award. Hydrosol's selection by the IPHE Awards Committee recognizes the significant potential it holds for large scale, emissions free hydrogen production.



Hydrosol's project structure embodies the IPHE international dimension through participation of research organizations from Denmark, Germany, Greece, and the United Kingdom.

The project seeks to develop a cost effective and efficient means of producing hydrogen from solar energy and is the world's first closed, solar-thermochemical cycle in operation that is capable of continuous hydrogen production. It employs a unique two-step thermo-chemical water splitting process that allows the catalyst to regenerate for continuous operation. Prior to the Hydrosol research program, this technology was only a theoretical possibility.

Results from this landmark research project promise the potential for long term production of renewable based hydrogen, particularly for regions of the world that lack indigenous resources but are endowed with ample solar energy.

The IPHE is pleased to bestow the 2006 Technical Achievement Award to Project Hydrosol in recognition of its significant potential to advance the production of renewable based hydrogen.



"In recognition of its pioneering research on solar hydrogen production featuring a two step thermo-chemical water splitting process and unique reactor that holds the potential for large scale, emissions free hydrogen production "

Project HYDROSOL

German Aerospace Center (DLR), Solar Research, D-51170 Köln, Germany

Telephone: +49-2203-601-2673 Fax: +49-2203-66900

Email: martin.roeb@dlr.de

www.hydrosol-project.org

IPHE Mission Statement

Serve as a mechanism to organize and implement effective, efficient, and focused international research, development, demonstration and commercial utilization activities that advance the transition to a global hydrogen economy.

www.iphe.net



**International Partnership
for the Hydrogen Economy
1000 Independence Ave. S.W.
(mail code EE-2H)
Washington, DC 20585**

www.IPHE.net