IPHE Roundtable Meeting with Stakeholders

November 17th 2011, Berlin

Summary and Key Points from Stakeholders

Notable Quotes

- "Everything has to change if we don't want anything to change" (in the way we drive and use energy).
- "We are ready."
- "The future is not predictable, but we can prepare for it and share it."
- "The stone age did not end for lack of stone."

Overall Summary

- The technologies are ready
  - R&D has removed technical barriers. Demonstrations have proved readiness of technologies.
  - Early markets are developing and approaching volume sales (e.g., FC vehicles sales to start in 2013/15 window)
- Hydrogen is ready to play a larger role in the energy portfolio of many countries
  - Governments should seek to include the role of hydrogen in future energy scenarios. This requires, amongst other things, educating & informing the broader government community and society
  - Need to take a long-term (20+ yr) perspective on transport & energy
- Fuel cells are predominately a substitution technology
  - Fuel cell products will need to perform as well or better than incumbent technologies

What is needed/what has to happen for success?

- Government support to reach commercial viability
  - Government as first purchaser/customer
  - Performance based incentives that are stable during this transition from proven technology to commercial products
  - Harmonized approach across countries
- Infrastructure
  - Government support with industry cooperation essential
- International Cooperation and Coordination
  - Coordinate timing of deployment to generate volume demand
  - Minimise market barriers including through use of consistent/harmonized Regulations, Codes and Standards (RCS)
  - Education of governments of the potential role of HFCs and of citizens/society to earn the social licence to operate

What is needed/what has to happen for success? (2)

- Investment/Financing
  - There is still significant risk in the business case for using HFCs; Government and Industry should share the risk
  - Need a long-term investment perspective
- "Beating" Incumbent Technologies
  - Given HFCs can be a substitute, it must clearly demonstrate other advantages (e.g., less GHG emissions, more efficient) that are important to end-users
- Integration of Renewables
  - Beyond competing with incumbent technologies, HFCs can play a significant role in optimizing the use of renewable energy generation
- Emphasize Benefits – economic, environmental, social
  - HFC development and use helps creates sustainable jobs

Recommendations to IPHE

- Work to get the marketplace framework in place
  - Facilitation of RCS development/harmonization
  - Further education of public/governments
- Continue to reduce the risk by sharing information
  - Technical data, benchmarking against other technologies
  - Success stories as well as failures
  - Policy measures
- Continue to build a broader community of stakeholders through collaboration with others including:
  - Utilities, renewable energy developers and generators
  - Emerging markets
- Hold similar Roundtable events in the future and challenge industry on what needs to be done

Recommendations to IPHE - Transport

- IPHE must continue to work on common issues across all markets:
  - Consistent RCS allows for ease of entry to multiple markets leading to earlier commercialisation of the technology - national implementation becomes a global challenge
  - Further education of government decision makers (local, regional and national) and the public
- Policy decisions by governments are driving FCV deployments
  - For example, governmental fleets (using different types of technologies) leads to educating the public via the media
  - Incentives encourage adoption of technology by industry/individuals

Recommendations to IPHE - Renewables

- There is a need to build an understanding of providing reliable energy to the power market.
  - Need to engage and work cooperatively with utilities and electrical power system operators, possibly through case studies, to benchmark costs and prove-up the role of HFCs to help solve storage needs and provide grid stability while increasing the use of renewable energy sources.

Recommendations to IPHE - Stationary

- As with Renewables, for Stationary applications there is a need to build an understanding of providing reliable energy to the power market.
  - Need to engage and work cooperatively with utilities and electrical power system operators understand the role that Stationary HFC systems can play in the power grid.
  - Need to understand role of performance based incentives that could be linked to disclosing of performance data – helping build a base of knowledge for all users/customers
  - Need to explore the potential opportunities in emerging markets and the ability to leap frog provision of power to customers through the introduction of new technologies such as HFCs

Messages from Keynotes

- Technology maturity demonstrated (e.g., Daimler World Tour)
- Initial Investment in H2 Infrastructure from industry is ongoing
- Need government policy support for “market activation”
- Technology improvement has and will continue to happen (e.g., increased performance, reduced cost,…)
- Early markets have developed and are leading to larger volume sales (e.g., FCV sales starting in 2013/15)
- As with all energy systems, long-term investments are needed – a public private approach; de-risk through a “consortium approach”
- FCV are part of the mobility portfolio in government programs (e.g., China)
- Commercialisation requires public investment
- FCV commercial launch depends on where the H2 infrastructure is available
- Hydrogen use is beneficial to society
- FCs offer multi-MW clean power solutions
- FC technology creates sustainable jobs
- Need stable incentive programs that are harmonized (globally)