Update on UK Hydrogen and Fuel Cell Activities

Making Way for Scotland’s Hydrogen Economy
Edinburgh Council Chambers, 30th September 2010

Dr Rupert Gammon
Director, UK Hydrogen and Fuel Cell Association
rgammon@bryte-energy.com
Scope of Presentation

- Merger of UKHA and FCUK
- UK-HyNet
- Political context
- Industry highlights
- Events
- Summary
Formation of UK HFCA

- UK Hydrogen and Fuel Cell Association formed 1st July 2010
  - Merger of UK Hydrogen Association and Fuel Cells UK

- Catalysed by the emergence of UK-HyNet
- Hydrogen and fuel cell landscape had become overly complex and fragmented in the UK
- Single voice needed
- Critical mass needed
- Economies of scale achievable
- Followed the example of
  - SHFCA
  - Merger of National Hydrogen Association (NHA) and the US Fuel Cell Council (USFCC)
    - Common voice needed to reverse Dr Chew’s decision on funding

- Please become a member!
  - Its effectiveness depends upon you
  - Contact Celia Greaves: c.greaves@synnogy.co.uk, 01223 96 9790
UK–HyNet Progress – Part 1

- Progress temporarily slowed by external factors
  - Merger of FCUK and UKHA
    ~ How will UK-HyNet integrate with new UK HFCA?
  - Politics
    ~ Effect of RDA closure on regional activities
    ~ Concentration on dialogue with Govt

- Despite this, new refuelling facilities are being added to the network
  - Currently 10 operational

- UK-HyNet to be part of NAIGT’s (New Automotive Innovation and Growth Team) Testbed UK
London Hydrogen Partnership
- London Hydrogen Action Plan aims to access funding from EU, UK Govt and private sector
  - Bid being prepared for JTI (FCH JU) call in Oct 2010
- Bus refuelling station under construction
  - 5 buses on RV1 route, operational by 2011 (10 buses by 2012)
- 5 more refuelling facilities planned for 2012
  - 150 hydrogen powered vehicles, incl. cars, vans, taxis, bikes, forklifts, etc
    - 50 for Functional Bodies (fire, police, etc)
- UK's largest in-house H2 FC at TfL's building, opened by Kit Malthouse, London’s Deputy Mayor for Policing, Feb 2010

Bristol Accord, June 2010
- Agreement between Low Carbon Economic Areas
  - North East (ultra low carbon vehicles)
  - Midlands (low carbon automotive engineering)
  - Wales (alternative fuels)
  - South West (extension of Welsh LCEA)
- Collaboration on development of low carbon vehicle infrastructure
- UK-HyNet will build on work already undertaken by these regions
  - including the establishment of 10 hydrogen refuelling stations for RD&D purposes

British Midlands Hydrogen Forum
- Midlands Hydrogen Ring plans under development....
Political Context

- Under previous government
  - UKHA present new case for hydrogen to DECC, Nov 2009
  - TSB call, Feb 2010
    ~ £7m for H2&FCs

- New government
  - No change in policy on H2&FCs indicated yet
  - UK HFCA meeting Prof David Mackay (Chief Scientific Adviser to DECC), Aug 2010
  - Presentation by Prof Julia King (Climate Change Committee) at HoC indicates improving prospects for H2&FCs, July 2010
  - Closing down of RDAs
    ~ Regional H2&FC activities have been strongly supported by RDAs
Industry Highlights – Part 1

- Intelligent Energy
  - £0.8M business investment grant from EMDA
    ~ Move to new premises
  - Reveals Suzuki Burgman fuel cell scooter, Feb 2010
    ~ Range = 217 miles
  - Unveils (with Lotus, LTI and TRW Conekt) zero-emissions FC-Hybrid London taxi
    ~ Top speed = 80+ mph
    ~ Range = 250+ miles
Industry Highlights – Part 2

- **ITM Power**
  - Launched 5 small and medium size electrolyser products
    - Hlab, Hbox, Hflame, Hpac, HFuel
  - Initiated HOST on site hydrogen trials
    - Begins in 2011
    - 1 week free trial of HFuel and two Revolve HICE transit vehicles
    - Option to lease both HFuel and vehicles for additional week(s)
    - Hydrogen produced on site at point of use
    - Sites operated by Scottish Water, DHL, Stansted Airport, Forestry Commission, Sheffield City Council, London Borough of Camden
Industry Highlights – Part 3

- **Riversimple**
  - 30 vehicles to be located in Leicester from 2012
    - Prototype city car does equivalent of 300 miles per gallon and has max speed of 50 mph (80km/h).
    - Leased at £200 p.c.m. plus 15p/mile

- **Microcab**
  - Begin using Serenergy high-temperature PEM fuel cells
  - Cabled project
    - 110 low-emission vehicles
    - 6 car makers
      - Microcab supplying 10 FCVs
      - Others providing EVs and hybrids
    - Plus Arup, E.On and universities of Birmingham, Coventry and Aston
    - Trials in Coventry and Birmingham
    - Part-funded by the TSB with support from AWM
Industry Highlights – Part 4

- **Air Products**
  - Announce planned 49MW renewable energy plant in Tees Valley
    - Advanced gasification technology
    - Waste to energy
      - Diverts waste from landfill
      - Convert pre-processed waste to base load power for to 50,000 homes
      - Fuels, including hydrogen, and other related products
  - Ian Williamson appointed President of EHA
Industry Highlights – Part 5

- **Acal Energy**
  - Leads TSB funded field demonstration of liquid cathode fuel cell system

- **AFC Energy**
  - AFC technology in proposal for 500MW CCS on Teesside
  - First commercial revenue from Linc Energy
    ~ Successful test of Alpha system operating on hydrogen from underground coal gasification
  - Agreement with Centrica plc for reservation of future capacity

- **Air Fuel Synthesis**
  - Fuels synthesised from reacting hydrogen with carbon captured from air
  - Raised £0.5M to build pilot plant

- **Ceres Power**
  - FC boiler will be on the mass market from mid 2012
    ~ Working with British Gas, Calor Gas and Daalderop to develop CHP unit running on methane

- **Smith Electric Vehicles**
  - Signed MOU to partner with Proton Power Systems

- **Bristol call for tenders to trial FC ferryboat**
Events

- Hydrogen & Fuel Cells for Clean Cities
  - NEC, Birmingham, March 2010
    ~ Prof Rex Harris receives 2010 H₂ & FC Future Award
- EG&S KTN
  - Challenge of Intermittency – will hydrogen deliver?, Cheltenham, June 2010
  - Emerging Support Strategies for Fuel Cells and Hydrogen, Wales, Sept 2010
- Supergen research consortia meetings
  - UK SHEC: Bath
  - HDel: Cardiff and Cambridge
- Bridgestone Brighton to London Eco Rally 2010, July 2010
  - ITM Power’s H2-ICE Ford Focus driven by Quentin Wilson
  - No FCVs this year!
- LCV 2010, Millbrook, Sept 2010
  - FCVs: Honda FCX Clarity, IE-Lotus-LTI FC taxi, etc
  - H2-ICEVs: Revolve vans, ITM Focus, etc
Summary

- UK is a quiet success story
- Refuelling infrastructure being deployed through UK-HyNet
  - Slowed by external events (e.g. FCUK – UKHA merger, politics, etc)
  - Small refuelling facilities are being deployed
    ~ Linked to hydrogen vehicle trials
    ~ Low risk, iterative rollout (may have advantages over German or Californian approach)
- UK has several world-leading FC technology developers
- UK has strong research in hydrogen production, storage and use
- Unique technology and infrastructure demonstrations
  - London buses (large-scale refuelling, advanced buses, significant numbers)
  - Teesside waste to energy and fuels plant
- Leadership in BEV deployment could be advantageous for early positioning of the in FCV markets
- HFC technologies appear to be coming in from the cold
Any Questions?

..., or have I missed anything?

For further information contact:
rgammon@bryte-energy.com

Thank You