

# Hydrogen and Fuel Cells in Australia

**Dr Andrew Dicks**

President, AAHE,

and

Queensland University of Technology



# Commercialization

- Commercial vehicle lease program initiated in Japan, Europe and USA since 2005
- Major OEMs indicate commercialization to start in 2015
- Early markets
  - Significant commercialization (100-1000 units) observed since 2006-07 in a number of key applications:
    - Fuel-cell hybrid Fork lift trucks
    - Fuel-cell UPS systems for communications and data centers
- The United States will be the largest market for FCVs in 2020 (134,049 FCVs), followed by China (129,241 FCVs) and Germany (126,783 FCVs). [ Pike Research 2009]

- Hydrogen is not a magic solution but a means of transferring energy
  - it can be made from a variety of energy sources, ideally renewables
  - it complements electricity as an energy ‘currency’
  - Goal should be to focus on a Sustainable Hydrogen Solution
  - May be produced from fossil fuels as an interim measure
  - In the future hydrogen and electricity will play complementary roles as energy vectors, and hydrogen and batteries complementary roles for energy storage
- Gradually the ‘barriers to commercialisation’ are being eroded
  - costs are being driven down
  - long term performance of PEM FCs not a ‘show stopper’
  - hydrogen storage for vehicles adequate (but could be better)

# Hydrogen-energy in Australia: key milestones

- 2003 National Hydrogen Study
- 2004-07 Perth Hydrogen Fuel Cell Bus Trial
- 2006-09 National Hydrogen Materials' Alliance
- 2007-08 DRET Hydrogen Technology Roadmap
- 2007-09 UoW-CSIRO Hydrogen Delivery Study
- 2008 17<sup>th</sup> World Hydrogen Energy Conference, Brisbane
- **2009 AAHE established**
- 2010 successful bid for WHTC 2015, Sydney
- 2010 early commercialization initiatives

# Australian Association for Hydrogen Energy

- Role and objectives
- Planned activities

# AAHE: role and objectives

**Role:** provide representation to a wide-range of hydrogen-energy stakeholders in Australia, including industry, government and academia

## **Objectives:**

influence policy development

facilitate networking

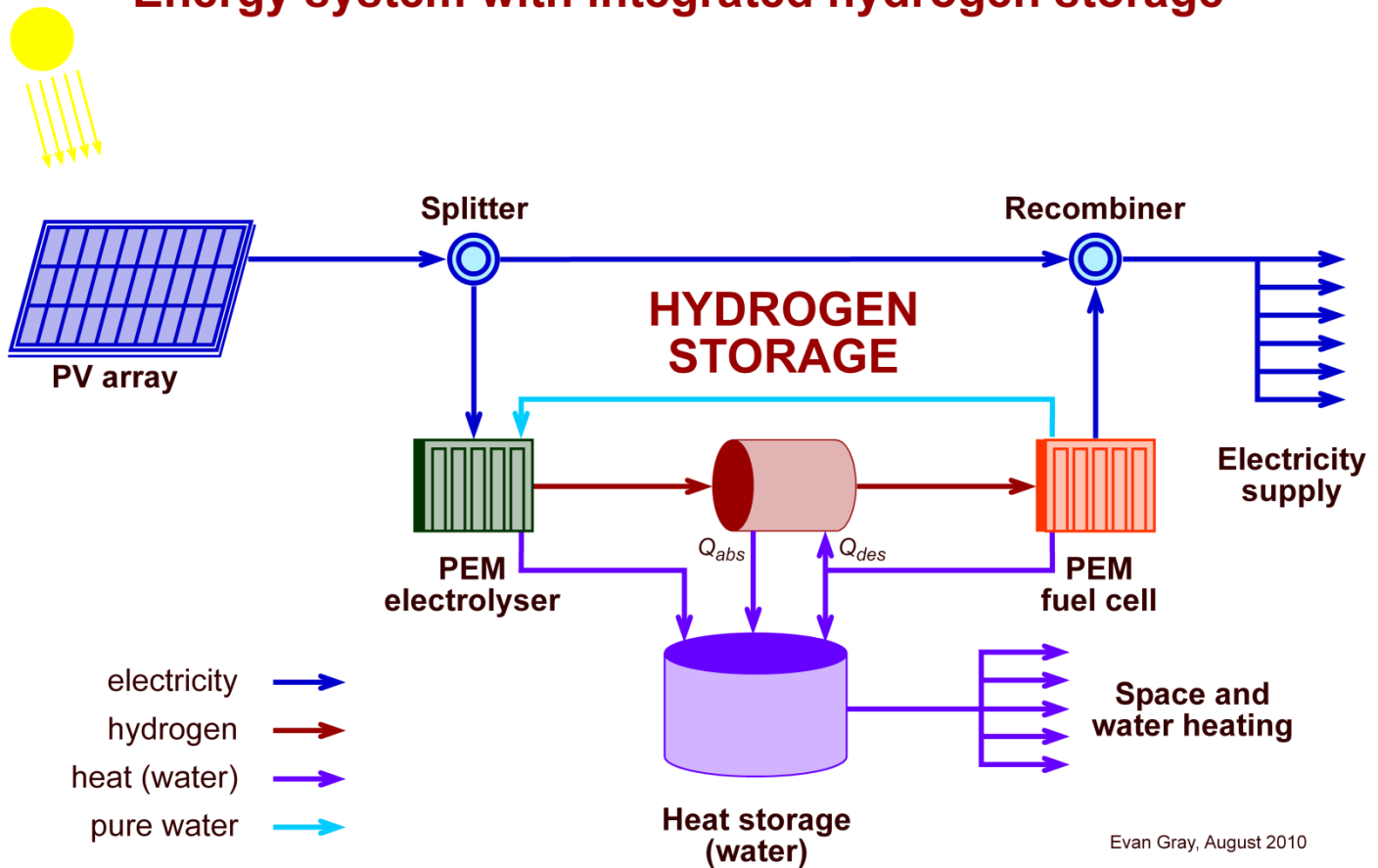
disseminate knowledge

enable business activities

# Objectives

- Co-ordinate hydrogen energy activities in Australia to influence the development of effective policy and regulatory frameworks for the adoption of hydrogen and associated technologies
- Facilitate networking, between industry, government and academia
- Promote awareness and understanding to the wider public
- Enable the realisation of business opportunities
- Build on existing work – e.g. NHMA

# Sir Samuel Griffith Centre: Energy system with integrated hydrogen storage



E. MacA. Gray, C.J. Webb, J. Andrews, B. Shabani, P.J. Tsai and S.L.I. Chan,  
*Int. J. Hydrogen Energy*, <http://dx.doi.org/10.1016/j.ijhydene.2010.09.051>  
"Hydrogen storage for off-grid power supply."

# Planned activities

- AAHE Launch, Sep 6 2010 Sydney
- AAHE workshop and AGM, Nov 2010 Melbourne
- Establish AAHE working groups:
  - Standards and regulations
  - Renewable hydrogen
  - ...
- Work with ORER to develop renewable hydrogen guidelines for RECs award to hydrogen projects
- Build up a membership base across all sectors
- Work with complementary organisations (e.g. conference organisers)
- Work with City of Sydney to design H<sub>2</sub> demonstration program for 2015 conference

# WHTC 2015 Sydney

