

Hydrogen Implementing Agreement SA Industry and R&D Perspectives

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Platinum and Gold Mining Industry

- Business is mining and refining of platinum/gold
- Business is not to produce catalysts, fuel cells or automobiles
- Interest is to promote the use of platinum/gold in order to sustain and grow the market for Pt/Au
- Is therefore sponsoring Pt/Au research at organizations that can grow the demand for Pt/Au
 - Anglo Platinum is investing in fuel cell research at Johnson Matthey in the UK
 - The gold mining industry is sponsoring collaborative research in Au catalysts at Mintek and Wits
- The mining industry also has an interest in the hydrogen economy as users of hydrogen fuelled vehicles for underground mining

Petrochemical Industry, e.g. Sasol

- Business is to produce and sell fuel
- Business is not to produce the engines or vehicles that consume fuel.
- Is therefore not interested in developing fuel cell themselves, but is interested in the potential use of their fuels in fuel cells.
- Although Sasol is one of, if not the largest producer of hydrogen in the world, it can do little to promote the use of hydrogen in vehicles
- Sasol had some of its clean fuels tested by Intelligent Energy for use in onboard reformers to generate hydrogen for use in fuel cells.
- Best strategy is probably to monitor developments

SA Automotive Industry

- Manufacture vehicles under license from its international principals
- It does not develop new models and breakthrough technologies locally.
- Consequently, the hydrogen economy is of little immediate interest to the local automotive industry.
- It is simply not in a position to take a leading role in developing the Hydrogen Economy

Electricity Generation – Eskom & PBMR

- Eskom's business is to generate and distribute electricity.
- It is not in the business of developing appliances that use hydrogen, i.e. hydrogen
- Interest in the use of fuel cell technology arises from:
 - Potential market for distributed power generation
 - Load leveling
 - Need for energy storage when using renewable energy sources (mainly wind or solar)
 - Use as back-up power supplies
- Is sponsoring research in fuel cell and hydrogen related technologies at UWC and has also participated in local fuel cell test campaigns
- PBMR is developing different applications for its nuclear technology and has identified thermo chemical generation hydrogen generation as a potential market

Fuel Cell Industry

- Two companies are already marketing fuel cells locally, I.e. Intelligent Energy and IST (PlugPower)
- Developments are done overseas and products are tested in South Africa for conditions in South Africa
- Is marketing to niche application as back-up power supplies and Uninterrupted Power Supplies
- There is no compelling reason to do research on its core technologies in South Africa

Potential Consumers

- There is already a fairly large number of potential users of fuel cells in South Africa that is aware of fuel cells and that are considering their use.

For example: The telecommunication industry, hospitals, Eskom, banks, the mining industry, Transnet and the military

- These users will not lead R&D in developing fuel cell and hydrogen technologies, but might undertake projects to develop or test its use.

R&D Community: Universities and Research Councils

- Role is to develop both technology and human capacity for the future
- These organizations are aware of the global interest and investment in fuel cell and hydrogen technologies, are keen to become involved, but are constrained because of the lack of local industrial interest
- Main activities to date:
 - UWC: fuel cell MEA development supported by Eskom and FRD
 - VUT: fuel cell system development with support from Telkom
 - UJ – Diffusion of FC technology in the market
 - UP – Following developments in automotive industry
 - Wits&Mintek: Gold catalysis for hydrogen purification
 - CSIR: Established fuel cell research laboratory and is also doing research in solar energy and hydrogen storage