

Case Studies of Integrated Hydrogen Energy Systems

Status report presented by

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*to the Executive Committee of the
IEA Hydrogen Programme*

Report Outline

- Project Goals
- General description
- Description of components
- Integration of components
- Performance and operational experience
- Data Acquisition
- Environmental Aspects
- Safety Issues
- Regulatory Aspects and Licensing Procedures
- Public Acceptance
- Other Experiences
- Remarks on future potential

Typical Questions

- Which approach was chosen and why?
- Novel features?
- Why were these components selected?
- How were the components matched?
- Surprises in performance of components and systems?
- Which goals have been reached?
- Resulting efficiencies?
- Consequences of dynamic behaviour ?
- Which major changes have been necessary and why?
- Reasons for failures?

Criteria for Selection of Projects

- Project leaders willingness to actively participate in case study
- Integration of multiple hydrogen components
- Regional and technology diversity preferred

Reports completed / Vehicles

- W.E.I.T. Hydrogen Delivery Vans (Hamburg)
- Bavarian Fuel Cell Bus (Munich/Nuremberg)
- SunLine Clean Fuels Mall
(Thousand Palms, CA, USA)
- Honda Solar Hydrogen Fueling Station
(Torrance, CA, USA)
- Zero-Emission Buses in Real-World Use
(Vancouver and Chicago)

Reports completed / Stationary

- LH₂-fueled Cogeneration Unit (Hamburg)
- Telecommunications Station (Redwood NP)
- Renewable Hydrogen System (Grimstad)
- Hydrogen from Windpower (Stralsund)
- Renewable Energy Systems for Residential Use (Trois-Rivières, Québec, Canada)

Reports in preparation

- Hydrogen Project at Munich International Airport
- California Fuel Cell Partnership
(West Sacramento, CA, USA)
- Fuel Cell Innovative Remote Systems
(Madrid, Spain)
- Two Hydrogen Filling Stations
(Osaka/Takamatsu, Japan)

Project leaders agree to contribute

- Stationary Gaseous Hydrogen Infrastructure (Burnaby ,BC, Canada)
- Ecological City Transport Europe (ECTOS) (Reykjavik, Iceland)
- Clean Urban Transport for Europe (CUTE) (Madrid and 8 other cities)

Watch List

- EUWEB Fuel Cell Bus (Berlin)
- Hydrogen from Biomass for Urban Transport (Atlanta/NREL)
- Hydrogen Generation from Wind Energy (Greece, Canary Islands)
- HyCHAIN (Grenoble, Milan, Ruhr/Germany)

Next steps

- Web-publish completed reports
- Complete "Reports in preparation"
- Identify additional demonstrations
 - from Watch List ?
 - new suggestions ?