ONZIEME RENCONTRE INTERNATIONALE DU GERPISA
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Les acteurs de l'entreprise à la recherche de nouveaux compromis ?
Construire le schéma d'analyse du GERPISA

Company Actors on the Look Out for New Compromises
Developing GERPISA's New Analytical Schema

11-13 Juin 2003 (Ministère de la Recherche, Paris, France)

TESTING TECHNOLOGICAL TABLEAUS: ACTOR COALITIONS IN HYDROGEN AND FUEL CELL DEVELOPMENT*

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The concept of a zero-emission, high performance car holds an attractive upside, where important societal wants, such as bettering living conditions and/or bettering the environment can be attained, and the private transport market is sustainable and can be increased.

A number of the internationally known carmakers have thrown in their chip in this development. Relatively small US developers such as Plug Power Inc., Ballard and Fuel Cell Energy Inc. are cooperating with the car and energy industry in developing this technology.[1] Ballard, as an example, is cooperating with General Motors and Ford, while at the same time supplying fuel cell components to Honda, Nissan and Volkswagen.[2] Providers of infrastructure are project partners with carmakers and cooperates with manufacturers of fuel cells.[3] Furthermore, many projects are to a large extent financed through public funds, in effect being public-private partnerships.[4]

Topping this off, many of the large carmakers have internal efforts on fuel cells. Some of our informants point to the R&D conducted by Adam Opel AG in Rüsselsheim, as the most extensive European, in-house, development effort. Other carmakers have their own in-house development as well. On the other hand, senior level research managers in the German car

* The research here was made possible through a grant from the Norwegian energy companies Norsk Hydro, Statoil and Statkraft as well as the Norwegian Research Council. Monica Rolfsen, Steffen Møller-Holst and Dirk Lungwitz, all from the SINTEF group, has made substantial contributions to the project.

[1] The market capitalization of these companies are as follow: Plug Power Inc.; $305M, Ballard; $1.3B, Fuel Cell Energy Inc. $202M (as of 08/04/2003).

[2] E.g. Ballard Inc. news release dated November 25, 2002.

[3] E.g. Stuart Energy Co. news release dated February 18, 2003

[4] The Clean Urban Transport project (CUTE) conducted by the European commission involves €18.5M of public funds.

industry have serious doubts of the viability of Hydrogen/Fuel cell car concepts, finding them too complex and expensive to manufacture (Jürgens 2002).

Furthermore, suppliers to carmakers have started to look into what consequences at hydrogen and fuel cell vehicle might have for future production. For example, as hydrogen poses other demands on storage tanks, Norwegian supplier Raufoss has developed composite tanks specified to 700 bars for compressed hydrogen.

Thus, on a number of fronts, the promises of a hydrogen economy is being tested, albeit slowly. And it might seem that expressed goals of the visions of a Hydrogen Economy are easier to see than the dynamics and function of the vision. The former is a sustainable transport system, a vision even spelled out in the "state of the union" address of the US president, the latter is more opaque.

This paper describes the dynamics between the energy industry, car industry and public policy using the case of fuel cell development activities as a pivotal point.

The paper seeks to illustrate the dynamics of early phase concept development, where the concept itself is tested while not knowing if the concept is feasible, production-wise, technically or if there is a market for it.

Thus, in relation the analytical framework proposed by Boyers and Freyssenet (2002), concept development of this kind have a local, company specific style, but also an important relation to the active policy-framing of cars and transport. Furthermore, the differences in market-preferences and policy-preferences between Europe and the US make different strategies for concept development more likely. The paper uses empirical material from a number of demonstration sites in Germany, Switzerland and the USA.

The analysis in the paper pivots around the "muddling about"-dynamics of such early phase fuel cell concept testing and development. The real, day-to-day testing of such concepts is a far cry from the well-functioning cars and support systems that are available in the marketplace.

On a slightly different note, these tests are portrayed as the opening-up of new area of energy-use, implying the Hydrogen Economy (Hoffmann; Rifkin). The paper, accordingly, tries to follow the relation between demonstration sites and policy as well. In the policy field, demonstrations are important as they give life and reality to different technological visions (Dierkes), such as the hydrogen economy. Therefore, the paper argues that early phase concept demonstrations interact with policy (goals for emission levels, research programs). The American FreedomCar-initiative[5] is such an example, which pairs changes in emission policy with a drive for hydrogen cars. The paper argues that public funding for fuel cell projects, which seems to be quite easy to come by at this time, is available to fill policy purposes.

[5] Cf. U.S. Department of Energy, http://www.energy.gov/