

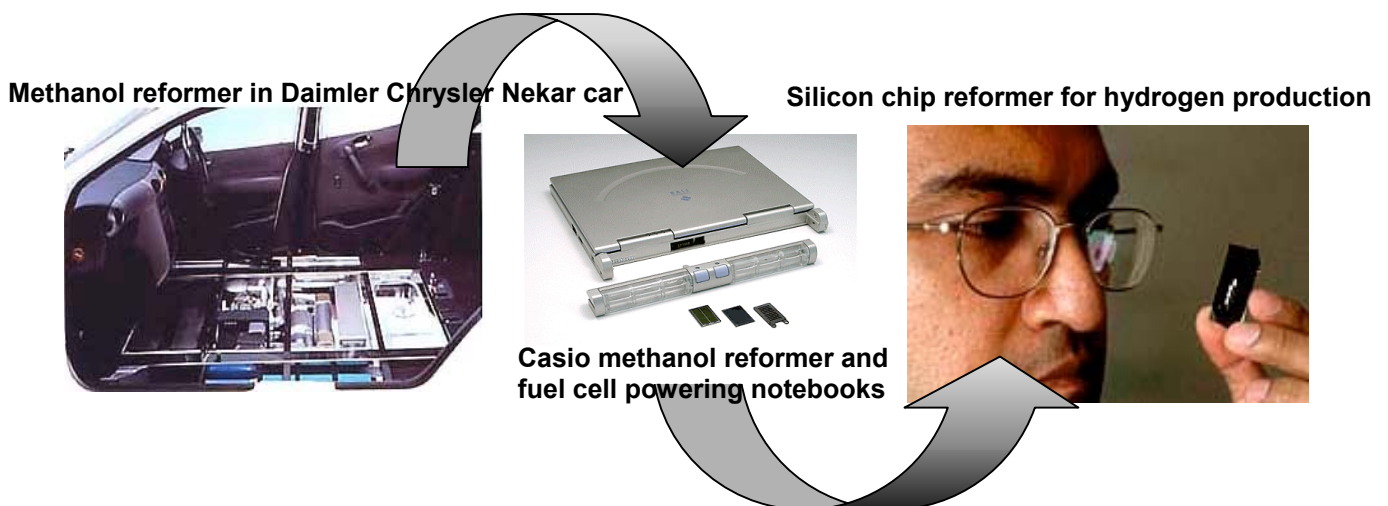
Micro-fuel Cells for portable Electronics and Micro-reformers for Hydrogen Production

This report was produced in 2002 upon request from electronic equipment makers searching for a new and more powerful electricity supply for their portable products such as computers, printers, cameras, TVs, radios, CD-players, phones and games. Silicon and polymer micro-machining made it possible to build such small reformers and fuel cells delivering between 0.1 to 5 W for duration of up to 72 hours.

It is a well know fact that the energy density of hydrocarbons is far superior to any battery, for instance butane contains 12.7 kWhr/kg as compared to a Li-ion battery which reaches only 0.3 kWhr/kg weight. Various technical concepts are discussed in this report ranging from direct methanol cells to reformer cells. Among the fuel cell technologies proton exchange membranes types and alkaline cells are the most favoured ones. Of course all have in common that recharging takes a matter of seconds by simply plugging in a new cartridge. Methanol, propane and sulphur-free Diesel are fuel candidates.

The market forecast predict that in terms of numbers sold micro-fuel cells for portable devices will outstrip stationary as well as automotive fuel cells already by 2005 with an overall sales volume of about 1 million units. However these forecast, even from reputed institutions tend to underestimate the technical problems of fuel cells, the most critical ones being reliability and constant production quality (companies have high reject rates)

The report concludes with a list of centers of technical excellence in Europe and the expected major industrial players in the future.



More information and the Table of Content of this useful 100 page report can be obtained from **sgt Sensor Consulting Dr. Guido Tschulena**, who has written the report together with Felix Trojer from Netlab GmbH in Düsseldorf. Tel: + 49 6081 56 168, Fax: + 49 6081 57 222, Mail: info@tschulena.de

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