

FUEL CELLS WITH RENNAISSANCE IN SEVERAL APPLICATION FIELDS

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Due to their response characteristics, their compact design and their weight/range-ratio, and the fast recharging by refueling fuel cells are an ideal complement to batteries in automotive applications with regard to electro-mobile applications. At the Fraunhofer Institute for Chemical Technology ICT an expanding Fuel Cell Group conducts applied research in areas of

- innovative fuel cell material solutions for polymer membrane based fuel cell technologies,
- advanced characterization methods for the evaluation of automotive fuel cell components and materials
- and the development of fuel cell systems for special applications

With respect to the latter topic, Fraunhofer ICT successfully concluded several projects of fuel cell based range extender and auxiliary power unit (APU) solutions to support electric mobility. In these projects, three very different solutions were found most suitable in accordance with expected market requirements ranging from a petrol operated APU to stabilize the driving range of light duty commercial electric vehicles, over a 5 kW reformed methanol range extender to enhance the range of compact class car vehicles for inter urban traffic to higher performance PEMFC based solution for upper electric car segments.

All developments were accompanied by innovative research on the material and components level, e.g. enhancing the resilience of HT-PEMFC MEAs against humidity and impurities from the steam reforming of conventional fuels or a chemical protection solution to avoid PEMFC degradation by air-air starts more regularly encountered by range-extender systems.

Based on the experiences gained in these public funded projects the Fuel Cell group is looking forward to support industrial and public customers in the development of similar systems for their particular applications also relying on Fraunhofer ICT's worldwide network to material and components suppliers allowing to develop tailored solutions for the expanding market.

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