

Dynamic Behaviour of a Fuel Cell with Ultra Capacitor Peak Power Assistance for a Light Vehicle

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Abstract:

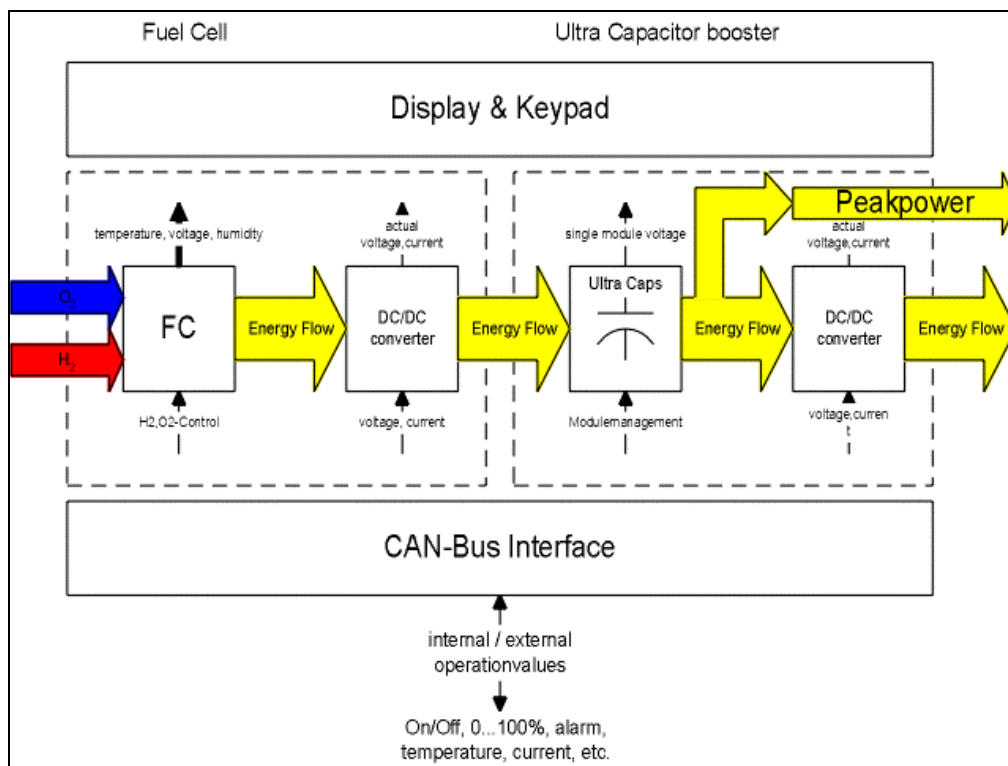


Figure 1: Fuel Cell with control structure and Ultra Capacitor booster

The operation of a Fuel Cell inside of a vehicle is a big challenge for control and safety. In continuation of an former project at the Berlin University of Technology a feasibility study for the use of a Fuel Cell in a light vehicle (TWIKE) was issued and realized. The Fuel Cell of this project ($\leq 2\text{kW}$) is redesigned and will be provided with the necessary control and service structure (figure 1).

A Fuel Cell needs for best efficiency an operating point nearby 70%-80% of maximum power, that means an almost steady power output. For this reason the Fuel Cell will get an additional power booster at the base of Ultra Capacitors. These modules will be optimized for a light vehicle under the aspect of the dynamic behaviour and of the size/cost of the booster.

The Full Paper will give a detailed description of the Fuel Cell / Ultra Capacitor booster and describe the first results of the dynamic performance of this system.