

Project Information



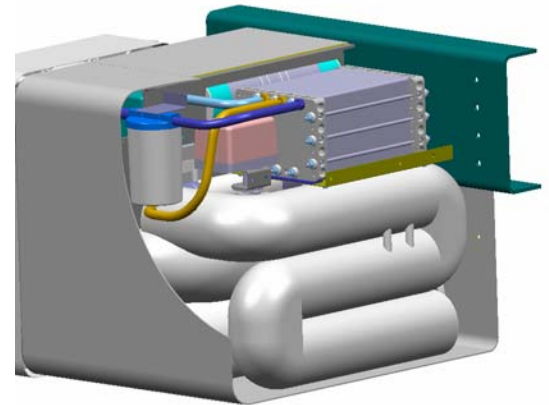
Subject: Development of diesel reformer for a fuel cell based APU operated on commercial diesel

Applicant: R&D OHG / FRT GmbH

Project Duration: 28.12.2004 – 31.12.2006

Project Partner: Powercell AB
Oel-Wärme Institut gGmbH

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Project description:

The objective of the project is to develop a first prototype of a diesel reformer system for a fuel cell Auxiliary Power Unit (APU) that is operated on commercial diesel. Core of the project is the development of an autothermal reformer (ATR) that converts a fuel/air composition into a hydrogen rich gas. In the first stage, the diesel gasification is performed with a cold-flame process.

The innovative reformer developed in this project, will enable the production of an APU that is characterized by fast dynamic properties as well as cold-start capability. The reformer will also be designed as a modular unit that is both compact and robust, designed for fast assembly. High energy efficiency is also a key-factor that will characterize the fuel cell APU developed within this project.

The reformer development is the responsibility of OWI gGmbH, located in Aachen/Ûbach Palenberg, whereas Powercell AB, focuses on the optimization of the overall system and is responsible for the APU's integration into the vehicle.

FRT GmbH coordinates the cooperation and is also currently performing a screening with respect to which NRW businesses are suitable for producing the prototype APU and a potential series production at a later stage.

The project's uniqueness is in the use of standard diesel, allowing the utilization of existing infrastructure, and thereby removing the need to store hydrogen onboard the vehicle. In addition, this concept focuses on the fuel cell based generation of heat and power independently of the vehicle's combustion engine as opposed to a completely fuel cell operated vehicle.

The project partners believe that the technical concept has a high commercial potential. The diesel operated fuel cell based APU offers a number of advantages. The main advantages of the system compared to existing ICE technologies are:

- Significantly lower noise and CO₂ emission levels,
- Environmentally friendly – there are no NOx or CO emissions
- Higher fuel efficiency



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In addition, the APU can be operated when the main engine is shutdown, which allows using additional power users such as air condition or entertainment equipment as well as the start-stop operation of the combustion motor without impairing the power supply on board the vehicle.



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