

Project Information



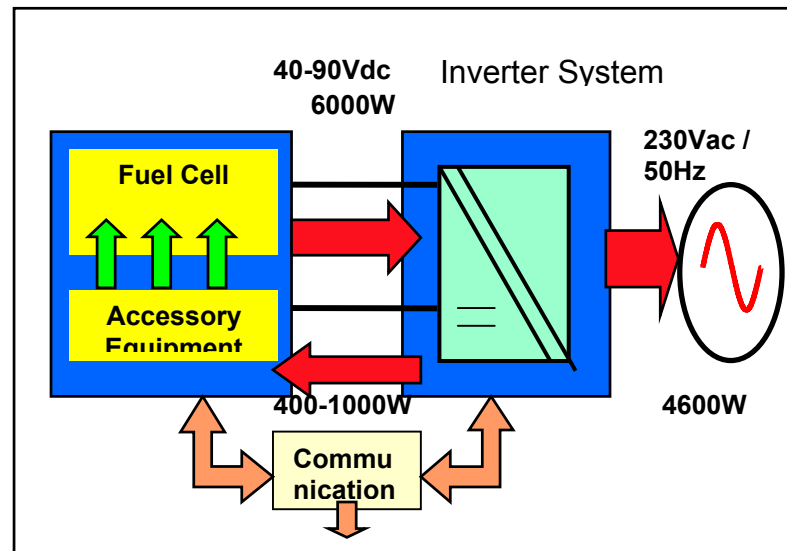
Subject: Grid parallel Inverter for residential use with bi-directional operation for auxiliary power

Project leader: Delta Energy Systems GmbH
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Project time: 1.1.2003-31.12 2005

Project partner: Vaillant GmbH
Universität Paderborn
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Project description:

The market introduction of fuel cell systems will be depending on the total system cost, on the overall efficiency and subsequently on the total benefit for the user. All parameters are substantially influenced by the inverter for grid parallel operation and the auxiliary power demand for the fuel cell system. It is the target for an optimal inverter development to integrate grid parallel operation and the auxiliary power supply using a bi-directional concept. Therefore following details must be addressed:

- Conversion of the DC output voltage to the grid AC voltage with a very high efficiency over the complete load area.
- Operation in bi-directional mode to allow active compensation and use in island operation
- Supply of the auxiliary power for the fuel cell system direct from the fuel cell DC output without any additional conversion losses.
- Supply of the start up power of the fuel cell system through bi-directional operation of the inverter to avoid use of a separate power supply.
- Integrated control system for start up, shut down and operation under different load conditions to support efficient operation

Improvement against existing solutions targeted are

- Cost reduction for the power conversion part up to 20 –30 %
- Efficiency improvement for the power conversion part up to 2 – 3 %.