

# 2<sup>nd</sup> European PV-Hybrid and Mini-Grid Conference

## September 2003

Proposal for an **oral** presentation during the conference

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Title :

PV fuel cell hybrid systems – possible applications and limits

Abstract :

As different types of fuel cell systems (like e.g. SOFC, MCFC, PAFC, DMFC, PEMFC, AFC) have been developed in research projects during the past decade some of these technologies meanwhile reached an acceptable practicability and might be not too far away from readiness for marketing.

Due to this development there is a need to investigate if such systems could help the off-grid PV and the off-grid PV-Hybrid applications to improve the problem of energy gap during winter season while low solar irradiation.

As a supplier of BOS components Steca GmbH has started activities to explore the potential of this technology.

A systematic overview of principle possibilities to integrate fuel cells into off – grid PV systems will be given as well as a comparison among the different technologies.

Especially as the costs for electricity in off-grid applications are typically high a detailed cost analysis will show in what type of application this technology will be able to compete with traditional technologies.

An important point to realise an efficient PV-Hybrid system is the communication among the components as well as the overall energy management strategy. An innovative concept will be shown. This concept allows to integrate the fuel cell system fully into the PV-system and its management structure. At the same time the user is still flexible to realise a system design which is adapted to the specific needs of the application. This leads to a flexible management on the generation side as well as on the load side.

Steca has realised pilot projects for PV-fuel cell hybrid systems. A detailed analysis of these systems will be given. The data analysis will show the possibilities and advantages of such systems. Critical parameters like e.g. reliability, life-time, fuel handling were taking into consideration. Experiences with these systems will be shown and the results will help to determine the first realistic possibilities for PV fuel cell hybrid systems and its market introduction.