

**DEFINITION OF HYDROGEN HYBRID SYSTEMS COMPONENTS FOR
DISTRIBUTED POWER GENERATION**

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ABSTRACT

HELION, subsidiary of the AREVA group, is specialized in the design, development and manufacture of Proton Exchange Membrane (PEM) fuel cell systems for stationary and transport applications. Based on AREVA's works in the late 80ies / early 90ies, HELION also develops High Pressure PEM water electrolyzers.

In distributed power generation, many storage solutions can be involved, and hydrogen could be in some cases a viable solution. In such a system, on-site produced hydrogen energy is converted by PEM fuel cells into electricity during periods where the renewable source alone can not satisfy the electric load.

Another target application for developed PEM electrolyzers is the production of hydrogen for filling stations.

Regarding these applications, parametric studies have been conducted in order to set up objectives for whole system costs.

In this framework the influence of parameters as lifetime, fuel cell and electrolyzer performance, hydrogen production and storage pressure, maintenance or power management is assessed. In this paper we present the results obtained within these studies and HELION's conclusions for future development activities.

Keywords: PEM electrolysis; PEM fuel cell; hydrogen production; hybrid systems; distributed generation