

Hydrogen fuel cell for phone charging set for 2013

September 22 2012, by Nancy Owano



Hydrogen Generating Sheet. Credit: Rohm

(Phys.org)—A three-way collaboration between Japan-based Rohm, Aquafairy, and Kyoto University has resulted in the development of a smartphone-charging fuel cell—a compact, high output, portable hydrogen powered fuel cell that can generate electricity by producing hydrogen. This is achieved through a chemical reaction between calcium hydride sheets and water. The fuel cell can generate five watt hours of electricity, to charge an average smartphone within two hours. The fuel cell will be promoted for a variety of uses, from charging a smartphone to serving as a 200-watt portable generator delivering backup power.

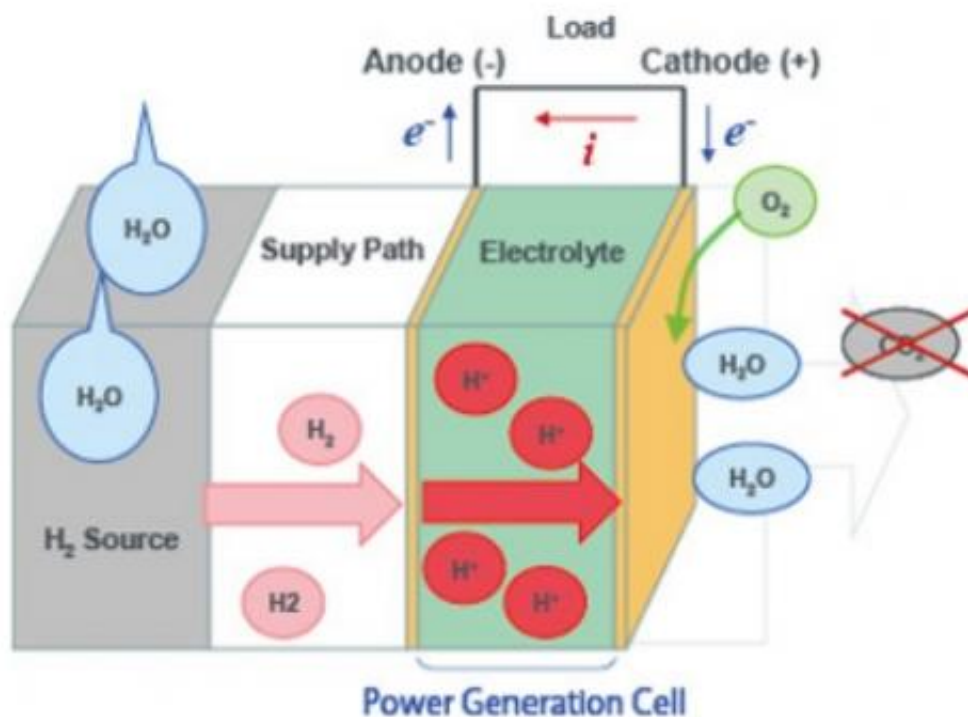
Rohm said the new [hydrogen fuel cells](#) use a solid that creates hydrogen by adding water, [generating power](#) through "hydro-synthesis." No

harmful byproducts such as carbon dioxide or VOCs ([Volatile Organic Compounds](#)) are involved. The fuel cells can be disposed of as general waste.

If the sheets are laminated and sealed, they last for twenty years, claimed a spokesman. Lithium ion batteries lose their charging ability in four to five years. Aquafairy had been developing a small fuel cell some years ago when they then started to exchange information with Rohm. Also, Rohm and Aquafairy have launched a joint project for a compact, lightweight 400-watt [fuel cell system](#) with Kinkei System.

The fuel cell announced this month is promoted as advanced in its use of calcium hydride in place of magnesium hydride. Calcium hydride has high reactivity with water at a wide range of temperatures. Stable reactions are possible just by taking measures to suppress reactions. A resin is added to calcium hydride. ROHM and Aquafairy succeeded in solidifying calcium hydride in a sheet configuration, generating approximately 4.5 litres of hydrogen from a sheet less than 3cc in volume (measuring 38 x 38 x 2mm), providing a power output of 5Whr, said Rohm.

All in all, [collaborative efforts](#) of Rohm, Aquafairy and Kyoto University have resulted in plans for (1) the cover type and card case type of fuel cell, which have a generation capacity of 5Wh for smartphones, (2) a portable power generator with an output power of 200Wh and (3) a 400Wh fuel cell for seismometers, developed in collaboration with Kinkei System.



Hydrogen fuel cell. Credit: Rohm

In describing the special nature of fuel cells, Aquafairy has said that a fuel cell doesn't store electricity, but generates it like a power-generating plant. It can continue to supply electric power as long as hydrogen and oxygen fuel are supplied.

"Fuel cells can be made smaller, lighter, and more efficient than conventional storage and rechargeable cells, and thus are expected to drive expansion into new markets and applications, said a Rohm release.

Rohm, Aquafairy, and Kyoto University will continue to work on their development. They plan to evaluate the reliability of the fuel cell, make improvements and commercialize it in 2013.

The fuel cell will be shown at CEATEC in Japan early next month and at Electronica in Munich, Germany, in November.

More information: [www.rohm.com/web/global/news-d...
defaultGroupId=false](http://www.rohm.com/web/global/news-d...defaultGroupId=false)

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