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Field Testing the Horizon MiniPak

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MiniPak charging in the Other Stage crowd – Glastonbury 2011 (Source: Jonathan Wing)

Micro portable fuel cells are an important area for many fuel cell manufacturers. Believed to be key to bridging the gap between the average consumer and the fuel cell industry by infiltrating the lucrative consumer electronics market, many companies are developing these 1-2 W USB interface handheld products. Of these, Horizon's MiniPak has had one of the highest profiles, having been shown at countless events through various stages of its development in the last few years. The product will finally be entering full commercialisation at the end of this year.

An attractive end use for fuel cells of all scales is the provision of off grid power. In the micro portable sector camping and travelling are applications where the technology comes into its own - providing universal, instant and clean power for many of the small electronic devices that have become intrinsic with modern living. Having attended music festivals every summer for the last six years, a permanent problem has been maintaining a charge on my mobile phone. The Glastonbury Festival is one of the largest in the world, with nearly 180,000 revellers attending this year and to stand any chance of finding all your friends throughout the five days, a mobile phone is essential. Keeping one charged in the past has been a mix of extremely conservative use and long queues with lacklustre results at the Orange Chill n' Charge tent.

With this in mind, I contacted Horizon Fuel Cell Technologies before the festival, managed to arrange a field test of the MiniPak and headed to Somerset with the device and five HydroSticks of solid state hydrogen packed in my bag. Having experienced similar portable fuel cell charging devices struggle to provide the power needed for modern smartphones it was with some scepticism that I approached the MiniPak.

As it transpired, my caution was unwarranted. The MiniPak exceeded my expectations on almost every front. Firstly, a word on the design of the unit; the MiniPak is the most aesthetically pleasing portable fuel cell design I have seen, featuring an understated combination of a soft touch black finish, cyan accents and Morse code-inspired ventilation grill. Good design should not be underestimated in products that are hoping to sell well in the consumer electronics market and Horizon has done an excellent job here.

With only one step, operation is as simple as the design. HydroStiks, hydrogen filled metal hydride cartridges, are simply screwed into the unit. The device then powers up automatically, purges its stack and is outputting electricity through the USB port within 10 seconds. No user intervention is required. The only drawbacks are that the unit must be kept horizontal for the water management system to work (water is released in bursts of vapour from the top of the unit), and with a sufficient airflow. In other words, what is very much a pocketable device can't be used in the pocket. That said, these limitations didn't hamper my use of the device. With a respectable 2 W output the unit charged my iPhone 4 at roughly the same speed as a mains outlet and each HydroStik holds enough hydrogen for just over 2 full charges. Given that Aquafairy claims on its website that the AF-M3000 uses an entire fuel cartridge to only half charge a smartphone in 1.5 to 2 hours, the MiniPak appears to have the edge on performance.

Horizon is also entering the market with comparatively aggressive pricing. Preproduction units sell from Arcola Energy in the UK for £75 and HydroStiks for £10, with costs set to decrease after launch. For comparison, preproduction units of the Dynario sold for GBP £229 (JPY¥29,800) and the AF-M3000 at GBP £202 (JPY ¥26,250). Horizon will also be offering a home refuelling station for HydroStiks, though being currently marked at GBP £250 (USD \$400), many users may opt to just buy individual HydroStiks (which are recyclable) as and when they need them. Too often fuel cell products have been criticised for being underdeveloped and unready for market, but devices such as the MiniPak are proving that the technology is now truly ready for general consumer use.

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