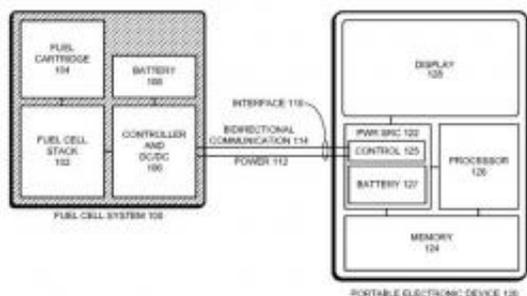


# Apple applies for two fuel cell patents for use with portable computing devices

December 23 2011, by Bob Yirka



An image from the second patent.

(PhysOrg.com) -- In a move that demonstrates Apple's determination to create an ever lighter Macbook that is also more environmentally friendly, the company has applied for two different patents that describe ways to use a fuel cell to power a portable computing device, which could of course also include devices like an iPad. In the patent applications, Apple also took the unusual step of adding some bit of political discourse to underscore its motivations in trying to build portable computing devices that are not reliant on fossil fuels.

Fuel cells are of course, a means for generating electricity by pushing compressed hydrogen through a membrane and mixing it with oxygen in the air. The only other output is water. It's a technology that has been widely proposed as an alternative means for powering cars and trucks, but thus far, has not caught on to the extent that some had hoped.

In these latest patent filings, Apple is proposing a [fuel cell](#) that can be integrated directly into a portable device, rather than, as other's have proposed, a means of charging it. Thus, the device would never need recharging at all, instead it would need a have its recyclable fuel cartridges refilled. The patent diagrams also show that the design for such a system that would also employ a small rechargeable a battery that would be charged by the fuel cell, but could also send a charge back to run the fuel cell. Such a system could in theory run for days, or even weeks before having to replace the fuel cartridge.

One of the major stumbling blocks for implementation of widespread fuel cell technology is the lack of an infrastructure to support it. If Apple were to sell hydrogen fuel cell powered Macbooks, they would also have to develop a means for creating the fuel to fill the cartridges and for selling them through their Apple stores, which they likely are investigating as well.

Not mentioned in the patent application is what Apple would do with the very small amount of water that the fuel cell would produce. Clearly simply pumping it out the bottom of a Macbook wouldn't work, and storing it would add weight. They might also be working on a way to force it to evaporate, but that might be subject to environmental humidity levels. In any case, it's clear that [Apple](#) understands the hurdles it faces as was also noted in the [patent](#) applications by the authors discussing how it is "extremely challenging" to figure out a way to create a hydrogen fuel cell system that would be both portable and in the end, cheap enough that the resulting device would still be price competitive. Thus, a fuel cell based Macbook likely is still a ways off into the future.

**More information:** [Fuel Cell System to Power a Portable Computing Device](#)  
[Fuel Cell System Coupled to a Portable Computing Device](#)

via [AppleInsider](#)

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