Toshiba develops fuel cell prototypes for portable music players

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Toshiba said Friday it has developed two small direct methanol fuel cell prototypes that can dramatically increase the playing time for mobile music players. A fuel cell unit the size of a pack of chewing gum can power a flash-memory-based player for about 35 hours on a single charge.

The new fuel cell units have an output power of 100mW and 300mW and have been applied to a flash-memory-based digital audio player and an HDD-based digital audio player, respectively

The 100mW unit, similar in shape and size to a pack of gum at a

compact W23mm x L75mm x D10mm, can power the flash-based player for approximately 35 hours on a single 3.5ml charge of highly concentrated methanol, the fuel that drives the electricity producing chemical reaction in the fuel cell. The 300mW unit is W60mm x L75mm x D10mm and delivers enough power to keep an HDD-based audio player running for approximately 60 hours on a single 10ml charge.

Both prototype players include components related to the testing and are W35mm x L110mm x D20mm (flash memory) and W65mm x L125mm x D27mm (HDD) with the fuel cell units. These sizes can be reduced substantially by removing the extra components and applying optimal design for commercial products.

The design of the fuel cell units reflects current moves toward international standardization of micro fuel cells and meets the International Electrotechnical Commission's draft safety standards now under review.

Toshiba's DMFC features a passive fuel supply system that is suited to smaller fuel cells and use with a highly concentrated methanol solution. Fuel cells usually mix methane with water in a concentration of less than 30%, a dilution that supports generating efficiency but which requires a fuel tank that is much too big for portable equipment. Through durability and reliability tests with the new units, Toshiba will accelerate technology enhancements, including development of production technology, to support integration of DMFC into commercial products expected to appear in and after 2007.

The two prototype players and their methanol cartridges will be exhibited at the CEATEC JAPAN 2005 which will be held at Makuhari Messe, Chiba Prefecture, from October 4 to 8, 2005.