

Applications:

LANL's unique, cylindrical, passive, fuel-cell design is ideal for low-voltage, low-power applications. The Air-Breather is primarily designed for powering portable electrical devices with small power needs—including flashlights, laptop computers, remote-controlled toys, and radios.

Benefits:

- Small, compact, reliable, inexpensive, silent, and relatively light
- Requires no peripheral devices
- Environmentally clean—produces no byproducts that must be disposed of, cleaned up, or stored.
- Lasts at least three times as long as conventional batteries.

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Air-breathing passive fuel cell stack

Summary:

The increasing number of portable electronic devices on the market today—from laptop computers to remote-controlled toys—is creating a demand for improved, more environmentally friendly battery technologies. Until recently, electrochemical fuel cells were too complicated and expensive to meet the need because they required cooling, humidification, and pressurization sub-systems to operate. In response, LANL has developed the Air-Breather Fuel Cell Stack for Portable Power Applications. The device consists of the fuel-cell stack itself (a finned, cylindrical device somewhat larger than a D-cell battery) and a small canister (with a miniature pressure regulator) that provides hydrogen fuel. The hydrogen fuel combines with oxygen that diffuses into the stack from the surrounding air. The only products of the Air-Breather are electrical power and water, which serve to maintain the moisture necessary for the unit's performance. A rechargeable fuel canister lasts three times as long as a conventional battery.

Development Stage:

This technology is reduced to practice; however, it may require customization depending upon the specific application of interest.

Patent Status:

U.S. Patent No. 5,514,486 Annular Feed Air Breathing Fuel Cell Stack

U.S. Patent No. 5,595,834 Annular Feed Air Breathing Fuel Cell Stack

Licensing Status:

This technology is available for nonexclusive licensing.