



Aluminum-Air Technology

P&B GLOBAL ENERGY

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Reliable Backup Power Solution New Power Source and Green Recyclable Fuel for 21st century

The aftermath of nor'easter that affected nine states and left 3 million homes and businesses without power is only the latest of a seemingly relenting pattern of natural disasters spanning the globe. This storm along with the recent earthquake in Japan and hurricane Irene in the USA once again shows the world how vulnerable and unprepared we are.

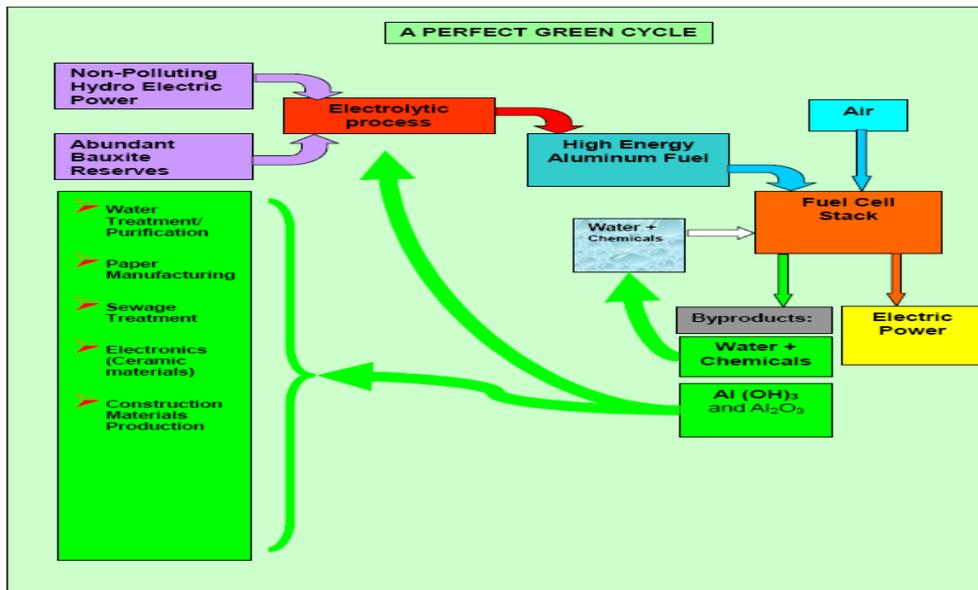
The most advanced countries in the world are demonstrating their inability of providing reliable and long-lasting power in emergency situations. In some instances this leads to catastrophic tragedy's such as what occurred in Japan, being the only available backup solutions today, fuel generators, became incapacitated in flooded environments. These life and death scenarios are not expected to ease, as a report from the Intergovernmental Panel on Climate Change says that global warming is going to continue causing abnormal and hazardous weather at an increased pace.

As a result, millions of families and businesses are left without power for days which brings enormous discomfort and frustration to the people and billions of dollars lost by businesses. About **3.5 million people just in the United States lose power each week¹ which costs our Nation \$80 Billion Annually².** A solution must be provided.

Altek Fuel Group, an alternative energy R&D company, has developed and introducing unique aluminum-air autonomous power supply APS 100 which also can be used as a reliable backup power solution for emergency situations.

Altek's breakthrough in chemistry and technology have made possible for aluminum, an abundant and fully recyclable metal, to be used as a fuel, more powerful than liquid fuels and natural gas, to generate electricity in Altek™ fuel cells, almost hundred times cheaper than existing similar technology.

Moreover, in the process of generating energy with **ZERO pollution** APS' fuel – Aluminum – turns into a valuable by-product - high purity aluminum hydroxide, which can be used for different industries and also is the final material for the production of new Aluminum, enabling a complete recyclable fuel solution. (See diagram below)



Unlike other methodologies, which use methanol, natural gas or other fossil fuel products, **Altek's technology will have no environmental or health side effects while generating electricity.**

Initial Product

Altek's initial product - APS 100 can be used as an autonomous electrical power source which can be easily carried around, does not require connection to the electrical grid, and can provide a consistent power supply to almost ALL types of electronic and electrical equipment separately or simultaneously for as long as necessary.

Advantages

There are significant benefits of using APS 100 over a conventional diesel generator. Firstly and most importantly, it does not require fossil fuels to operate, it is very compact, it produces only green energy and does not generate any hazardous fumes and noise and is perfectly safe for indoor use. Secondly the extra cartridges do not require any special or large space to store. APS 100, like a battery, has no moving parts which allow the fuel cell greater reliability compared to its mechanical competition.

- ***It can be installed anywhere with no restriction, right next to the user;***
- ***Components and fuel are safe, readily available and inexpensive;***
- ***Long shelf life without deterioration of power or capacity;***

Today all back up power generating technologies in the world are toxic and produce CO².

Applications

The availability of a scalable design (20W – 10kW) as offered by Altek's fuel cell technologies is in great demand from the military, municipal, commercial and non-commercial customers, for virtually unlimited applications.

Altek products will have immediate effects on millions of people around the world, in all areas where batteries and fuel generators cannot perform. Also the immediate end users of Altek's products will be hundreds of thousands of off-grid consumers, families and businesses that are frustrated by the tremendous discomfort brought on by power failures.

APS 100 can provide power during power outage and in disaster areas for a broad range of portable and small stationary applications including:

- Communications, Computers and Security systems;
- Emergency, ambulance, fire, police, rescue, and other services;
- Hospitals/Medical Offices and Portable medical equipment;
- All off-grid construction and warning equipment, (lighting for the road works, signs, etc.).

Military missions are limited by the immense weight of batteries and the severe burden they place on soldiers who carry spare batteries. Also the transportation and security of liquid fuel for remote military communication is risky and very expensive³.

Two core patents protecting Altek technology have been filed in the US. The Altek team has designed, produced and extensively tested a lab prototype which has demonstrated record specific energy over 300 Wh/kg. This is 10 times higher than lead acid, 6-8 times higher than Ni-Cd battery and 3-5 times higher than Li-ion batteries and at least **5 times less expensive than any other known fuel cell power supplies in the world.**

Altek has broken through all the essential technical barriers and has enabled fuel cells to become practicable and competitive in the energy marketplace, a phenomenon that has not been previously possible.

Why aluminum?

1. Aluminum has been a sought after source of energy and for over 50 years scientists have been attempting to unleash the extensive stored energy locked in aluminum because it has one of the highest levels available in any metal or fuel. Aluminum theoretical limit of energy is exceptionally high ~ **10.2 kilowatts hours' from 1 kg.** We can see the power of aluminum when its powder is ignited in fireworks.
2. Altek technology releases the energy stored in aluminum both efficiently (**80% efficiency** of the theoretical limit, ~ **8.100 kWh**) and economically, with fully **recyclable** byproducts and no wastes.

Altek's technology provides a unique product that currently has no contender on the market.