

EWP BatCap™

Electronic Water Purifier **An UltraCap in a battery format**

Many industries are evolving to hybrid power and backup systems such as automotive and telecommunication. The existing Lithium and Nickel based technologies can't deliver power fast enough, cheap enough and be environmentally safe. BatCap is not a chemical reaction.

Aqua developed the EWP for water purification and now the exact opposite of this makes patent pending technology available to generate power at very favorable recharge/discharge times..

How it Works

Electrodes used are made from activated carbon with an integral polymeric coating. These electrodes are layered into a cell casing like a sandwich. A DC power supply is used to charge the electrodes. The individual electrodes are charged with different polarities. The minerals in the water soluble based electrolyte solution are attracted to the electrode surface and diffuse through the polymeric coating. The mass deposited on the surface of the electrode is relational to the residual charge available

When sufficient minerals are deposited on the electrodes, the minerals are released during a regeneration step. The charge is also released—ready for useable. The discharge time is greater than the recharge time.

The power cells are put in duplex. While one is charging the other is generating power. Then the cells alternate.

Benefits

- Simple Operation
- Much Lower cost than other technologies
- No hazardous chemicals and no recharge limits
- Small physical size-modular in design
- Quick recharge
- Can perform like an Ultracap (if desired)

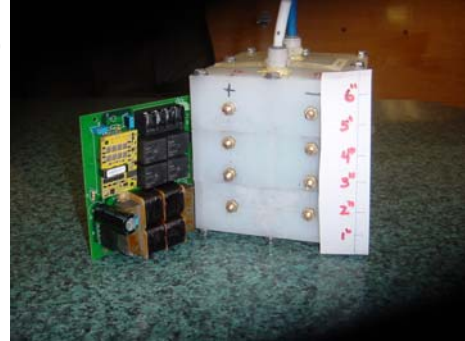
Size:

- **1.2 KW/KG @ 12 VDC (42,000 Farads)**
- **Size 6" x 8" x 8"**
- **Discharge 4 min, recharge 30 seconds**

Applications

- Hybrid power in vehicles
- Use for regenerative power from braking
- Backup power

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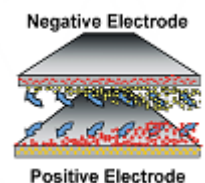


AQUA EWP



How it

When DC voltage is applied across the electrodes, mass transfer of ions in the electrolyte solutions diffuse through a semi permeable coating onto the electrode surface.

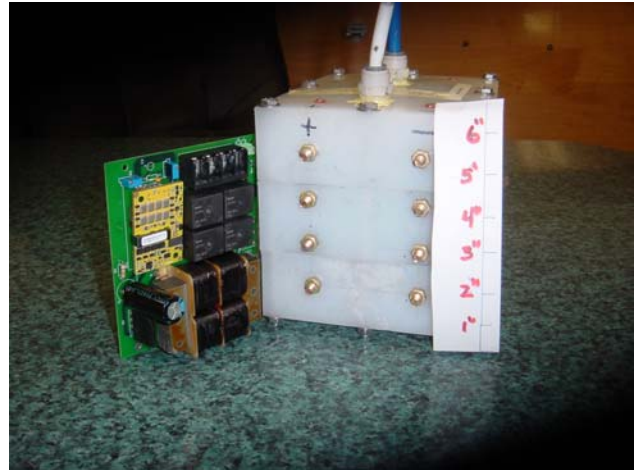


The mass deposited is proportional to the charge available. During discharge the ions release from the surface in a reversible process creating power available for use.

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Features

- More power than Lithium Hydride and Nickel Hydride per minute of use
- Over 1,000,000 duty cycles
- Average Voltage range of 12 VDC circuit —discharges at 12 VDC for 4 minutes
- Modular design for series and parallel configurations
- Fast recharge time of 30 seconds—designed for use with hybrid power recharge
- Higher power than Ultra Caps—more capacitance 42,000 farads
- Can function just like an Ultra Cap for regenerative braking
- Environmentally safe, water based electrolyte solution
- Polypropylene construction



Comparison of Key Parameters

from experimental data

Battery Technology	power density w/kg	power density w/kg/min use	energy density wh/kg	life cycles	cost \$/Wh
DOE Standard	600	3.33		5	100,000
Li ion	760	4		500	1,200 \$ 1.20
BatCap	1,100	550		750	1,000,000 \$ 0.50
Ni MH	1,000	3		600	1,500 \$ 0.60
Lead Acid	180	10		40	800 \$ 0.15