

Limited resources and unlimited usage.  
*How can we save it?*

Newsletter



**Conserve the energy,  
Save our climate!**

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Issue : 11

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## Why ???

We the people on the earth are gifted with wonderful energy sources by the nature, which has made our routine much more smother & easier... However, this gift of the nature is ' limited '. What we have done is, with the growth of science & technology, we have started using it extremely, because of which the energy resources are going to finish in near future. Hence, let us take the pledge to conserve the energy - save the energy!!!

## Tips of the Month



Insulate your wall, ceiling, floors and windows with insulations, that will keep the room temperature warm in the winter and cool in summer by keeping additional cold / heat away.

## Article - 1 : ALUMINUM-ION BATTERY

New technology developed from the scientist of California, from the researchers at UCLA's California NanoSystem Institute. A new type of aluminum-ion battery is the recent advancements in battery technology.

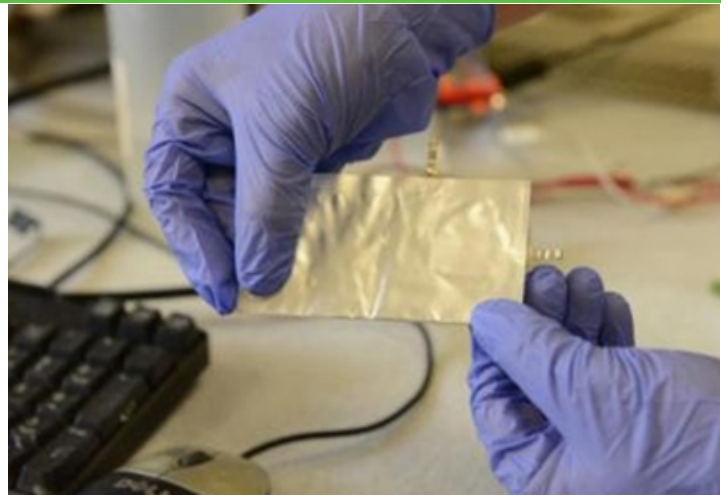
These batteries consist of an aluminum anode with a graphite cathode in a sac of ionic liquid electrolyte. Aluminum-ion battery doesn't explode or erupt into flames when damaged like lithium ion batteries. The battery prototype can withstand 7,500 charging cycles before any performance degradation sets in which is much more than the 1,000 expected from a Li-ion battery. Aluminum-ion battery can be fully recharged in roughly 60 seconds.

The cathode is made by creating metal foam, then catalyzing graphite formation on its surface and anode is made up of aluminum foil. The electrolyte used is a solution of aluminum trichloride dissolved in an organic solvent that also contained chlorine. The voltage provided by an aluminum-ion battery is only about half of that get from a lithium-ion cell.

Aluminum-ion battery produces about 2 volts which is much less than conventional lithium-ion battery which produces 3.6 volts. Aluminum-ion battery energy density is at 40 watts per kilogram which is again less than conventional lithium-ion battery whose energy density is 100 to 260 watts per kilogram.

Each leaf has a separate power converter, creating a multi converter system that makes it possible to collect energy from a variety of sources like solar, wind and heat temperature. This is the tree which can be placed both indoors or outdoors to harvest energy, stores the electricity internally until it is ready to be used.

While this current innovation of this tree won't be able to power large structures such as homes. But it is currently able to power



*\*image source: <http://www.graphene-info.com>*

small devices including smart phone, humidifier, thermometer and LED

light bulbs and other household appliances and gadgets. The flexible and patterned solar cells that make up the leaves of the tree are made using an undisclosed printing technology.

**Aluminum-ion battery has many advantages over conventional batteries. They are as follows:**

1. It is flexible
2. It can be charged in minutes instead of hours
3. It is very durable
4. It is cheaper
5. Non- reactive

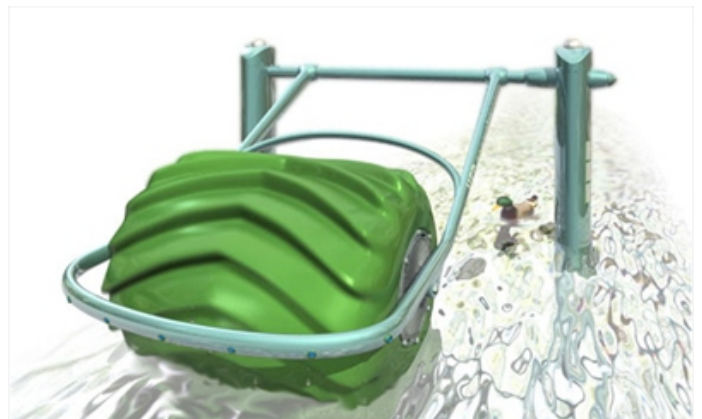
*\*source: <http://www.techspot.com/>; <http://www.graphene-info.com/>*

## Article - 2 : HYDRO-ELECTRIC BARREL

This is very green design idea to produce renewable energy that is hydro electric barrel. This is a floating waterwheel that can generate electricity when floating over a river or other flowing water in spite of the depth and speed of flow.

The exceptional chevron shaped paddle treads give the barrel the capability to rotate about its horizontal axis in fast flowing water, after that water enter and resurfacing without lifting water.

The advantage of this design is the noteworthy decrease of any down force and the taking away of the bow wave in front of the barrel as it rotates at the same speed as the flow of water, which increasing the efficiency of the machine. This may be an perfect product for todays demands for cheap renewable energy and would be a cost effective product for the pico hydroelectric or micro hydroelectric energy market. The hydro electric barrel used in both of the conditions whether it is used to produce both wave energy and energy from tidal current at the same time. The barrel rotates on the waves, rising and falling to drive both hub and linear permanent magnet generators. Energy could be produced at the same time by the tidal current rotating the barrel. Like this way hydro electric barrel produce more stable energy output being inactive only at slack tide when the surface is flat calm. This design has many advantages compared to other methods which produce hydroelectric power.



*\*Image source: <http://www.hydro-electric-barrel.com>*

Those are given below:

- Calm operation compared to conventional waterwheel.
- Easy to transport and install.
- Environmentally friendly.
- Cost effective to manufacture, low capital outlay per kilowatt. 24/7 operation unlike solar and wind.
- Easily adjusts to water level.
- If you want more power than install another HEB generator.

It can also be used for remote area power supply for battery charging, lighting, irrigation, refrigeration, monitoring.

*\*Source: <http://www.hydro-electric-barrel.com/>; <http://www.ritholtz.com/>*

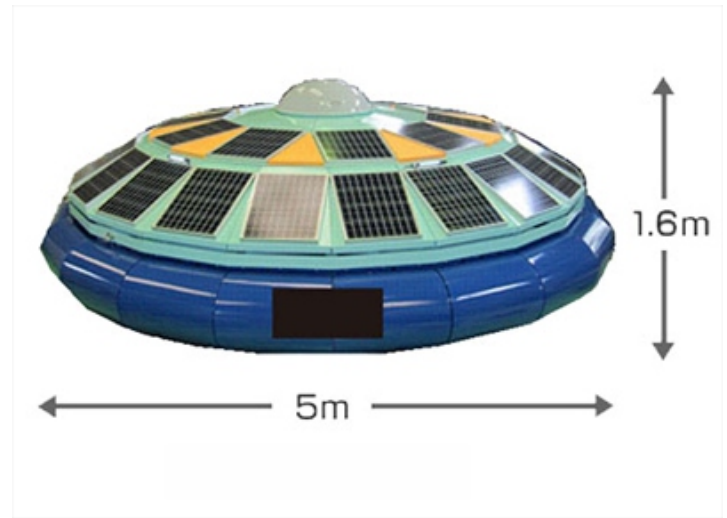
## Article - 3 : SOLAR UFO WATER CLEANERS IN OSAKA CANALS, JAPAN

Engineering firm NTT Facilities, a Tokyo-based company (part of the NTT Group) whose business includes architecture, construction planning, power supply system design, and the management of large-scale solar power plants. It has developed a pair of solar-powered, UFO-shaped floating water purifiers to purify Osaka Canals of Japan. Osaka is a canal city where the water transport has prospered since far back in history. Rivers, big and small, flow through the central part of the city.

Solar UFO water cleaners is a disc shaped machine, its weight is about 3.4 tons. It measures 1.6 meters (5 ft) tall and 5 meters (16 ft) wide. On the top solar panel array is formed to capture sunlight.

During the day, solar panels give power to the machine's filtration system which pumps fresh oxygen into the water while removing impurities. During the night, a 1.3-kilowatt solar battery provides juice to the LED lamps lining the edges of the floating craft.

This solar UFO can purify water about 9,000 liters (2,400 gallons) per day and spray out clean water out through a nozzle on top. Like fountain water is sprayed out which cools solar panel, keeps the surface clean of bird droppings and grime and helps to maintain high output efficiency.



*\*image source: <http://pinktentacle.com/2009/08/solar-ufo-water-cleaners-afloat-in-osaka-canals/>*

NTT Facilities also announced plans to deploy Solar UFOs in Tokyo-area waters in the near future.

*\*source: <http://pinktentacle.com/2009/08/solar-ufo-water-cleaners-afloat-in-osaka-canals/>*

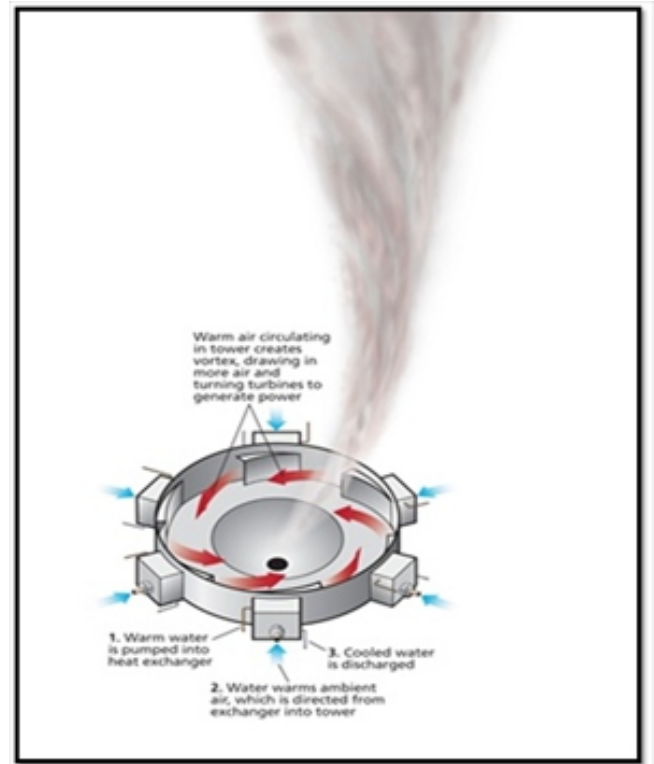
## Article - 4 : TORNADOES CREATE RENEWABLE ENERGY

Tornadoes is very destructive, but even cone shaped clouds have a silver lining. Scientists Inspired by this natural process of twisters, electrical engineer Louis Michaud of Canada's AVEtec Energy Corp. designed a nonpolluting source of swirling power calls the Atmospheric Vortex Engine. The machine can spin waste heat from power plants into functional energy.

We have never thought about this idea that this kind of renewable energy is also possible. As an alternative of converting excess heat into conventional cooling towers which are simply disperse it into the air, power plants could usher the heat into the hollow, open-topped tower of a vortex engine. A heat exchanger outside the tower transfers the extra heat (piped in as warm water) to ambient air.

When this warmed air is heading into the tower at an angle, it encounters cooler air and generates a circular current. This current cone shaped air upward into a controlled twister, whose low-pressure midpoint draws extra air into the tower, turning turbines at its base. These turbines drive a generator much like a wind turbine does. The vortex engine could produce an extra 200 megawatts of energy just by putting the excess heat to use.

At a very low cost of 3 cents per kilowatt-hour, energy generated from tornado is cheaper than burning coal (which rings up at 4 or 5 cents per kWh) on top of it with no additional greenhouse gases.



*\*Image source: <http://discovermagazine.com>*

The vortex engine could also run on heat sources other than power plants. Only you've got to have warm air, and spin. Solar heat or warm ocean waters fit the bill. If there's enough energy in warm seawater to produce a hurricane there's sufficient energy to run a vortex engine.

*\*Source: <http://discovermagazine.com>*



Conserve the Energy,  
*Save our Climate!*

**Conserve™**  
**The Energy**



It's  
**Tomorrow™**


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