



Energy Headlines

ENERGY NEWSLETTER OF MNIT, JAIPUR

Volume 7 Issue 02, April 2013

This Issue

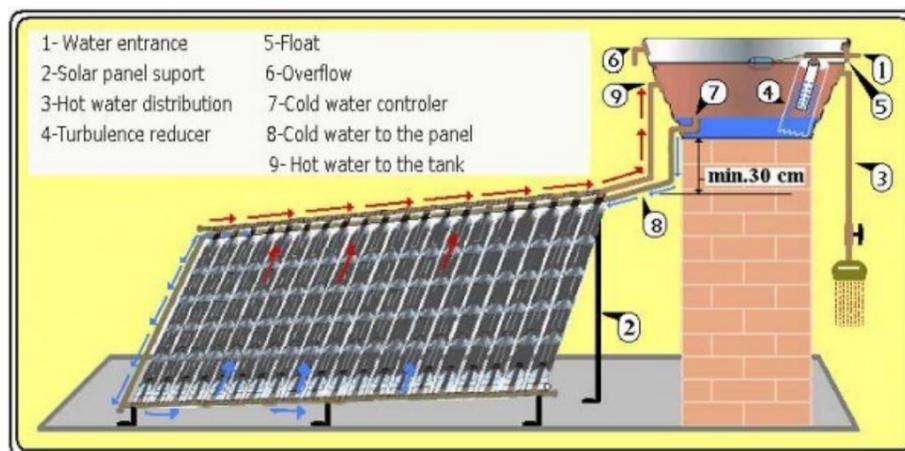
• Vegetable, Fruit or Car	P.2	• Green Roof	P.2
• Energy Harvesting Solar Ponds	P.3	• Info Graph	P.3
• Myths And Facts	P.4		

Solar Power In a Bottle

The village of Qigiao in Shaanxi Province was not offering enough in the way of home comforts to its residents. A Chinese peasant, has managed to create a solar water heater, using only beer bottles and hoses.

He invented this for his mother. He wanted her to shower at any time more comfortably. Ma Yanjun, a carpenter, has now helped more than 20 families in the village to make and install their own beer bottle solar water-heaters.

The made up-solar panel is constructed from 66 beer bottles attached to a board. Each bottle is interconnected so that the water flows through the bottle network, and as the water flows through the bottles, the sun heats it up. At the end of the network, the water is piped into the



bathroom where it emerges as hot water. Apparently enough “for all three family members to have a shower each day”.

This beer bottle solar panel has benefits pretty much like solar panels and it is very cheap also. Thereby, eliminating the need to invest hundreds of dollars.

Sending these bottles to recycling

factories would have used up a whole lot of energy and toxic gases would have been created in this process. Thus, this technique not only provides a cheap heating solution but helps manage a whole lot of waste. Additionally, it makes rooftop stand out from other house rooftops giving quite a funky look.

Source: mnn.com

THE DYNAMIC TOWER

The Dynamic Tower, designed by architect David Fisher, consists of a tubular concrete core, layered with smooth triangular floors which can move at varying speeds and so create a vast combination of different shapes. The floors will comprise more than 2,000 prefabricated steel and aluminium pods. The Dynamic Tower is environmental friendly, with the ability to generate electricity for itself. The entire skyscraper will be powered by its own fuel from wind and solar power generators.



The wind turbines will be located between two consecutive floors, while the solar panels will be placed on top of each floor and the roof. The wind turbines will be capable of producing 1,200,000 kilowatt hour of energy, and both the energy sources combined can generate enough surplus electricity to power several nearby structures. An intelligent building as such that can power itself is environmental friendly to a huge extent.

Source : ice.org.uk



Vegetable, Fruit or Car ???

It's got a steering wheel made from **carrots**, a body made from potatoes and it's powered by waste chocolate and vegetable oil. It can also go 125 miles per hour around corners. It's not just a vegetarian environmentalist's dream, it's a real competitive racing car made using environmentally sustainable components.

The project truly is a World First as the team have examined all the components of the vehicle and attempted to introduce a green and sustainable element into each aspect of the car. Components made from plants form the mainstay of the car's make up, including a race spec steering wheel derived from carrots and other root vegetables, a flax fibre and soybean oil foam racing seat, a woven flax



fibre bib, plant oil based lubricants and a bio diesel engine configured to run on fuel derived from waste chocolate and vegetable oil.

It also incorporates a radiator coated in a ground-breaking emission destroying catalyst. As original equipment manufacturers focus on decreasing engine emissions, to meet future CO2 legislation, the WorldFirst project proves that if you are going to wholeheartedly embrace the 'green is great' ethos and do more than merely posture, you have to



The Earth is fine, it is the people that are in trouble!

broaden your vision.

This must encompass a strategy that stretches throughout the chain from the raw materials to the final disposal of the car. The project clearly demonstrates that automotive environmentalism can and should be about the whole package. Project Manager, James Meredith a researcher in WMG at the University of Warwick, said "It's been very exciting working on the project and important for our team to develop a working example of a truly 'Green' motor racing car. The WorldFirst project expels the myth that performance needs to be compromised when developing the sustainable motor vehicles of the future."

Source: www.greanpeace.org

GREEN ROOF

A green roof is a special type of roof that is covered with certain types of vegetation. Green roofs have many advantages and can be installed with relative ease.

Installing a Green Roof

The first step is to place a waterproof membrane on the roof to protect it from water damage. They come in many different varieties, from asphalt to liquid membranes.

The next step is to add a concrete or cellular glass root barrier. Root barriers protect the roof from roots attempting to grow around and through it, causing costly damage.

The next step is adding a drainage layer to send excess water to the roof's gutter system. A filter fabric placed over the drainage layer serves the important function of keeping the

growing medium in place. This filter needs to be porous so that water can drain properly.

After putting all this together, it's time to place the growing medium upon the roof. This should be a mixture of sand, crushed clay, topsoil, and humus about 3 inches deep.

Now you need to install drip irrigation. Drip irrigation will save you a lot of hassle by giving the proper amount of water and fertilizer to the roots as needed.

Plants should be added next. The type of plants placed on your roof should be able to handle the climate you live in. They also need to be able to tolerate sun, wind, and frost or heat exposure. Finally, don't forget to add a wind blanket to protect your plants from erosion.



Benefits of Installing a Green Roof

Green Roofs can improve water quality by reducing nitrogen and other pollutants by filtering water. When rain falls, the growing medium stores it, and the plants filter the water so any runoff is made much cleaner. Green roofs help cool cities and mitigate the urban heat island effect and thus, have many more multiple benefits.

Source: cleantechies.com

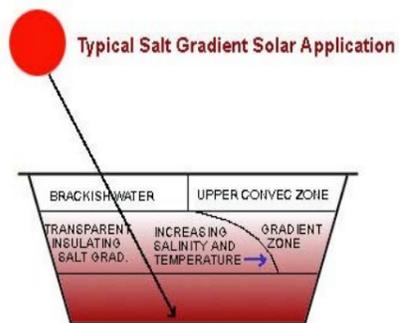


Energy Harvesting Solar Ponds

One of the better and lesser known ways of harnessing solar energy is through **solar ponds**.

A solar pond is basically a pool of water that collects and also stores solar energy. The peculiarity of the solar pond is that it has layers of salt solutions of differing concentration and thus, different densities to a certain depth. Once this depth is reached, you find water with uniform, high salt concentration. The solar pond is a relatively low tech and low cost approach for harvesting solar energy which is done very easily.

A solar pond has three layers of water where the top layer has a low salt content in it. Next comes the intermediate insulating layer that has a salt gradient and a density gradient which helps in preventing heat ex-



change with the natural convection of water. The bottom layer of the solar pond has a high salt content that reaches temperatures reaching 90 degrees Celsius. With the different densities in the water, the development of convection currents is prevented, which would have transferred heat to the surface of the pond, and then to the air above.

Thus, the heat is trapped in the salty bottom layer of the solar pond, which is used for heating of build-

Did you know?

On April 22, 1970, 20 million people across America celebrated the first Earth Day.

ings, industrial processes, generation of electricity and other purposes. In addition to the above uses, solar ponds can also be used in water desalination and for storage of thermal energy. Of date, there are two solar ponds functioning; one in Bhuj, Gujarat, India and the other in the University of Texas El Paso.

The greatest advantage of using a solar pond lies in the fact that it has a low cost per unit area of collection and also an inherent capacity for storage purposes. In addition, it is possible to easily construct solar ponds over large areas with which it is possible for the diffusion of solar resources to get concentrated on a grand scale.

Source: thinksolarenergy.net

GLOBAL INVESTMENT IN

CLEAN ENERGY

BETWEEN 2005 AND 2009, CLEAN ENERGY INVESTMENTS INCREASED 230% GLOBALLY.

SOURCES

<http://www.pewtrusts.org/> "Global warming/G-20 Report"
<http://www.ren21.net/> "Renewable Global Status Report 2010"
<http://www.worldenergyoutlook.org/>

TOP COUNTRIES IN CLEAN ENERGY INVESTMENT

CLEAN ENERGY INVESTMENT AS A PERCENTAGE OF GDP



ESTIMATED \$200 BILLION TO BE INVESTED IN 2010 IN ENERGY, CLIMATE AND JOBS.

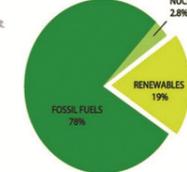
Relative to the size of its economy, the U.S. clean energy finance and investments lag behind many of its G-20 partners.

Spain invested 5 times more than the U.S. last year, and China, Brazil and the UK invested 3x more.

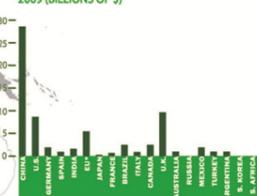
NEW TECHNOLOGY AND DECLINING SOLAR ENERGY PRICES POSITION THE SOLAR SECTOR FOR SIGNIFICANT GROWTH.

RENEWABLE ENERGY 2008

SHARE OF GLOBAL ENERGY CONSUMPTION



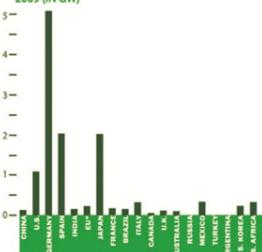
INVESTMENT IN WIND ENERGY 2009 (BILLIONS OF \$)



INVESTMENT IN SOLAR ENERGY 2009 (BILLIONS OF \$)



INSTALLED SOLAR CAPACITY 2009 (IN GW)



WIND AND SOLAR LEAD INVESTMENTS. WIND ENERGY ACCOUNTS FOR MORE THAN 50% OF WORLDWIDE CLEAN ENERGY CAPACITY.

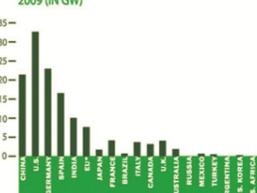
FIVE YEAR GROWTH IN INVESTMENT

1. Turkey	178%
2. Brazil	148%
3. China	148%
4. U.K.	127%
5. Italy	111%
6. U.S.	103%
7. France	98%
8. Indonesia	95%
9. Mexico	92%
10. EU*	87%

TOP 10 IN CLEAN ENERGY INVESTMENT

1. China	\$34.6 billion
2. U.S.	\$18.6 billion
3. U.K.	\$11.2 billion
4. EU*	\$10.8 billion
5. Spain	\$10.4 billion
6. Brazil	\$7.4 billion
7. Germany	\$4.3 billion
8. Canada	\$3.3 billion
9. Italy	\$2.6 billion
10. India	\$2.3 billion

INSTALLED WIND CAPACITY 2009 (IN GW)



ALTERNATIVE ENERGY : MYTHS AND FACTS ABOUT GREEN BUILDINGS

Myth: Green building is only for environmentalists. .

Fact: Green building is for everyone – from using low-VOC paint and installing sustainable floors, to designing with recycled materials, it's easy to find green materials to incorporate into your home or business.

Myth: Green building is more expensive than conventional building.

Fact: While some sustainable materials are more expensive than others, overall using green building materials will lower your maintenance and utility costs and give you a comparatively much greater return on investment. Plus you know that it's a wise choice for the planet too.



Myth: Green products are hard to find.

Fact: Green products are readily available in specialty stores and big-box home improvement stores. A little Internet research will return a wide range of sustainable solutions. Additionally, your contractor can help you source green products for your project.

Myth: Green buildings' energy savings are more hype than reality.

Fact: The truth is that mainstream green building certification systems such as LEED, Built Green Canada, and Green Globes all reward strategies that lower energy demand, while next-generation standards such as Passivhaus and Living Buildings are whittling building energy use very close to zero.

Myth: LEED is used by developers for promotional purposes only.

Fact: The vast majority of LEED projects is in the private sector and receives no incentive to pursue LEED, yet they choose to do so repeatedly because LEED saves money and results in better building.

COMIC SENSE

FOSSIL FOOLS



How Green



Are You?

QUIZ TIME

Best 2 entries will win exciting prizes

Q1. What is ISO 14000, its key requirements and what can be done to make our campus ISO 14000 compliance?

Q2. What are Euro-4 standards and name a few common Euro-4 cars?

Last date to submit your answers : May 20th, 2013

Winners of Last Quiz

Sheshnag C S	II sem.	Renewable Energy (M.Tech)
Bhupesh Yadav	VI sem.	Mechanical Engg. (B.Tech)

As the year draws near, we bid farewell to our beloved seniors Anshul Sharma, Ankur Kumar, Shubham Khandelwal, Sahil Dave, Soumya Mukherjee.

Wishing you great success in all the avenues of life.

credits

Navdeep Agarwal	(3 rd Yr. Mechanical Engg.)
Ibrahim Katthawala	(3 rd Yr. Mechanical Engg.)
Anshuman	(2 nd Yr. Mechanical Engg.)
Dherya Mehta	(2 nd Yr. Architecture)
Ankush Mittal	(2 nd Yr. Electronics Engg.)
Kuldeep Singh Bhati	(2 nd Yr. Chemical Engg.)
Dr.-Ing. Jyotirmay Mathur,	
Head, Centre for Energy and Environment	

Disclaimer: This newsletter is for internal circulation within MNIT . All information/articles have been compiled from newspapers, technical magazines and other sources.

For quiz answers, suggestions, feedback, and any other article you want to read on some particular topic or want us to publish in our reader's column then mail us to mnit.energyheadlines@gmail.com or write to us on our blog <http://theehblogmnit.blogspot.com>

Also follow us on our facebook page <https://www.facebook.com/EH.MNITJaipur.in?ref=ts&sk=wall>

