



ENERGY HEADLINES



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Quotes

"Conservation of energy also protects our environment."

- Lamar S. Smith

"Nature provides a free lunch, but only if we control our appetites."

-William Ruckelshaus

In the Desert, harnessing the Power of the Sun by Capturing Heat instead of Light

Scientists have struggled for years to make electricity from the sun's light at a cost competitive with power from coal or natural gas. The challenges are formidable. But now they are close, using the sun's heat instead.

Acciona Energy, a Spanish company, has opened a solar thermal installation spread across 400 acres of desert outside Boulder City, Nev., 25 miles southwest of Las Vegas. Called Nevada Solar One, it has 47 miles of trough-shaped mirrors, lined up in rows. Producing 64 megawatts, it is many times larger than the largest photovoltaic installations, which use the cells that are found in everything from rooftop panels to pocket calculators.

Acciona will not disclose the production costs at the thermal plant, which was subsidized by the Energy Department. But according to the Solar Energy Industries Association, representing manufacturers of both photovoltaic and solar thermal systems, power from solar thermal electricity costs 12 to 14 cents a kilowatt-hour to produce, while power from solar cells costs 18 to 40 cents a kilowatt-hour. The national average retail price of electricity is about 10.5 cents a kilowatt-hour.

Photovoltaic cells, first made practical for the space program, are falling in price, but so are the thermal systems, which focus sunlight on a fluid-filled pipe to collect the heat. The heated fluid runs through the pipes to a central power block, where it flows through a network of pipes bathed in ordinary water. The water is boiled and the steam drives a turbine, as in coal plants. But a typical coal-burning plant produces about 600 megawatts, roughly 10 times more than Nevada Solar One does.

Source: www.nytimes.com

India to implement Pilot Project on Renewable Energy in Egypt

India will implement a pilot project on renewable energy in Egypt to enhance bilateral cooperation and encourage the Indian private sector to participate in developing wind and solar energy sectors in the country. The two sides also signed a MoU during the visit by the minister of New and Renewable energy, Farooq Abdullah. He said partnership with Egypt in renewable energy is win-win situation.

Abdullah, who is on a visit to the country from January 19 to 23 at the invitation of Egypt's Minister of Electricity and Energy Hassan Younes, is accompanied by a 14-member strong business delegation consisting of top companies engaged in wind and solar energy fields. Indian Ambassador to Egypt R Swaminathan said that the MoU includes training programmes, local manufacturing of equipment as well as exchanging information, policy formulation and joint research and development. The further aim is to encourage the Indian private sector to participate in Egypt's program of achieving 20% of its energy from renewable energy sources by the year 2020," Swaminathan said. The pilot project in renewable energy will be implemented in an Egyptian village. The project is to be equally funded by both sides. Abdullah said Egypt has the unique distinction of being the centre of Africa, Europe and the Arab countries. Thus it can easily export excess energy to other countries, he said.

Source: www.hindustantimes.com

World Future Energy Summit 2011 concludes with record attendee levels

The fourth World Future Energy Summit (WFES) 2011 concluded in Abu Dhabi between Jan 17 -20 , 2011 following four days of high level summit debate from international leaders and experts, and two exhibitions showcasing the latest technologies and innovations in renewable energy and environment. This year's summit attracted record levels of attendance, with over 26,000 attendees from 137 countries over the course of the four days. Additionally over 2,500 school and university students from across the UAE were given insights into the future of renewable energy through guided tours of the exhibition during the course of the event. The attendees included 3,150 international dignitaries, delegates, members of media and participants who attended the Opening Ceremony on Day One, which opened with a keynote address from HE Ban Ki-Moon, Secretary General, United Nations.

Source: www.worldfutureenergysummit.com

MIT launches Contest to fire up Energy Entrepreneurs

The Massachusetts Institute of Technology is kicking off a competition to award \$200,000 to entrepreneurs in the green-energy field. The MIT Clean Energy Entrepreneurship Prize combines two existing prizes and increases the prize money.

The revamped contest pulls in sponsorship from the U.S. Department of Energy and NStar, an electric and gas utility based in Massachusetts. In addition to receiving cash or services, competitors will also get mentoring from experts as they develop their business plans. Sponsors hope the competition will accelerate the pace of innovation and energy.

In the past three years, there has been an avalanche of venture capital money into clean tech businesses, with solar and biofuels attracting the most investment. But the field is still trying to pull in a steady flow of entrepreneurs and experienced business managers, with many people trying to make the jump from the IT industry to clean energy. The new contest combines what were formerly known as the MIT \$100K Business Plan Competition and the Ignite Clean Energy Competition. The contest begins February 15 on MIT's campus in Cambridge, Mass. In addition to the grand prize, there will be three secondary prizes of \$20,000 each.

Source: news.cnet.com

Energy Standards needed, says McKinsey

Energy saving opportunities in American homes are immense with current technology, but new product standard mandates will be needed, according to a study by the McKinsey Global Institute. The research group's study, concludes that projected electricity consumption in residential buildings in the United States in 2020 could be reduced by more than a third if compact fluorescent light bulbs and an array of other high-efficiency options including water heaters, kitchen appliances, room-insulation materials and standby power were adopted across the nation.

The energy saving over that time, if achieved, would be equivalent to the production from 110 new coal-fired 600-megawatt power plants, the researchers estimate. Yet market forces alone, even considerably higher energy prices, will not be enough to cause wholesale adoption of the most energy-efficient technology, the report said.

"The study makes a strong case for what economists tend to shy away from — market intervention," said Diana Farrell, director of the institute, the economics research arm of the consulting firm McKinsey & Company. "But this would be market intervention to correct market distortions that exist."

Such distortions, result from individuals lacking adequate information to make the best decisions or the market's failure to encourage individuals to make energy-efficient investments. "Everyone would be better off if the capital investments were made," Ms. Farrell said. "But the individual parties do not have the incentives to make the needed investments."

The solution, the McKinsey report suggested, is more stringent product standards so that all new appliances are energy-efficient models.

The McKinsey policy prescriptions resemble the California model. Starting in the 1970s, the state began imposing requirements for appliances and building materials, among other energy-saving measures.

The new study is a more detailed examination by country and industry sector, where energy savings can be achieved and how large the savings may be. Residential buildings in the United States, the largest single energy-consuming group worldwide, are one of a few categories that McKinsey pointed to as policy priorities for making sizable savings.

Source: www.nytimes.com

DID YOU KNOW?

Anaconda: Wave Energy Converter

Snakes are typically associated with horror movies, snake charmers and energetic men showing off their talents for handling various poisonous reptiles on television but it was the shape of a snake that spurred the idea for a unique wave energy system—the 'Anaconda'.

This rubber snake rolls over ocean currents, with an almost soothing motion, absorbing the natural energy created from each passing wave. The 200 meter long Anaconda device is designed to sit in 40 to 100 meter deep water. The velocity of the bulge wave in the tube and the waves in the sea is the same; then the wave energy is transferred gradually to the tube. At the bow, the wave squeezes the tube and starts a bulge running. As it runs the wave runs after it, squeezing more and more, so the bulge gets bigger and bigger. In effect the bulge is surfing on the front of the wave.

At 4 cents per kWh, this Anaconda made from cheap materials like rubber and plastic is relatively affordable to make and easy to install.

Source: www.ecoworld.com

Anaconda generates around 1MW of electricity per year—enough to power around 2000 homes.

New High Mileage Carburetors to reduce pollutants by 80%

For those who are still driving petroleum fuelled automobiles, Paul Pantone of Global Environmental Energy Technologies (GEET) has developed a vapor based fuel carburetion system which reduces pollutants by 80% and doubles to triples the mileage or efficiency of internal combustion engines (thereby reducing pollution even more than 80%). The GEET fuel processor is a replacement for the standard carburetor on internal combustion engines. Utilizing the engines vacuum pressures it draws fuel vapors into a proprietary chamber where the vapors are preheated by exhaust temperatures. One test was performed at Brigham Young University using crude oil as a fuel. They detected 39 known elements entering the chamber and only 13 elements were measured on the output of the chamber. This test, coupled with Paul Pantone's report of a strong magnetic field surrounding the chamber, is exciting evidence pointing toward transformation at an atomic level. In addition, GEET equipped engines run so clean and carbon free, it is anticipated that engines will last at least twice as long.

Source: www.garyawake.com

Profile of Energy Company: First Solar



First Solar is the world's leading manufacturer of thin film photovoltaic (PV) modules, or solar panels, which convert sunlight to electricity at a lower cost than other types of modules. Using cadmium telluride (CdTe) as a semiconductor instead of the more common crystalline silicon, First Solar's modules are more economical and productive in a variety of temperature and light conditions. In some laboratory testing, PV modules with CdTe technology have been shown to be somewhat less efficient at converting light to electricity, but in field performance comparisons they perform as well or better than silicon-based modules.

Headquarters -Tempe, Arizona, U.S.

Key people -Robert J. Gillette, CEO

Revenue -US\$ 2,07 Billion

Operating income -US\$ 679.6 Million

Total assets- US\$ 3.35 Billion

Employees -4,700 (2010)

Technology

First Solar manufactures cadmium telluride (CdTe)-based photovoltaic (PV) modules, which produce electricity with a thin CdTe film on glass. The company recently reached an average conversion efficiency of more than 11 percent; CdTe technology is the most environmentally friendly of current PV technologies.

77 cent is the manufacturing cost per watt

Market performance

According to the company's financial reporting, it earned \$640.1 million, or \$7.53 per share, in fiscal year 2009. It appears to be on track to exceed those numbers in fiscal year 2010, having earned \$508 million through the close of the third quarter. First Solar's use of cadmium telluride instead of silicon has allowed it to achieve a significantly lower price point, especially compared to crystalline-silicon PV which averages \$1.85 per watt.

Facts & Figures

- Formed in 1999 and launched production of commercial products in 2002.
- Achieved the lowest manufacturing cost per watt in the industry, breaking \$1 per watt in 2008.
- First Solar will bring total expected capacity to more than 1.4GW by the end of 2010.
- Attained the smallest carbon footprint and fastest energy payback time of any PV technology on the market.
- Developed the first comprehensive, prefunded module collection and recycling program in the PV industry.

Source: www.firstsolar.com

Solar Wind Power: Generating Power In The Future

As the world discovers new ways to meet its growing energy needs, energy generated from Sun, which is better known as solar power and energy generated from wind called the wind power are being considered as a means of generating power. Though these two sources of energy have attracted the scientists for a very long time, they are not able to decide, which of the two is a better source to generate power. Now scientists are looking at a third option as well. Scientists at Washington State University have now combined solar power and wind power to produce enormous energy called the solar wind power, which will satisfy all energy requirements of human kind.

How does the solar wind power technology work?

The satellite launched to tap solar wind power, instead of working like a wind mill, where a blade attached to the turbine is physically rotated to generate electricity, would use charged copper wire for capturing electrons zooming away from the sun at several hundred kilometers per second.

Advantages of solar wind power

- 1)The scientists say that whereas the entire energy generated from solar wind will not be able to reach the planet for consumption as a lot of energy generated by the satellite has to be pumped back to copper wire to create the electron-harvesting magnetic field, yet the amount that reaches earth is more than sufficient to fulfill the needs of entire human, irrespective of the environment condition.
- 2)Moreover, the team of scientists at Washington State University hopes that it can generate 1 billion gigawatts of power by using a massive 8,400-kilometer-wide solar sail to harvest the power in solar wind.
- 3)According to the team at Washington State University, 1000 homes can be lit by generating enough power for them with the help of 300 meters (984 feet) of copper wire, which is attached to a two-meter-wide (6.6-foot-wide) receiver and a 10-meter (32.8-foot) sail.
- 4)One billion gigawatts of power could also be generated by a satellite having 1,000-meter (3,280-foot) cable with a sail 8,400 kilometers (5,220 miles) across, which are placed at roughly the same orbit.
- 5)The scientists feel that if some of the practical issues are solved, Solar wind power will generate the amount of power that no one including the scientists working to find new means of generating power ever expected.

Disadvantages of solar wind power

But despite the fact that Solar wind power will solve almost all the problems that we were to face in future due to power generating resources getting exhausted, it has some disadvantages as well. These may include:

- 1)Brooks Harrop, the co-author of the journal paper says that while scientists are keen to tap solar wind to generate power, they also need to keep provisions for engineering difficulties and these engineering difficulties will have to be solved before satellites to tap solar wind power are deployed.
- 2)The distance between the satellite and earth will be so huge that as the laser beam travels millions of miles, it makes even the tightest laser beam spread out and lose most of the energy. To solve this problem, a more focused laser is needed.
- 3)Even if these laser beams reach our satellites, it is very doubtful that our satellites in their present form will be able to tap them. As Greg Howes, a scientist at the University of Iowa puts it, "The energy is there but to tap that energy from solar wind, we require big satellites. There may be practical constraints in this."

Source: www.alternative-energy-news.info

Imagining a New Skin that's able to repel Ice

De-icing aircraft with chemicals is expensive, environmentally unfriendly and time-consuming, as stranded passengers during winter blizzards may be well aware. For the last decade researchers have been exploring the possibility of building planes with hydrophobic, or water-repellent, materials that would not require de-icing.

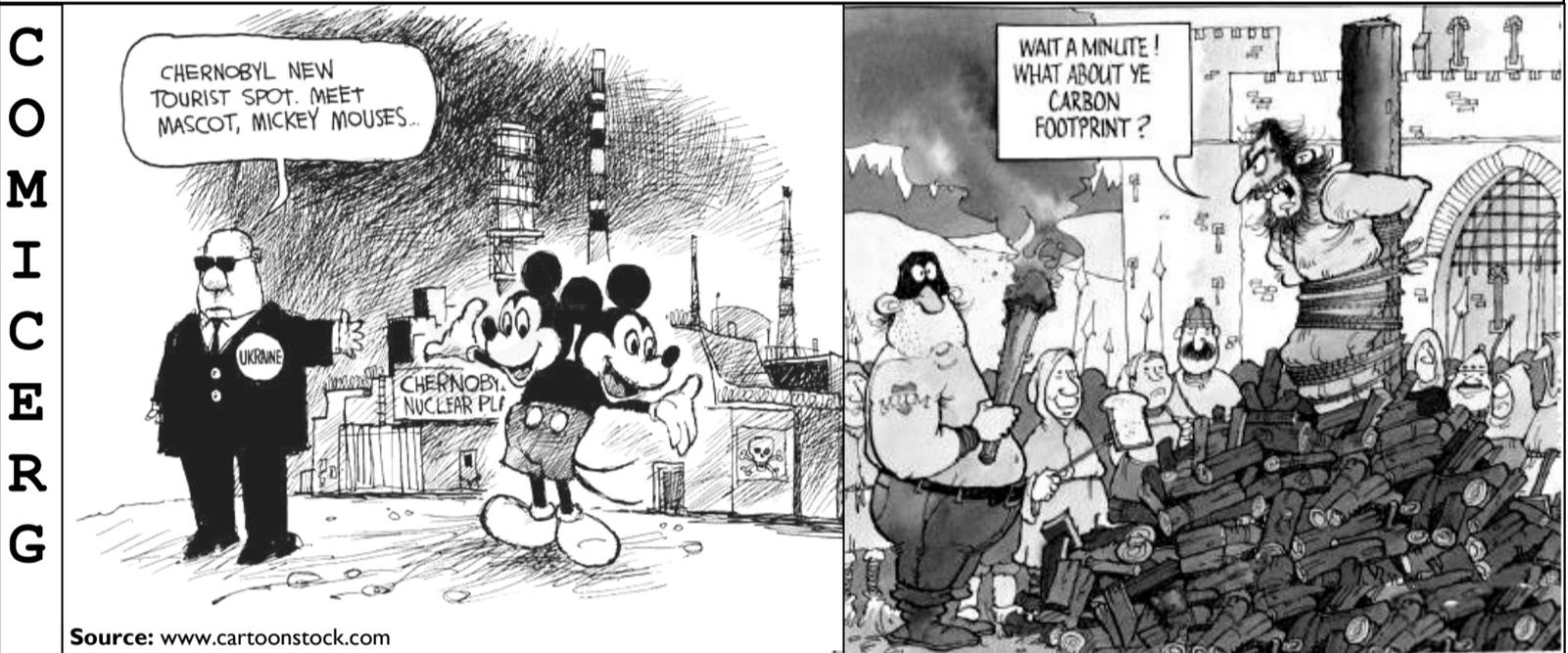
But now, researchers from M.I.T. report that this approach is flawed. Although a surface might be water-repellent, it may not be ice or frost-repellent. "Water can go directly from a vapor stage to a solid state," said Kripa Varanasi the study's lead author and a professor of mechanical engineering at M.I.T. "When ice forms this way — typically called frost — on a super hydrophobic surface it can pretty much coat up the entire surface."

The result is a surface covered in frost that is no longer hydrophobic, but incredibly hydrophilic, or water-attracting, he said.

Dr. Varanasi believes that frost build up can be better controlled by creating a surface with nanoscale texturing.

The technology would have applications outside aviation as well. Wind turbines tend to collect large amounts of ice and aside from introducing significant drag and reducing performance, a spinning turbine can hurl out large chunks of ice that can cause serious damage. The real challenge lies in creating an ideal texture that deflects unwanted frost formation and is also durable and scalable, Dr. Varanasi said.

Source: www.nytimes.com



Source: www.cartoonstock.com

Conferences Alert

MIT Energy Conference

website: <http://www.mitenergyconference.com>

Date: March 4-5, 2011

Location: Boston, USA

Renewable Energy Integration and Development

website: http://www.marcusevansch.com/ca_renew

Date: March 23-24, 2011

Location: San Francisco, USA

National Conference on Sustainable Development in Energy Sector

website: <http://upes.ac.in/events.aspx?id=16>

Date: April 8-9, 2011

Location: Dehradun, India

Solar Energy and Environment

website: <http://www.sinergie-afrique.com>

Date: April 27-30, 2011

Location: Dakar, Senegal

Conference on Wind Energy and Wildlife Impacts

website: <http://www.futurelightingevent.com>

Date: May 2-5, 2011

Location: Trondheim, Norway

QUIZ

1. Where is the world's largest photovoltaic park located ?
2. Who is the founder of Solar Light Electric Company (SELCO)?
3. 'World Energy Outlook' is published by which international Agency ?
4. How many countries are currently member of 'Organization of the Petroleum Exporting Countries'?

Send your entries to mnit.energyheadlines@gmail.com

Answers to the Quiz in Volume 3 Issue 6

1) Farrington Daniels 2) ABB, Norway 3) Portugal 4) India

We received a lot of correct entries. Following are the first three correct entries.

Binod Koirala M.Sc., Germany (MNIT Alumnus)
 Shivani Raina 4th Year, MNIT
 M. Amit Kumar 4th Year, MNIT

Editorial Board- Dr. -Ing. Jyotirmay Mathur (Mech. Dept.), Pritam Biswas (8th Sem Elect Engg), Punit Lohani (8th Sem Mech Engg), Saurabh Mittal (6th Sem Mech Engg), Abhishek Porwal (4th Sem, Elect Engg), Shubham Khandelwal (4th sem Mech Engg)

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