



ENERGY HEADLINES



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Quotes

"Just as your car runs more smoothly and requires less energy to go faster and farther when the wheels are in perfect alignment, you perform better when your thoughts, feelings, emotions, goals, and values are in balance."

-Brian Tracy

Boeing taps hydrogen for Phantom Eye UAV

The Phantom Eye, an unmanned aerial vehicle Boeing's Phantom Works division, is expected to make its first flight early next year. Boeing is pitching the demonstrator UAV as a "first of its kind" aircraft that "could open up a whole new market in collecting data and communications." A decade into the 21st century, surveillance drones are nothing new considering the now long-running successes of aircraft such as the Predator and the Global Hawk. What sets the Phantom Eye apart is the hydrogen propulsion system. The hydrogen propulsion system will be the key to Phantom Eye's success. It is very efficient and offers great fuel economy, and its only byproduct is water, so it's also a 'green' aircraft. This look at the Phantom Eye includes the full wingspan, plus an unmounted engine nacelle with propeller. But the propeller-driven Phantom Eye is no muscle plane. It'll have a pair of 150-horsepower, 2.3-liter, and four-cylinder engines. Boeing says the UAV, with a 150-foot wingspan, will be able to cruise at about 150 knots and carry a payload of up to 450 pounds. It is expected to fly at an altitude of 65,000 feet for up to four days. The initial flight in early 2011, however, is expected to last only about four to eight hours. Between now and then it will undergo a series of ground and taxi tests. That flying-wing design, which uses a turbo-fan engine and is expected to fly at, better than 600 miles per hour, is set to make its debut flight in December.

Source: www.nytimes.com

Silicene: It Could Be The New Graphene

The hottest celebrity in the world of nanomaterials may soon face a new rival. Inspired by the Nobel Prize-winning creation of the carbon material known as graphene, physicists have now created atom-thin sheets of carbon's big brother, silicon. Silicon shares many properties with carbon, which sits just above silicon on the periodic table. In 2007 at Wright State University in Dayton, Ohio, it was proposed that silicon could exist in flat sheets similar to graphene, even though silicon doesn't naturally form the kind of atomic bonds needed to accomplish this. They coined the new term for this material: Silicene.

Silicon has the advantage of being more integratable in today's electronics. The semiconductor industry has spent decades building the infrastructure needed to manipulate silicon to create the chips that run modern electronics. The Japanese colleagues grew a thin layer of silicon on top of the ceramic material zirconium diboride. X-rays shined on this thin layer of silicon revealed a honeycomb of hexagons similar to the structure of graphene. Last year, the first-ever silicene ribbons were created. As described these 1.6-nanometer wide stripes of honeycombed atoms, grown on top of silver, in the June 28 *Applied Physics Letters*. These ribbons can be more than a hundred nanometers long, perhaps micrometers.

New data, also presented at the physical society meeting, suggests that silicene and graphene share not only a similar structure, but possibly similar electronic properties. Spectroscopic techniques provided evidence that silicene contains a Dirac cone — the entity that intrigues scientists because it allows electrons to move very quickly through graphene, which makes graphene a promising material for flexible electronics. To prove silicene's worth, though, we will need to grow it not on silver — which, as an electrical conductor can interfere with the movement of electrons in the single-layer silicon — but on an insulating material. On an insulating platform, physicists will be able to do direct tests of the material's electronic properties and experiments to determine whether the same quantum effects that make graphene so remarkable are at work. For silicene to compete with graphene in the long run, however, the process of creating it must be comparably simple. Graphene really took off in 2004 because it was so easy to make. Competing with graphene in this regard won't be easy: The Russian scientists who first made graphene in 2004 — and won the 2010 Nobel Prize in Physics for their efforts — did it using only a piece of Scotch tape and a chunk of graphite similar to pencil lead.

Source: www.alternativeenergybase.com

Portland Roofs are Going Green

Portland, Oregon has a well-deserved reputation as a “green” city that actively promotes sustainable living practices, but it’s not just good public transportation and miles of bike lanes that make Portland green. This Northwest city is also a national leader in the use of green roofs (also called eco-roofs or planted roofs) to create a more livable urban environment. Portland got its first green roof in 1996, when Tom Liptan, an eco-roof expert for the Bureau of Environmental Services, topped his garage with a green roof. Today, Portland has hundreds of green roofs that cover about 19 acres of rooftops, and the city plans to add another 43 acres of green roofs in the next five years. Portland offers a number of incentives to encourage homeowners, local businesses and developers to install green roofs on their structures. Many of Portland’s green roofs are on private residences and office buildings. Others are on public buildings such as the Central Multnomah County Library in downtown Portland and the Native American Student and Community Center at the south end of the Portland State University campus, and are open to people in need of an oasis in the city—and who isn’t? The Multnomah County Building, for example, has a 12,000 square foot green roof that offers a 180-degree view of downtown Portland from a sky-high garden of lupine, iris, daffodil, lavender and other wildflowers.
Source: news.cnet.com

China leads the world in clean energy investment

China has surpassed the United States to become the world's leader in so-called "clean energy" investments, according to a report by The Pew Charitable Trusts. The report defines wind power, solar power and biofuels as clean energy sources and analyzes the investment in these technologies by G-20 nations. The G-20 accounts for 90 percent of all investments in such technologies worldwide. With \$34.6 billion in investments in 2009, China surpassed the United States by more than \$15 billion, accounting for 30.5 percent of G-20 investment in renewable power. A full 71.1% of this investment went to wind power. Although only 8 percent of China's renewable energy spending went into solar power, it has already become the world's largest producer of solar panels. Coming in a distant second, the United States invested \$18.6 billion in renewable energy in 2009, accounting for 16.4 percent of the G-20 total. Along with Brazil, it was one of only two G-20 countries still investing significantly in biofuels, which the report notes have declined in popularity since the food shortages of 2006-07. A full 43.1 percent of U.S. renewable energy investments went to wind power. Although the United States still leads the world in research and development of renewable energy technology, it has fallen behind in manufacturing. The United Kingdom, the European Union and Spain came in third and fourth, investing \$11.2 billion and \$10.8 billion. While both of these nations invested primarily in wind, fifth-place Spain (\$10.4 billion investment) focused its spending primarily on solar, with wind coming in second. The only Latin American country on the list, Brazil came in sixth. Germany ranked seventh, with splitting its \$4.3 billion investment primarily between solar (44.3%) and wind power (31.2%). Canada came in eighth and Italy came in ninth, with both nations focusing on wind power. In tenth place, India spent \$2.3 billion on renewable technologies, accounting for 2 percent of G-20 spending.
Source: www.nytimes.com

Eco Gift Ideas are Kind to the Environment

Our planet is slowly being smothered by manufactured plastic bottles, bags and packaging. People are becoming more conscious about the damage that is being caused to the environment, and they are slowly starting to realize that simply throwing something in the trash can or flushing it away is not really getting rid of the problem. This year, consider buying gifts that are made from recycled materials or biodegradable products.

Bamboo Clothing

T-shirts, shorts and baby clothes made from bamboo fabric are becoming quite popular and even teenagers will be impressed with some of the trendy designs available. Clothing made from bamboo fibers is said to be cooler than cotton and helps counter body odor, eczema, allergies and/or sensitive skin. Bamboo clothing is reasonably priced and makes a sustainable, environmentally friendly gift.

Eco Friendly Jewelry

Look out for necklaces, bracelets and earrings made by disadvantaged communities out of recycled materials such as tin and natural products such as coconuts and driftwood. If you have the time and a creative flair, consider making some hand crafted pieces yourself.

Natural Soaps, Shampoos and Fragrances

When it comes to bathroom products, stay away from products containing emulsifiers and chemicals. Buying products with natural ingredients is thoughtful and will certainly be kinder to the environment as well. Shop online to find great natural products which are becoming more readily available and more reasonably priced these days. Once again if there is time, consider making some natural soaps and fragrances yourself - it is not complicated and you can really personalize a gift this way.
Source: www.ecoworld.com

Beyond batteries: laptops to be powered by solar power, micro fuel cells

The future of portable power for notebook computers is fast approaching, and it looks promising: batteries will soon be augmented or replaced by more exotic power systems. The two most promising candidates are solar power and micro fuel cells. Solar cells are seeing a major breakthrough with the ability to print flexible sheets of solar panel material that can be folded like maps or wrapped around other objects (like your notebook). No longer will solar technology be large, heavy and clunky. Micro fuel cells are also seeing technology breakthroughs even before first-generation fuel cells have appeared on the market. Compared to batteries, micro fuel cells offer extraordinary advantages: 1/20th the weight while delivering as much as ten times the power. So which technology is better? Solar power wins this designation, since it's free, renewable and clean. But solar power isn't always available, especially if you're working indoors or during evening hours. Micro fuel cells offer portable power anytime, anywhere, albeit at a fixed price per watt: the more power you use, the more you have to pay. In the end, a hybrid approach seems to be the best: charge your notebook computer with free sunlight when available, but run on fuel cells the rest of the time. Of course, having both power systems in a notebook computer will increase the base cost of the unit, so that's yet another cost penalty for upgrading to modern power technology. But if you're like most notebook computer users, you'll appreciate the 10 - 12 hours of uninterrupted notebook uptime, even if it costs you 25% more than today's notebook computers.
Source: www.naturalnews.com

Profile of Energy Company: PetroChina



PetroChina

PetroChina Company Limited is a Chinese oil company and is the listed arm of state-owned China National Petroleum Corporation (CNPC). It is China's biggest oil producer and is the world's most valuable company by market value as of September 28th 2010. Traded in Hong Kong and New York, the mainland enterprise announced its plans to issue stock in Shanghai in November 2007, and following its debut on the Shanghai index, its market value tripled, making PetroChina the first company to reach a trillion dollar market capitalization.

Headquarters - Dongcheng District, Beijing

Operating income -US\$ 24.3 billion

Key people -Zhou Jiping, CEO

Total assets- US\$ 175 billion

Revenue -US\$ 157 billion

Employees -539,168 (2008)

History

PetroChina was established as a joint stock company with limited liabilities under the Company Law of the People's Republic of China (the PRC) on November 5, 1999, as part of the restructuring of CNPC. In the restructuring, CNPC injected into PetroChina most of the assets and liabilities of CNPC relating to its exploration and production, refining and marketing, chemicals and natural gas businesses. The corporate logos of PetroChina and its parent company CNPC strongly resemble that of the British and American oil companies operated under the Shell name. Although PetroChina is the most profitable company in Asia, this success may be the result of corporate management, but can also be attributed to the near duopoly on the wholesale and retail business of oil products it shares with Sinopec in China.

PetroChina's Dushanzi District refinery is China's largest refinery with annual capacity of 10 million tons of oil and 1 million tons of ethylene.

“The Western Gas to the East” Pipeline Project

Another major controversial issue is PetroChina's development in gas reserves in Tarim Basins, Xinjiang. It is now constructing a pipeline across Tibet to Gansu province in China, eventually lead to Shanghai. It is argued that such a project might pose a threat to the environment, as the construction of the pipeline might affect the wildlife in the regions where it runs through. Also, the exiled Tibetan government argued that such project is part of China's strategy to consolidate political control of the Western Regions in China, including Tibet. However, no known environmental or social impact assessments have been conducted, as the environmental record of Tarim Basins is very poor.

Source: www.wikipedia.com

The First Day of Spring: Fun Facts About the Vernal Equinox

The first day of spring is also called the vernal equinox. “Vernal” and “equinox” are Latin terms meaning “spring” and “equal night” respectively.

Is the Vernal Equinox Really Equal?

The idea is that on the first day of spring there are exactly 12 hours of daylight and 12 hours of darkness, but it rarely works out that way. There *is* always a time each spring, and again each fall, when the hours of light and darkness are equal, but it usually occurs *before* the vernal equinox and *after* the autumnal equinox.

First Day of Spring--Above and Below the Equator

The vernal equinox, which occurs on March 20 or 21 each year and signals the start of spring in the Northern Hemisphere, is also the autumnal equinox—the first day of autumn—in the Southern Hemisphere. Conversely, the autumnal equinox in the north, which occurs in late September, is the first day of spring south of the equator.

Fun Facts About the First Day of Spring

Here are a few other interesting facts about the first day of spring:

If you were standing on the equator during either the vernal or autumnal equinox, you would see the sun pass directly overhead, the only two times in the year when that is true.

- The two equinoxes are also the only times during the year when the sun rises due east and sets due west.

In spring, the Earth's axis is tilted toward the sun, increasing the number of daylight hours and bringing warmer weather that causes plants to bring forth new growth.

Source: www.renewableenergyworld.com

What is Reverse Ozone Layer Depletion?

The ozone layer protect life on earth from the sun's damaging ultra violet (UV) rays. UV rays are absorbed by ozone before they reach the troposphere; the lowest section of the earth's atmosphere. Ozone depleting substances or ODS, is a general term for the various types of manmade chemicals that are responsible for ozone depletion. In fact, 85% of ozone depletion is the result of human activity where as only 15% is due to natural causes. ODS chemicals include chlorofluorocarbons or CFC's, halons, methyl chloroform, carbon tetrachloride and methyl bromide. These chemicals, all of which contain chlorine atoms, react with the ozone and break apart the three oxygen molecules that make up ozone. Just one chlorine atom is responsible for the destruction of over **100,000** molecules of ozone before the life of the chlorine atom has expired. Many countries have agreed to reduce or prohibit the production of materials made of or by the use of CFC's. This decision was the first major attempt to reverse ozone depletion, and was the result of the **Montreal Protocol** of 1987. A worldwide effort to stop the use of ozone depleting chemicals can reverse ozone depletion. If harmful chemicals are not manufactured, the natural ozone production process is expected to reverse the past damage that has been done to the ozone in approximately 50 years. However, we will not have this opportunity forever. At a certain point, the damage will be so severe that the effects of the sun's ultra violet radiation will cause so much damage to people, animals and plants that we will experience serious secondary environmental problems.

Source: www.naturalnews.com

Save our sky

For those sky-watchers who worry about the environment, having the world go green is not enough. In place of that color it should be dark green. Although light pollution doesn't generally cause as much alarm as other issues such as the changing climate, there is an outspoken community of stargazers that feel this is an important problem that must be worked on and eventually solved. Our Milky Way is home to hundreds of millions of stars, fewer and fewer of which are observable due to increasing light pollution; not only does light pollution interfere with our experiencing the wonder of our own galaxy, but it also wastes energy. Only one-third of the cities in the United States are dark enough at night for people to see the Milky Way while standing in their backyards. Watchers of the night sky generally prefer to use the Milky Way as a measuring tool. If you consult an atlas and look at the eastern portion of the US, you will find areas the size of a small country with dark unpolluted skies. It's difficult to find a place where you can truly feel and see the darkness, here in the West, even if you're willing to travel long distances to get there. Most crimes against property take place during the day, so 24-hour security lighting (in home and industrial settings) may not be as important as people think. Although at this point twenty-seven states already have laws in place or proposed to control the amount of skyward-pointed lighting and energy lights, this is a type of pollution that ought to be regulated to the same degree as any other, and the current regulations are not enough. The pollution that is caused by home owners will need to be reduced (including a control of security lighting and snigger window coverings).

Source: www.naturalnews.com

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Source: www.cartoonistgroup.com



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Conferences Alert

Energy and Sustainability 2011

website: <http://www.wessex.ac.uk/11-conferences>

Date: April 11-13, 2011

Location: Alicante, Spain

Environmental Conference 2011

website: <http://www.aep.com.my>

Date: April 12-13, 2011

Location: Kuala Lumpur, Malaysia

Conference on Wind Energy and Wildlife Impacts

website: <http://www.cww2011.nina.no/>

Date: May 2-5, 2011

Location: Trondheim, Norway

International Sustainable Development Research Conference

website: <http://isdrc17.ei.columbia.edu/>

Date: May 8-10, 2011

Location: New York, USA

Cannes Water Symposium

website: <http://www.cannes-water-symposium.com/>

Date: June 29– July 31, 2011

Location: Cannes, France.

QUIZ

1. In which state Periyar wildlife sanctuary is located?
2. Which country is maximum dependent on nuclear power?
3. Who is the Chairman of Indian Atomic Energy Commission?
4. Crescograph is used to measure?

Send your entries to mnit.energyheadlines@gmail.com

Answers to the Quiz in Volume 3 Issue 6

- 1) Sarnia Photovoltaic Power Plant, Ontario, Canada
- 2) Harish Hande & Neville Williams, 1995
- 3) International Energy Agency (IEA).
- 4) Twelve

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

Chandan Murmu, IV Yr. B.Tech,
Shashank Jhaharia, VI Yr. B.Tech.

Editorial Board- Dr. -Ing. Jyotirmay Mathur (Mech. Dept.), Saurabh Mittal (6th Sem Mech Engg), Anshul Sharma (4th Sem, Mech Engg), Shubham Khandelwal (4th sem, Mech Engg).

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