New Energy News - Continued

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LETTERS AND EMAILS - Continued
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8. American Physical Society Journal Editors Speak on Scientific Publishing Issues By Steven B. Krivit Honestly, I expected the Journal Editors' Panel Session at the March 2005 American Physical Society meeting in Los Angeles, Calif., to be rather dry and boring. I was mistaken. Six editors from the APS journals The Physical Review, Physical Review Letters, and Reviews of Modern Physics responded to spirited questions from the 150 members of the audience. Marty Blume, APS editor-in-chief, led the session. One of the hot questions on members' minds was, How are the referees refereed? A few members expressed the concern that some referees appeared to take a less-than-rigorous approach to their voluntary duties. We do have a system, Peter Adams, editor of Physical Review B, said. "It may not be as effective as you would like, but it's there." "The bottom line is, we do grade referees' reports," Anthony Begley, senior assistant to Adams, said. "We want the best-quality referees. If we find a referee that's not giving us the quality that we think, then we will grade them harshly, and the editors will usually not use them." A member of the audience raised a complaint about reviewers who rejected papers with sparse, one-sentence rejections. "Authors deserve a more thoughtful response," he said. Panel members agreed and added that papers which are accepted also should be held to the same standard: Reviewers who recommend the publication of papers should provide more than a one-sentence letter of acceptance. They should explicitly state why the paper is meritorious. "We're very much like a credit bureau," Blume said. "And there is a grade [for reviewers]. It is very much like a credit report. In this case, if we get a report which is thoughtful, that contains significant content to it, or instead, if it is just 'publish' or 'don't publish,' all of those things are considered." Blume discussed the challenges the editors face in finding quality reviewers who have sufficient time for the volunteer task. "Of course, the reviewers are not going to understand your subtleties. They're just not spending enough time reviewing the papers," Blume said. "Too many papers, not enough referees, not enough time." Blume ran through the yearly statistics of the thousands of papers that are submitted to the APS journals each year and compared that with the number of available reviewers. Not only did the statistics display a severe bottleneck, but they also revealed the steep competition that authors face when journal editors confront the daily decision of which papers to send out for review and which papers are less significant to their readership, or not as good and must be rejected. Adams asked the audience for opinions on how high to set the bar for quality. "Should we be more or less restrictive?" he asked. Most people responded that the current standard was optimal. Blume conducted a straw poll of the audience and found that half were also reviewers for various journals. "Subjectivity is a problem we face," Jack Sandweiss, editor of Physical Review Letters, said. The bottom line, he explained, was that the decision to publish should be based on the question, "Is this a paper that, in this or a related field, is one that readers should not miss?" Returning to the challenge of "too many papers and not enough reviewers," Blume made a strong plea for new volunteers. Audience member Scott Chubb, a reviewer for Physical Review Letters and several other journals, asked the editors whether they would accept suggestions for referees. Yes, he was told, one could submit a list of up to 10 names. One astute comment I heard from the floor was the point that, "in

situations involving new fields, suggestions for new referees who have familiarity with the subject matter are urgently needed." The session came to a close when another member of the audience proposed what he thought was a "wacky" idea: use short excerpts from reviewers' comments on accepted papers and posting those comments with the reviewers' names removed. The idea, he said, was to provide a means for readers to get a quick sense of whether the paper might catch their interest, much like a blurb for a book review.Blume responded kindly, with interest. It's not really that wacky, he said. "We should think about that, perhaps put a link somewhere on a Web page for new papers."

9. Mitsubishi's Answer to Nuclear Waste: Low Energy Transmutations are Gaining Scientific Ground By Haiko Lietz This story first aired on German National Radio on March 23, 2005, the 16th anniversary of the announcement of cold fusion. The German article and on-demand audio are here: www.dradio.de/dlf/sendungen/forschak/359485/When

Yasuhiro Iwamura presented his lecture (lenr-canr.org/acrobat/IwamuraYobservatiob.pdf) at the last International Conference on Condensed Matter Nuclear Science (newenergytimes.com/ICCF11/ICCF11.htm) in Marseille, France, you could have heard a pin drop. The Japanese researcher presented results from Mitsubishi Heavy Industries. The corporation does much more than build cars. If their results are right, the Japanese also have developed a technology within the last 10 years that, under certain conditions, will physically transmute chemical elements into new elements. According to established theory, this should be impossible. Iwamura explains the method, which involves a special heavy metal sandwich: "It is composed of pure palladium and a calcium oxide complex layer. On one side of the palladium complex, we have deuterium gas at about 1 atmospheric pressure. On the other side, we keep a vacuum condition. If we put an element on the palladium complex, that is specifically targeted to be transmuted, and we make deuterium gas permeate through the palladium complex. After about a week or 10 days, we observe the transmutation of this element." If there are, for example, caesium atoms on the palladium sandwich, those gradually disappear, and atoms of the element praseodymium appear during the experiment. After about four days, there are more praseodymium atoms than caesium atoms. The praseodymium nucleus is heavier than the caesium nucleus by four protons and neutrons each. It seems as if caesium nuclei somehow reacted with ions of the deuterium gas and formed praseodymium nuclei. Iwamura and his colleagues published their results in the renowned Japanese Journal of Applied Physics in 2002 (lenr-canr.org/acrobat/IwamuraYelementalaa.pdf). Since then, they have successfully repeated the experiment over 50 times. In the same way, they were able to transmute strontium into molybdenum. Also, in recent experiments, one element disappears, and another appears. "Currently, we involve a barium transmutation experiment," Iwamura said. "We observe the transmutation of barium into samarium. And this samarium has a non-natural isotopic ratio. At first, we performed a natural barium experiment, and after that, we used enriched barium-137. If we use barium-138, we get samarium-150. And if we use barium-137, then we will have samarium-149. In other words, we observe different mass distributions by controlling the initial mass distribution." The yielded element is determined by the initial element that is used. In the barium experiment, a non-natural samarium isotope is formed. In the caesium experiment, it is not just the isotope, but even the element that is rare in nature. That is why the researchers are confident the new-found elements are not the result of contamination of the system. It is noticeable that caesium and strontium are products of nuclear fission, which are radioactive, depending on the isotope. Is Mitsubishi conducting these experiments to try to remediate nuclear waste? At the moment, it is very difficult to say, but it might be possible, Iwamura said. "Mitsubishi Heavy Industries has a very wide range of products, including nuclear power plants. Our research into this field may yield commercial applications." The Japanese financial newspaper Nikkei-Shinbun recently rated the Mitsubishi research the third-most-important technology trend. The effect has been confirmed by the universities of Osaka and Shizuoka, the Japanese "SPring-8" synchrotron radiation facility, and the Italian National Institute of Nuclear Physics. The head of the Italian transmutation study group, Francesco Celani, with the Instituto Nazionale de Fisica Nucleare, gives high grades to the Japanese experiment: This is a very, very clean experiment, Celani said. "Iwamura makes several cross checks for his results. Not just one, but four different kinds of analyses. Contamination, the weak point in

any kind of transmutation experiment, is almost ruled out. I think this is a model that all of us should follow." Celani now wants to start a joint Italian/Japanese basic research program into transmutations. In a second phase, program members also plan to transmute radioactive caesium and strontium. The project is set at 25 million Euro over a five-year period. According to Celani, high-ranking political circles in Italy are "very positive" about it. At the Marseille conference, eight additional transmutation experiments involving researchers from Canada, Italy, Romania, Russia and the US Navy were presented. Scott Chubb from the Naval Research Laboratory said, "The materials control and measurements in the Mitsubishi work are so well done it is hard to believe that it could be wrong."

BITS AND PIECES

10. Cold Fusion in the NewsFusion, La Science, Passionn ment: Fusion Froide, "ICCF 11: Le Feu Sous la Banquise," by David Fabrice (Feb.- Mar., 2005)

www.revuefusion.com
(Subscription may be required)A brief review of the ICCF-11 conference, a response to Huizenga's three miracles, and some of the work by Russian and French scientists.[Editors note: No cold fusion news here, but the subject is related]CNN Money: "Goldman Sees Oil Price 'Super Spike' to $105 a Barrel," (March 31, 2005)

money.cnn.com/2005/03/31/news/international/goldman_oil.reut/
LONDON (Reuters) - Oil prices could touch $105 a barrel in the next fewyears, the influential investment bank Goldman Sachs said Thursday. Thebank's analysts said in a research report that the world energy market is in theearly stages of a 'super-spi ke' period that could see 1970s-style price surges.The bank called its forecast 'conservative.'Nigeria World: Cold Fusion, The Unlimited Energy Source: A Myth Or Reality? by Sam Ejike Okoye (March 27, 2005)

nigeriaworld.com/articles/2005/mar/271.html"...
Cold fusion, on the other hand, attempts to achieve the same result, but by using solid materials ... various metals, including palladium... Because the process causing this to happen is not well understood, the possibility is rejected by many conventional scientists. Difficulty in producing the process on command has intensified the rejection. While this difficulty is real, it has not, as many sceptics have claimed, prevented the process from being reproduced hundreds of times in laboratories all over the world for the past 13 years. Indeed, the process continues to be reproduced with increasing ease using a variety of methods and materials."[Editor's note: Okoye has a few minor technical errors in his article.]The Guardian Unlimited: "In From the Cold," by David Adam, (March 24, 2005)

education.guardian.co.uk/higher/research/story/0,9865,1444306,00.htmlAdam
quotes Mike McKubre, of SRI International in California: "The ability to wield the power of nuclear physics on a tabletop has enormous technological importance. When the smoke clears, it will be obvious to all, and our current critics will claim it was obvious to them all along. "Nature; Physicists Look to Crystal Device for Future of Fusion, by Mark Peplow (April 28, 2005)(Subscription only)"Tabletop fusion has been a touchy subject since Stanley Pons and Martin Fleischmann said in 1989 that they had achieved 'cold fusion' at room temperature. [Seth] Putterman helped to discredit this claim, as well as more recent reports of 'bubble fusion'. Now Putterman, a physicist at the University of California, Los Angeles, has turned a tiny crystal into a particle accelerator. When its electric field is focused by a tungsten needle, it fires deuterium ions into a target so fast that the colliding nuclei fuse to create a stream of neutrons."AP: "UCLA Researchers Produce Nuclear Fusion," by Alicia Chang, (April 27, 2005)

news.yahoo.com/news?tmpl=story ncid=753 e=1 u=/ap/20050427/ap_on_sc/tabletop_fusion sid=84439559"

LOS ANGELES - A tabletop experiment created nuclear fusion, long seen as a possible clean energy solution, under lab conditions, scientists reported. But the amount of energy produced was too little to be seen as a breakthrough in solving the world's energy needs...This latest experiment relied on a tiny crystal to generate a strong electric field. While falling short as a way to produce energy, the method could have potential uses in the oil-drilling industry and homeland security, said Seth Putterman, one of the physicists who did the experiment at the University of California, Los Angeles." New York Times: "Itty-Bitty and Shrinking, Fusion Device Has Big Ideas," by Kenneth Chang (April 28, 2005)

www.nytimes.com/2005/04/28/science/28fusion.html
"While the device is probably too inefficient to produce electricity or other forms of energy, the scientists say, egg-size fusion generators could someday find uses in spacecraft thrusters, medical treatments and scanners that search for bombs."[Editors note: No cold fusion news here, but the subject is related]The Guardian Unlimited: "Huge Radioactive Leak Closes Thorp Nuclear Plant," by Paul Brown (May 9, 2005)

www.guardian.co.uk/nuclear/article/0,2763,1479527,00.html
A leak of highly radioactive nuclear fuel dissolved in concentrated nitric acid, enough to half fill an Olympic-size swimming pool, has forced the closure of Sellafield's Thorp reprocessing plant....Recovering the liquids and fixing the pipes will take
months and may require special robots to be built and sophisticated engineering techniques devised to repair the 2.1bn plant... The leak is not a danger to the public but is likely to be a financial disaster for the taxpayer since income from the Thorp
plant, calculated to be more than 1m a day, is supposed to pay for the cleanup of redundant nuclear facilities.

11. Speakers Available
Experts on the Subject of Cold Fusion Steven B. Krivit -
General audiences (Co-author of The Rebirth of Cold Fusion)Charles G. Beaudette - Academic audiences (Author of Excess Heat and Why Cold Fusion Research Prevailed, 2nd Ed.)David J. Nagel - Government and military audiences (Participant in the 2004 DOE Cold Fusion Review)

12. Updates to the New Energy
Times(tm) Web SiteNew Energy
Times(tm) Newsletter Issue #9
newenergytimes.com/news/NET9.htmArchive
Freedom Story Updated The story regarding the Archive Freedom Web site in New Energy Times issue #9 has been revised since it was distributed on March 10. The revised story is included in Issue #9 here
http
://newenergytimes.com/news/NET9.htm.
"Why Cold Fusion is Important" has been updated.

newenergytimes.com/Reports/WhyisColdFusionImportant.htm"Cold Fusion Frequently Asked Questions" has been added.

newenergytimes.com/PR/ColdFusionFAQ.htm"Author Charles Beaudette Responds to the 2004 DoE Cold Fusion Reviewers," report added.

newenergytimes.com/Library/2005BeaudetteC-ResponseToDOE2004Review.pdf"Second Chance for Cold Fusion: U.S. Department of Energy Recognizes Research and Funding Demand," article added.

newenergytimes.com/news/2005LietzH-SecondChanceForColdFusion.htm"Mitsubishi's Answer to Nuclear Waste: Low Energy Transmutations are Gaining Scientific Ground," article added.

www.newenergytimes.com/news/2005Mitsubishi-Answer-Lietz.htm"Students"

page: Four papers added.

newenergytimes.com/students/students.htm
Dr. Edmund Storms:"A Students' Guide" How toProduce the Pons-Fleischmann Effect How To Makea Cheap and Effective Seebeck Calorimeter Giuliano Mengoli: Calorimetry Close to the Boiling Temperature. "Conversations" page: Three new pages added.

newenergytimes.com/Conversations/conversations.htm
A Few Questions and Answers with Roger Stringham by Steven Krivit, July 21, 2004Interview of K.P. Sinha by Steven Krivit, August 25, 2003Interview of Akito Takahashi by Steven Krivit, August 25, 2003Errata to The Rebirth of Cold Fusion, by Krivit and Winocur newenergytimes.com/TRCF/Errata.htmICCF-10 page: Link to LENR-CANR.org proceedings added.

newenergytimes.com/ICCF10/iccf10.htm
A link to some of the ICCF-10 proceedings, compiled and published by Jed Rothwell, has been added on the ICCF-10 page. The published proceedings are under way, according to Peter Hagelstein. Numerous complications have caused unexpected delays.The 12th Russian Conference on Cold Nuclei Transmutation of Chemical Elements and Ball Lightning.

newenergytimes.com/Conf/RCCNTBL-12/RCCNTBL-12.htm
Program and abstracts have been added.American Physical Society March 2005 Meeting, Los Angeles, Calif.

newenergytimes.com/Conf/APS2005/2005.htm
Audio recordings and presentations added.Pre-print of the Journal of Electroanalytical Chemistry paper by Szpak, Boss, Young, Gordon, "The Effect of an External Electric Field on Surface Morphology of Co-Deposited Pd/D Films," added to this section.Japan CF-Research Society JCF6 Conference newenergytimes.com/Conf/JCF6/JCF6-Program.htmProgram and abstracts have been added.Conferences and Cold Fusion Sessions newenergytimes.com/Conf/conf.htmLinks to several other future programs added.

13. Support New Energy Times(tm) New Energy Times is a public-benefit company that provides news and educational resources in the field of leading-edge energy research and development. We deliver original reporting, research, and analyses to the public and general media through our Web site, electronic newsletter, and latest book, The Rebirth of Cold Fusion: Real Science, Real Hope, Real Energy. We specialize in energy developments that are environmentally friendly and that support a sustainable future.We pledge to remain a news source you can trust and a resource you can depend on. If you find our work valuable, please become a regular sponsor or make a donation so we may continue being of service. We depend on our readers and thank you for your support. Donations can be made via Paypal:

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you are interested in providing a tax-deductible donation, please contact us for special arrangements.

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Subject: Windhexe - Vortex Technology
From: Sepp Hasslberger <sepp@lastrega.com>
Date: Wed, 11 May 2005 10:14:00 +0200

An application of vortex technology, report found on

www.zpenergy.com/

Kind regards
Sepp

Impossible Tornado

Here's an interesting new invention. It creates an artificial TORNADO, just by pushing hot air into a metal cone. That creates a tornado-like VORTEX, which pulverizes just about anything, using a FRACTION of power that'd be otherwise needed. And even the inventor doesn't understand how it works...

www.zpenergy.com/modules.php?name=News&file=article&sid=1312

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The individual is supreme and finds its way through intuition.
Sepp Hasslberger My page on physics, new energy, economy:
www.hasslberger.com/
Critical perspective on Health:
www.newmediaexplorer.org/sepp/

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Subject: [FE_updates] Huge Nuclear Spill; Silicon Helping Betavoltaics; Brown's Gas And Nuclear Remediation; Cold Fusion Updates; Hybrids Compared; New Power Generation
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Wed, 11 May 2005

speedstream.netro.ca/osen/May112005TIFE.wma
Today in Free Energy(tm)

(13 mins)- Sterling D. Allan and Matthew L. Carson of the Open Source Energy Network discuss today's news. Four synchronistic stories on nuclear energy, covering spills, remediation, batteries, and cold fusion. Hybrid comparisons. (OSEN; May 11)

BetaVoltaics
www.physorg.com/news4039.html

Silicon solution could lead to a truly life-long battery- Using some of the same manufacturing techniques that produce microchips, researchers have created a porous-silicon diode that may lead to improved betavoltaics. Such devices convert low levels of radiation into electricity and can have useful lives spanning several decades. (PhysOrg; May 10)

Cold Fusion New Energy Times(tm)May 10 Newsletter(free subscription) - Several Cold Fusion Colloquia and Conference Updates | Mitsubishi's Answer to Nuclear Waste: Low Energy Transmutations Are Gaining Scientific Ground | Cold Fusion in the News | Speakers Available - Experts on the Subject of Cold Fusion | Updates to the New Energy Times (tm) Web site

Huge radioactive leak closes Thorp nuclear plant- About 20 tonnes of uranium and plutonium fuel dissolved in concentrated nitric acid, enough to half fill an Olympic-size swimming pool, has leaked through a fractured pipe into a huge stainless steel chamber, forcing the closure of Sellafield's Thorp 2.1bn reprocessing plant. (Guardian.uk; May 9) (Thanks Aerielle Louise)

Nuclear Remediation/ Brown's Gas
pacenet.homestead.com/Nucwaste.html
PACE Report on Brown's Gas Neutralization of Radioactive Material- Cites a number of scientific studies that have been conducted. (PACE) (Thanks Adrian Akau)

Fuel Efficiency/ EV
Hybrid Drivers Provide Real-World Mileage Data- Private database (GreenHybrid.com) compiles 5-million-mile driving data from 455 hybrids from around the world. Honda Insight leads the pack at 62 mpg; with Toyota Prius I and II coming at a distant second at 48 and 46mpg; and Ford Escape and Lexus RX trailing at 28 mpg. (Slashdot; May 10)

The New Power Generation- Soccer moms, taco shops, even real estate developers - mainstream America is starting to pull the plug and rely on homegrown solar energy. Call it the dawn of the hygrid age. 185,000 U.S. households have switched. (Wired; May 2005)

Chemical engineer to investigate ways to help plastic conduct electricity- Award granted Dr. Yueh-Lin (Lynn) Loo at the University of Texas at Austin to improve conductivity of polyanaline. Applications range from roll-up display screens, to chemical-detection clothing. (PhysOrg; May 10)

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Subject: [FE_updates] Windhexe Page; H-Canister In Market; Zanadu's Bedini SG; Reply-To: FE_Updates@Yahoogroups.Com
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Thu, 12 May 2005

Vortex Tornado in a Can- Invention by Frank Polifka pulverizes items down to micrometer powder. The energy-in-versus-energy-out ratio defies known laws of physics. Several applications now in place. (PESWiki; May 10) (Thanks ZPEnergy)

Hydrogen Storage Canister Manufacturer Seeking FC Partners- HBank's metal hydride technology canister is now available for sale. Releases hydrogen as needed, safely. Compact. (PESN; Taiwan; May 10)

Bedini
SG Zanadus replication of the Bedini SG- Monopole motor and battery energizer. Posted April 10, has been updated several times. (PESWiki)

Investors at UN Meet Pledge $1 Billion in Clean Energy- US and British institutional investors who collectively manage over $3 trillion in assets pledged on Tuesday to invest $1 billion in clean energy companies in an effort to reduce risks posed by climate change. (Reuters; May 11)
[Most of that will go to mainstream solutions like wind and hybrid manufacturers.]

From backyard to big time- Tacoma Washington has unveiled the first biodiesel pump. Fuel comes from soybeans. (TheNewsTribune.com; May 8)

Global Warming Greenhouse Gas Trade Growing Sharply- Trading CO2permits for $$. (Reuters; May 12)
[Somehow I don't think this is going to stem global warming. How about we trade our grandchildren's planet for some good times today! Boo, hiss.]

[Read the new book "State of Fear" (now in paperback). What "Global Warming?… What sea level rise?… Ed.]

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Subject: [FE_updates] Magcorp Pollutions; Betavoltaics Improvements; Zenn Progress; Solar Boat Race; Global Warming Tax
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Fri, 13 May 2005

Waste-to-Energy
DOJ Files Civil Action Against MagCorp for PCB Violations- Leading U.S. polluter, US Magnesium Corporation of Salt Lake City, has been on the EPA's list as the largest toxic air polluter in the country. Though it emissions have improved, they are still significant. Local inventor said he demonstrated the successful burning of some of their emissions for energy and clean-up, but they declined to integrate the technique. (PESN; May 12)

BetaVoltaics
www.physorg.com/news4081.html
New 'Nuclear Battery' runs 10 years, 10 times more powerful- University of Rochester 3D-capture design increases betavoltatics properties, bringing them closer to practical use. Technology is licensed to BetaBatt Inc. (PhysOrg; May 12)

EV
www.exn.ca/dailyplanet/view.asp?date=5/4/2005#
A study in Zenn- All-electric vehicle. Low speed urban car. Six hours to recharge. 60 km range, 40 kph speed. Cheaper and more efficient than combustion systems. To market in U.S. Oct. Nov. 2005. (DiscoveryChannel.ca; May 4)

www.peswiki.com/index.php/Current_events

www.freeenergynews.com/Directory/Solar/index.html

Hundreds of High School Students to Race Solar-Powered Boats in Solar Cup- May 13-15, Lake Skinner, Temecula, California. (BusinessWire; May 11).

Global Warming
New Zealanders to pay global warming tax- World's first tax on energy sources that come from fossil fuel so that their cost more accurately represents their earth load. (TheAge.au; May 6)

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Subject: [FE_updates] Student's H-Car KIT; Tripp V Pantone; Jetta On Acetone; Ocean Renewable; Tour De Sol
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Fri, 13 May 2005

Fuel Cells Clarification on Student's Hydrogen Car
Micah Hinton did not design the car, but bought it as a kit. It employs a clever "reversible fuel cell" principle which uses the FC to either generate electricity from H and O or to produce H and O from electricity supplied by a solar cell. Water is conserved in the process. (PESN; May 13)

GEET
Dialogue between Tom Tripp of MagCorp and inventor Paul Pantone- Tipp says that the reason he did not take Pantone up on his proposal for cleaning MagCorp emissions is because he was lacking in scientific evidence for his claims. Pantone responds with sampling of evidences. (PESN; May 13, 2005)

Acetone
peswiki.com/index.php/Directory:Acetone:MarkCooper
Mark Cooper's Jetta- Adding 3 to 3.5 oz Acetone per 10 gallons of regular gas, the mileage on Mark's 2005 VW Jetta GLI went from 23 to 27.6 mpg over 2,100 miles.

peswiki.com/index.php/PAC
PAC Ocean Renewable- Washington, D.C.-based ocean energy lobbying group, emphasized the need for legislative and regulatory reforms to support the development of ocean renewable technologies. Is pushing for ocean renewable provisions in energy bill now before the Senate.

www.peswiki.com/index.php/Current_events
Events
www.csrwire.com/article.cgi/3870.html">2005
Tour de Sol Offers Solutions to Energy Crisis- Now under way. Presented by the Northeast Sustainable Energy Association in Saratoga Springs and Albany, NY May 13-16. (CSRwire.com; May 4, 2005)

OT
Friday the 13th, 2029- Asteroid 2004 MN4 will come scarily close to Earth on April 13, 2029, but it will not hit. (NASA; May 13, 2005)

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Subject: Nuclear Power Seen As The ONLY Way To Effectively Deal With Future
From: Jerry Decker - KN <jwdecker@keelynet.com>
Date: Sat, 14 May 2005

Hola Folks!

Article of interest regarding energy;

news.independent.co.uk/uk/environment/story.jsp?story=637696

Nuclear power may be the only way, says chief scientist

By Michael McCarthy, Environment Editor

Britain may need one more generation of nuclear power stations in the fight against climate change, Sir David King, the Government's chief scientific adviser, says.

Sir David, who has sounded the alarm about global warming more loudly than anyone else in recent years, believes that new nuclear plants may be needed to keep Britain's faltering plans to reduce greenhouse gas emissions on course.

His comments, in an interview with The Independent, come three weeks after this newspaper reported that Tony Blair was drawing up plans to revive the nuclear option as a key element in the Government's drive to combat global warming.

They are the clearest on-the-record indications yet of high-level thinking about what will be an immensely controversial decision, likely to split the Cabinet, enrage the green movement and deeply concern many of the public, frightened about nuclear waste, nuclear accidents and potential nuclear terrorism.

Sir David, who said last year that the threat of climate change was worse than the terrorism risk, and publicly castigated the Bush administration in the United States for not signing the Kyoto climate treaty, does not see an unlimited nuclear future for Britain.

In years to come, he believes, renewable energy systems such as wind, wave and solar power, together with increased energy efficiency and the possible development of fusion power, will be sufficient to cut back the emissions of carbon dioxide (CO2) from conventional coal and gas-fired power stations, which are believed to be raising temperatures around the globe. In the short term, he thinks, there may be no alternative to building new nuclear facilities - "one generation only", he stresses - if Britain is not to miss badly its more demanding global warming targets.

The reason is what he refers to as the "energy gap" - the period coming soon when Britain's existing range of atomic power stations, which provide us with nearly a quarter of our electricity without producing any significant amounts of CO2, start to be retired and drop out of the energy mix. Unless they are replaced, Sir David believes, the Government may not be able to meet its target of providing 20 per cent of our electricity from non-fossil-fuel sources by 2020.

To its considerable embarrassment, the Government has already admitted that it will miss, by a wide margin, its target of cutting CO2 emissions by a fifth by 2010. It has been further embarrassed by an increase in emissions in each of the past two years.

In the interview, Sir David, one of Tony Blair's most trusted advisers, said the energy gap was imminent and was the key issue. In a long discussion of the nuclear question, he said he well understood the fears of many of the public about nuclear waste, nuclear accidents and the possibilities of terrorists acquiring nuclear material.

He said: "I've never been a great nuclear protagonist, because of concerns of waste and leakage, the cost of disposal, the decommissioning issue and the whole question of public acceptability." But he said the question of climate change and its impacts on human society - "the most serious problem we're faced with globally this century" - was so important that the nuclear option had to be re-examined, and that public perception of nuclear's dangers did not necessarily accord with reality.

He said fewer people had been killed in nuclear power generation than in other forms of energy production, and that modern nuclear stations being designed were inherently much safer than those involved in the notorious accidents at Three Mile Island in the US in 1979 and Chernobyl in Ukraine in 1986.

Furthermore, he indicated that if new nuclear power stations were built in Britain, they would be sited near existing nuclear sites, and it would be highly unlikely that fresh "greenfield" sites would be chosen.

The decision to go nuclear would not mean large amounts of Government money being spent he said, merely opening the option to the private sector. But it would be necessary to look at the fiscal regime very carefully, so that nuclear, with its high fixed costs, did not lose out in a competitive energy market.

Sir David stressed that going nuclear once more would not mean that Britain's commitment to the renewable energy systems of wind, wave and solar power would be in any way weakened. But the energy gap was a key issue, he said, as it was imminent.

He said: "That's why it's a live issue. I'd be ducking it if I wasn't to say that. And it may be that the conclusion would be reached that we need another generation of nuclear-fission power stations."

He went on: "Examining the situation now, because there's this imminent projected gap in nuclear energy on the grid, the whole question is whether this gap can be filled quickly enough with renewables. But if it can't, then I would imagine that one further generation of nuclear power stations would be all that would be required."

The Government is actively studying whether or not the gap can be filled in the review of its climate change programme, which is expected in the late summer. Sir David said he did not wish to prejudge the issue, but he warned: "The more ambitious targets that the Government has set are beginning to look quite difficult."

Climate change is so important, we have to examine use of nuclear'

Sitting in his third-floor office in the new Department for Productivity, Energy and Industry (the Department of Trade and Industry until last weekend) in Victoria Street, central London, the Government's chief scientist spoke at length of his concerns about climate change, nuclear power, and in particular what he terms the energy gap.

Sir David King means what will happen to Britain's fight against global warming as, over the next 15 years or so, 11 out of Britain's current 12 nuclear power stations, which do not emit carbon dioxide, the main greenhouse gas, come to the end of their working lives.

As they are shut down, the proportion of Britain's electricity produced by nuclear (CO2-free) power will drop from around a quarter now to about 4 per cent by 2020.

Can renewable energy systems, such as wind, wave and solar power, currently providing 3 per cent of Britain's electricity, provide enough CO2-free power in the meantime to fill the gap and enable the UK to meet its demanding climate-change targets? For if they cannot, Sir David says, a new generation of atomic power stations may be necessary.

The quietly spoken South African-born scientist, professor of chemistry at the University of Cambridge, is a practised Whitehall hand and was scrupulously careful not to give any direct public endorsement of his own to a new nuclear energy programme.

This is a decision strictly for ministers. But the stress he laid on the energy gap gave an insight into the Government's private thinking.

I've always said in the past that, as we move to 2020, the proportion of nuclear energy going on to the grid, if there is no nuclear new-build, is going to drop from roughly 27 per cent to roughly 4 per cent, he [LB] said. "By 2020 we'll be left with Sizewell B [the nuclear plant in Suffolk].

So the question in my mind and in many other people's mind is going to be, whether the renewables targets and the energy-efficiency targets will be sufficient to meet CO2 reductions, in the face of a falling [LB] percentage from nuclear power. He went on: That gap in energy is imminent, and that's why [nuclear] is a live issue, I'd be ducking it if I wasn't to say that. And it may be that the conclusion would be reached that we need another generation of nuclear-fission stations."

However, one generation would probably be sufficient, he said, and then a much-expanded renewables sector, and possibly nuclear-fusion power, would be able to take on the burden of the UK's carbon-free future.

In other words, if we look into the long-term future, and project forward the work on renewables, and also project forward the work on nuclear-fusion power stations, I would imagine we would in the long term not [LB] need to continue with nuclear-fission power.

The other question was the public acceptability of any new nuclear build programme, he said. "I don't see any government being prepared to go down a route on an issue like this without taking the public with them, so I think that is a key issue." He said he could understand fears over waste and accidents.

I'm not a great fan of nuclear, he said. "I can understand the public concerns, I can understand all the concerns about radioactive waste and so on. But I also feel that the climate change issue is so important that we really have to examine the potential use of nuclear."

Alternative energy sources

WIND POWER

Wind energy is by far the most advanced form of renewable power in Britain. There are 101 wind farms in the United Kingdom with a total of 1,234 wind turbines, and a total capacity of 980 megawatts, or enough to supply more than half a million homes - about the same as a large coal or gas-fired power station. Currently, wind produces 0.8 per cent of UK electricity, or about a third of the total power from renewables, but that is set to leap as new projects come on stream. Wind energy has encountered hostility from some environmentalists who say the large turbines disfigure the landscape.

SOLAR POWER

Solar power has immense potential which is not yet anything like fully exploited. It is based on the fact that every day the sun bathes the earth in an immense amount of energy, most of which is lost; it uses photovoltaic (PV) panels which are made of silicon and generate electricity whenever light falls upon them, whatever the weather. Britain's leading solar company, Solarcentury, says that "if we covered a small fraction of the Sahara desert with PV, we could generate all the world's electricity requirements".

WAVE AND TIDAL POWER

Wave and tidal power are again potentially huge sources of energy but the least developed, certainly in Britain. A wave-powered generator christened Limpet is operating on rocks on the Scottish island of Islay but only produces about 500 kilowatts of energy. The Department for Productivity, Energy and Industry has commissioned the UK Renewable Energy Atlas which will spatially map the wave and tidal resource potential. But other countries such as France have already gone much further: since 1966, the big tidal power station at La Rance on the Normandy coast has been producing 240 megawatts of energy with its 24 turbines.

-- Jerry Decker -
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www.keelynet.com/donate1.htm
Public Archive
www.escribe.com/science/keelynet
Order out of Chaos - From an Art to a Science

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Subject: Silicon Tritium Betavoltaics Battery Lasts 12 Years
From: RemyC <remyc@optonline.net>
Date: Sat, 14 May 2005

From:
story.news.yahoo.com/s/space/20050513/sc_space/personalnuclearpowernewbatterylasts12years
(Thanks to Elliott Maynard for this item)

Personal Nuclear Power: New Battery Lasts 12 Years
by Robert Roy Britt
LiveScience Senior Writer

www.LiveScience.com

Fri May 13, 2005

A new type of battery based on the radioactive decay of nuclear material is 10 times more powerful than similar prototypes and should last a decade or more without a charge, scientists announced this week.

The longevity would make the battery ideal for use in pacemakers or other surgically implanted devices, developers say, or it might power spacecraft or deep-sea probes.

You might also find these nuclear batteries running sensors and other small devices in your home in a few years. Such devices "don't consume much power," said University of Rochester electrical engineer Philippe Fauchet, and yet having to replace the battery every so often is a real pain in the neck.

Fauchet told LiveScience the batteries could last a dozen years. They're being developed at Rochester and the technology has been licensed by BetaBatt Inc.

How it works

The technology is called betavoltaics. It uses a silicon wafer to capture electrons emitted by a radioactive gas, such as tritium. It is similar to the mechanics of converting sunlight into electricity in a solar panel.

Until now, betavoltaics has been unable to match solar-cell efficiency. The reason is simple: When the gas decays, its electrons shoot out in all directions. Many of them are lost.

For 50 years, people have been investigating converting simple nuclear decay into usable energy, but the yields were always too low, Fauchet explained. "We've found a way to make the interaction much more efficient, and we hope these findings will lead to a new kind of battery that can pump out energy for years."

Fauchet's team took the flat silicon surface, where the electrons are captured and converted to a current, and turned it into a three-dimensional surface by adding deep pits.

Each pit is about one micron wide. That's four ten-thousandths of an inch. They're more than 40 microns deep.

Tritium is a radioactive form of hydrogen. Mixed with chemicals that emit light, it is used to illuminate exit signs without electricity -- the sort commonly found in schools and other public buildings.

It is safe and can be implanted in the body, Fauchet said. "The energetic particles emitted by tritium do not penetrate inside the skin."

Tritium emits only low energy particles "that can be shielded by very thin materials, such as a sheet of paper," said Gadeken of BetaBatt. "The hermetically-sealed, metallic BetaBattery cases will encapsulate the entire radioactive energy source, just like a normal battery contains its chemical source so it cannot escape."

The device is detailed in today's issue of Advanced Materials.

Improvements needed

The manufacturing process is standard to the semiconductor industry, so no other technology breakthroughs are needed to bring the batteries to market. Still, don't expect anything on the store shelves for at least two years, Fauchet said. His team is now working to improve the manufacturing process, aiming for batteries many times more efficient than those announced today.

If we are as successful as we think we may be, it will take less than five years before this technology is adopted, he said.

Graduate student Wei Sun of the University of Toronto was lead author on the paper describing the work, which was supported by the National Science Foundation.

From: nsf.gov/news/news_summ.jsp?cntn_id=104140&org=NSF&from=news

Press Release 05-075 Silicon Solution Could Lead to a Truly Long-life Battery

New devices may provide power for decades

The wafer test fixture the researchers used to test the new porous-silicon diode. Credit and Larger Version

Using some of the same manufacturing techniques that produce microchips, researchers have created a porous-silicon diode that may lead to improved betavoltaics. Such devices convert low levels of radiation into electricity and can have useful lives spanning several decades.

While producing as little as one-thousandth of the power of conventional chemical batteries, the new "BetaBattery" concept is more efficient and potentially less expensive than similar designs and should be easier to manufacture. If the new diode proves successful when incorporated into a finished battery, it could help power such hard-to-service, long-life systems as structural sensors on bridges, climate monitoring equipment and satellites.

The battery's staying power is tied to the enduring nature of its fuel, tritium, a hydrogen isotope that releases electrons in a process called beta decay. The porous-silicon semiconductors generate electricity by absorbing the electrons, just as a solar cell generates electricity by absorbing energy from incoming photons of light.

Supported by grants from the NSF Small Business Innovation Research (SBIR) program, a multi-disciplinary team of researchers from the University of Rochester, the University of Toronto, Rochester Institute of Technology and BetaBatt, Inc. of Houston, Texas, describe their new diode in the May 13 issue of Advanced Materials.

Researchers have been attempting to convert various types of radiation into electricity since the development of the transistor more than 50 years ago. Mastering the junctions between relatively electron-rich and electron-poor regions of semiconductor material (p-n junctions) led to many modern electronic products.

Yet, while engineers have been successful at capturing electromagnetic radiation with solar cells, the flat, thin devices have been unable to collect enough beta-decay electrons to yield a viable betavoltaic device.

The BetaBatt will not be the first battery to harness a radioactive source, or even the first to use tritium, but the new cell will have a unique advantage - the half-millimeter-thick silicon wafer into which researchers have etched a network of deep pores. This structure vastly increases the exposed surface area, creating a device that is 10 times more efficient than planar designs.

The 3-D porous silicon configuration is excellent for absorbing essentially all the kinetic energy of the source electrons, says co-author Nazir Kherani of the University of Toronto. Instead of generating current by absorbing electrons at the outermost layer of a thin sheet, surfaces deep within these porous silicon wafers accommodate a much larger amount of incoming radiation. In early tests, nearly all electrons emitted during the tritium's beta decay were absorbed.

There were a number of practical reasons for selecting tritium as the source of energy, says co-author Larry Gadeken of BetaBatt - particularly safety and containment.

Tritium emits only low energy beta particles (electrons) that can be shielded by very thin materials, such as a sheet of paper, says Gadeken. The hermetically-sealed, metallic BetaBattery cases will encapsulate the entire radioactive energy source, just like a normal battery contains its chemical source so it cannot escape.

Even if the hermetic case were to be breached, adds Gadeken, the source material the team is developing will be a hard plastic that incorporates tritium into its chemical structure. Unlike a chemical paste, the plastic cannot not leak out or leach into the surrounding environment.

Researchers and manufacturers have been producing porous silicon for decades, and it is commonly used for antireflective coatings, light emitting devices, and photon filters for fiber optics. However, the current research is the first patented betavoltaic application for porous silicon and the first time that 3-D p-n diodes have been created with standard semiconductor industry techniques.

The betavoltaic and photovoltaic applications of 3-D porous silicon diodes will result in an exciting arena of additional uses for this versatile material, says co-author Philippe Fauchet of the University of [LB] Rochester.

This is the first time that uniform p-n junctions have been made in porous silicon, which is exciting from the point of view of materials science, says Fauchet. For example, because of its characteristics and photon sensitivity, each diode pore could serve as an individual detector, potentially creating an extremely high-resolution image sensor.

The ease of using standard semiconductor processing technology to fabricate 3-D p-n junctions was surprising, adds co-author Karl Hirschman of the Rochester Institute of Technology. That manufacturing ease is an important breakthrough for increasing production and lowering costs, and it makes the device scalable and versatile for a range of applications.

The initial applications will be for remote or inaccessible sensors and devices where the availability of long-life power is critical, says Gadeken.

The BetaBattery may prove better suited to certain tasks than chemical batteries when power needs are limited. The structures are robust--tolerant to motion and shock, and functional from -148 Fahrenheit (-100 Celsius) to 302 F (150 C)--and may never have to be changed for the lifetime of the device.

-NSF-

Article reference: (W. Sun et al., Adv. Mater. 2005, 17, 1230.)

The NSF Engineering Directorate's SBIR and Small Business Technology Transfer (STTR) programs target small businesses and their partners at universities, enabling the companies to pursue high-risk science and engineering research that could one day prove both useful and economically valuable. One area of investment is alternative electricity-generation technology, such as BetaBatt. In fiscal year 2004, NSF provided just over $100 million to support small business programs.

Gadeken SBIR Phase I & II Awards: NSF Award No. 0320029: A Semiconductor Device for Direct and Efficient Conversion of Radioisotope Energy

www.nsf.gov/awardsearch/showAward.do?AwardNumber=0320029

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www.nsf.gov/statistics

Awards Searches:
www.nsf.gov/awardsearch

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Subject: Zero Point Energy From Conwiki
From: RemyC <remyc@optonline.net>
Date: Sat, 14 May 2005

Spelling errors are left as they are on the mirrored page.
RC

From:
www.conwiki.com/index.php?title=Zero_Point_Energy

Zero Point Energy
From Conwiki

Zero Point Energy come late in the Game of Free energy enthusiasts and is losely based on the Heisenberg Uncertainity Principle. This is usually defined as:
(Delta E) times (Delta T)

Where h = planck's constant (a pretty small number) Delta E = variation in Energy measurement Delta T = variation in Time measurement

This has real physical meaning in that space itself generates virtual particles which come out of the vacuum and dissapear. Because of the conservation of Energy (Ooops I said it!) these virtual particles have a very small life time. They are in effect borrowing energy from the vaccum, but the debt must be repaid FAST. The More energy in the virtual particles, the less time they have to exist. This formulation has great

predictive powers in quantum mechanics, and explains with the proper calculations what is actually hapening in the microworld. In the case of QED it is accurate to 10 decimal places. Virtual photons can also be measured in the Casimir effect.

When it come to getting any usefull work out of the vaccuum the Free energy guys go bonkers. It comes with the territory. Usually they call upon the ghost of Tesla with claims that Tesla had already invented some sort of Free energy machine. Also we have the Useless MEG - "Motionless Electromagnetic Generator" from Tom Bearden. Bearden likes to use high sounding physics terms like "Space Time Metric" without ever doing any calculations. He makes Minkowsky roll in his grave. The MEG is a transfomer with a permanent magnet in its magnetic path. This serves to scew the hysterisis curve enough to cause saturation and voltage spikes on the output. Since Bearden and his Synchophants like J L Naudin, can't measure these complicated waveforms they assume they must be over unity. Fat chance.

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Subject: [FE_updates] Blood Fuel Cells; China Power; Seaweed Power; Green Energy Island; Konarka 100
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Sat, 14 May 2005

Fuel Cells/ Human Power

Fuel cell that runs on blood- A Japanese research team at Tohoku University has developed a fuel cell that runs on blood without using toxic substances, opening the way for use in artificial hearts and other organs. (Gulf Times; May 14, 2005)

Growth of Energy Sources in China vs Pollution- An overview of the present energy generation methods and their pollution load, as well as up-coming installations, many of which are green energy modalities; but also talk of re-starting older, less efficient plants, in order to handle mushrooming electricity demands. (PESN; May 14, 2005)

Global Warming/Biomass

Seaweed to breathe new life into fight against global warming- Japanese team envisages 100 vast nets full of quick-growing seaweed, each measuring six miles by six miles, floating off the northeast coast of Japan. The seaweed in each net, growing to a weight of 270,000 tonnes a year, will absorb prodigious quantities of greenhouse gases and convert them to oxygen before being harvested 12 months later as a rich source of biomass energy. (Times Online; May 14)

Trends

Samsoe, the 'green energy' island- The 4,400 residents of the island aim for 100 renewable energy within 10 years. (Malay Mail; May 8)

Konarka Named a Red Herring 100 Company- Konarka Technologies, Inc., an innovator in developing and commercializing power plastics that convert light to energy, has been named one of the Red Herring 100 Private Companies of North America. (BusinesWire; California; May 13)

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Subject: [FE_updates] Henry Lee On Mallove's Murder Case; TWIFE; Greens Going Nuclear?; Ultar-Clean Coal; Nature Cleaning Atmosphere; H-Wind; Rocket Bike

From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Sun, 15 May 2005

This Week in Free Energy(tm) report: May 1- Semi on acetone; LEDs emerging as new preferred light bulb; solar-powered Stratellite; Kneider wave video; open source tech. discussion lists directory.

Eugene Mallove
Norwich police ask Henry Lee for help in solving year-old homicide- On anniversary of cold fusion advocate's murder, new blood brought into the investigation. Lee, a former state public safety commissioner, has worked on cases involving O-J Simspon, Jon Benet Ramsey and William Kennedy Smith. (WTNH; New Haven, CT; May 15)

Books
Free Energy Secrets of Cold Electricity Book Available Again-
Book by Peter Lindemann was out of print for a while. (ZPEnergy; May 15)
[Buy this book!
Buy this book!
Replicate this! Ed.
Did you get that?]

Some greens change tune on nuclear power- "It's not that something new and important and good had happened with nuclear, it's that something new and important and bad has happened with climate change." (SLTrib/ NY Times; May 16)

Ultra-clean coal to power a greener future- Engineers in Nottingham are developing leaching process to produce ultra-clean coal that could make power generation 50% more efficient and reduce carbon dioxide emissions by a third. (PhysOrg; May 13)

Atmosphere May Cleanse Itself Better than Previously Thought- Perdue and University of California scientists have learned that some naturally occurring atmospheric chemicals react with sunlight more effectively than previously thought to produce substances that "scrub" the air of smog. (NewsWire; May 12)
Hydrogen

Clean Patagonian Energy from Wind and Hydrogen- A laboratory situated in the southern Patagonia region of Argentina is producing hydrogen from wind energy to supply power to a village -- and prove that it is possible to replace the polluting fuels derived from petroleum. (Sustain Online; May 13)

Rocket bike- Reaches 60 mph in 5 seconds. What an X-prize contestant does with his know-how when he's bored because Rutan had things sewn up. 25 mph version for daughter. (DiscoveryChannel.ca; May 9, 2005)

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Subject: re: Paul Brown SEG pdf's OnLine
From: LeRoy Pea <leroy.pea@rocketmail.com>
Date: Tue, 17 May 2005

Get 'em while they're hot, Paul Brown pdf's...

www.intalek.com/AV/Brown/

www.intalek.com/AV/Brown/

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Subject: [FE_updates] FLASH: Cheap Synthetic Nat. Gas; Vortex Toilet; Global Wind Potential; Konarka Solar Army; Bush On BioDiesel
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Tue, 17 May 2005

pesn.com/2005/05/16/6900096_Syngas
Company Announces Discovery of Almost Unlimited Inexpensive Natural Gas Substitute- No airborne emissions from inexpensive process that creates gas from biomass, waste wood, and low-grade coal. (PESN; May 16)

Today in Free Energy(tm) -- May 17

(24 mins)- Sterling D. Allan and Matthew L. Carson discuss today's news. Eugene Mallove murder investigation red flag; cheap, synthetic natural gas; vortex toilet; global wind potential; Konarka solar army; Bush on biodiesel; OSEN Hummer on veg. oil hydrogen. (OSEN)

Vortex Toilet- Champion toilet maker took Uncle Sam's 1/2 water challenge to heart and has come up with a super-powerful vortex design. Their trick is in releasing water rapidly. (DiscoveryChannel.ca; 10, 2005)

www.physorg.com/news4117.html
Global wind map identifies wind power potential- Stanford University researchers conclude from more than 8,000 wind speed measurements analyzed worldwide that wind alone could answer world's energy needs inexpensively. (PhysOrg; May 16)

Mobile Army Requires Solar Soldiers- Today's soldiers are more power hungry than ever, and the army believes flexible solar cells can provide the extra juice. The military is testing lightweight materials by Konarka. (H2O Power; May 16)

Bush Touts Energy Alternatives- President Bush visits biodiesel facility, urges Congress to encourage development of alternate fuels to make the U.S. less dependent on foreign oil. (CBS; May 16)

US Should Help China Improve Energy Efficiency- President Bush says, It's in our economic interest and our national interest to help countries like India and China become more efficient users of oil. (Reuters; May 17)[A little slow and a little vested. A little?!]

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Subject: Power That Lasts All Day :: Red Herring
From: RemyC <remyc@optonline.net>
Date: Wed, 18 May 2005

From:
www.redherring.com/Article.aspx?a=12084&hed=Power+Shift

Power Shift

The battery, once considered low tech, is a new focus of innovation and investment as users demand more-like power that lasts all day.

Red Herring Magazine
38488
Print Issue
Raj Atluru, a managing director at Draper Fisher Jurvetson, remembers the data that convinced him that power was a tech industry pain point. A large Japanese consumer electronics company (he won't say which one) had reported that consumers would pay a good deal more for batteries that were only two to three times better.

In the IT space, you are looking for 10X improvements-10 times better on price or on performance, he says. "TwoX doesn't sound like a lot for a VC, but it is a lot in this space because people are willing to pay for it. That's one reason I started getting excited about batteries."

Another factor is the increased applications for batteries, including medical devices, RFID tags, and security cards. Colleagues were also looking for ways to close the "run-time gap"-the unmet need for consumer electronics to run during an entire workday. Two years ago, Menlo Park, California's Draper Fisher Jurvetson invested in Solicore, a Lakeland, Florida-based company with a thin, flexible battery based on new lithium-ion chemistry it claims is more powerful. DFJ, like many other VC firms, is on the lookout for more power-source investments, says Mr. Atluru.

Historically, battery investments have not been good investments. -Raj Atluru, Managing Director, Draper Fisher Jurvetson

OnPoint Technologies, in Maitland, Florida, led a $10-million round in November for PowerGenix, a San Diego-based company with a nickel-zinc battery, and led a $9-million round in October for Zinc Matrix Power, a Santa Barbara, California-based firm with a zinc battery technology. Micro Power, a Hillsboro, Oregon-based battery integrator for medical devices, received $5 million in October and $9 million last May, in rounds led by Palisades Ventures of Los Angeles and Sierra Ventures of Menlo Park, California.

It's a switch for the battery sector, which has usually been dismissed as too low tech for new investment. "Historically, battery investments have not been good investments," says Mr. Atluru. "Batteries have been commoditized. But now the pain points are just really strong." Devices such as digital cameras, cell phones, portable music players, and handheld computers and video games are becoming more power-hungry and more popular, and the need for smaller and stronger batteries has cracked the battery industry open to startups.

Surging Need

The science of batteries leaves plenty of room for improvement, says Rob Enderle, a principal analyst for the Enderle Group, a firm in San Jose, California, that provides technology analysis and consulting.

A battery, which is made up of plates of reactive chemicals separated by barriers, is polarized so all the electrons gather on one side. That end becomes negatively charged, and the other side becomes positively charged. Connecting a device creates a current and the electrons flow through the device to the positive side. At the same time, an electrochemical reaction takes place inside the batteries to replenish the electrons.

Basically, you're converting electrical energy into a chemical process, and then the chemical process reverses to put electrical energy back out, says Mr. Enderle, adding that about 80 percent of the energy put into batteries is lost in the process. "It's incredibly inefficient."

Inefficient, yet invaluable. According to the Freedonia Group, a Cleveland-based market research firm, the worldwide battery industry is worth $48 billion and is expected to grow 6.5 percent annually until 2008. The Euromonitor International, a consumer market research and analysis firm based in London, estimates the U.S. market for batteries and rechargers at about $2.8 billion in 2003, and projects it will reach about $3.4 billion by 2008

The top four manufacturers-Rayovac in Atlanta, Matsushita Electric Industrial in Osaka, Japan, the Gillette Company in Boston (now merging with Proctor & Gamble), and Energizer Holdings in St. Louis-controlled 87 percent of the U.S. market in 2003, according to Euromonitor. Sony, Panasonic, Sanyo, Samsung Electronics, and BYD are also power players.

The industry faces pressure to improve battery technology before other technologies, such as fuel cells and photovoltaic solar cells, disrupt its market. "Current battery technologies are certainly not adequate," says Mr. Enderle. "We've got a fairly staid group of companies that operate batteries, and we do have people investing in next-generation technologies, in trying to move the ball forward to make batteries better, cheaper, stronger."

Tinkering with the Science

Lithium-ion batteries (Li-ions) are generally considered the most powerful, offering the same energy as nickel metal hydride (NiMH) batteries, with 20 to 30 percent less weight. They are expensive compared to older battery technologies, but are valued for high-power portable applications, such as laptops, cell phones, and PDAs.

But even Li-ions aren't strong enough to power all of the functions manufacturers want to add to their devices. "With Moore's Law, the chip capacity is increasing every 18 months, and competition requires all manufacturers to bring out all these new functions," says Atakan Ozbek, a former analyst with ABI Research. "Power suppliers are lagging behind what's really required by the [original equipment manufacturers], by more than a factor of 30. That's why batteries are always being called 'the weakest link.'"

Zinc is one company hoping to challenge Li-ions, with a new zinc manganese alkaline battery expected to launch in mid-2006. The battery has no lithium or other explosive compound, says Jerome Wiedermann, the company's vice president of marketing, and it provides twice the runtime as Li-ions of the same size. The company will target consumer electronics. But Zinc's competitors are working to bring strong batteries to applications where Li-ions have yet to take hold.

Alkalines are still the most prevalent batteries, and Panasonic in January announced that it will launch new AA and AAA batteries-targeting digital cameras-in Europe and the United States this spring. According to the company, the Panasonic Oxyride Extreme Power batteries provide higher voltage than other alkalines, and last between one and a half to two times longer. They will sell for $3.99 for four, roughly the price of other alkalines.

Oxyride batteries have been on sale in Japan since April 2004, and have already won 10 percent of the market share there. Oxyrides use a new oxy-nickel-hydroxide mixture with manganese dioxide and graphite, and Panasonic says it uses a new vacuum-pouring technology to pack more electrolytes into the battery.

Lead-acid batteries, the standard for vehicles and other large-format applications, are another area of interest. Lead-acid is fairly inexpensive, and many new technologies must overcome significant cost barriers to break into that market, says Mr. Enderle. But startups are trying, anyway. Firefly Energy, based in Peoria, Illinois, is developing a new lead-acid battery that it says will match the performance of NiMH or Li-ion, at one-tenth of the cost. It has a coating process that will prevent corrosion, giving its battery a much longer

life, says Firefly. The company, a Caterpillar spin-off that completed a $4-million venture round in October, estimates the worldwide lead-acid industry at $30 billion.

Austin-based Valence Technology is bringing Li-ions to large-format applications currently using lead-acid or NiMH batteries, such as scooters and wheelchairs. The company says its technology, Saphion, is safer than regular Li-ions because phosphate, an element used to extinguish fires, is structurally bound to the metal. The Segway Human Transporter got four hours of runtime using NiMH batteries, and doubled its runtime to a full workday by switching to Saphion, says CEO Stephan Godevais. Valence's battery is less powerful than other Li-ions, but is not a competitor, he says, as Valence isn't targeting consumer electronics.

Shrinking to Grow

Cell phones, digital cameras, and other gadgets are getting smaller while doing more. Manufacturers can make batteries stronger by making them larger, but that doesn't work for these devices. Some battery makers have tackled the problem by transferring stronger technologies to miniature sizes.

Last fall, for instance, Energizer introduced a Li-ion battery in AAA size, called Energizer e2, to fill the need for stronger batteries in the smaller size, which are often used for digital cameras. Sony and Sanyo also introduced new Li-ion and Li-ion-polymer batteries in the fourth quarter of 2004

Nanotech companies are also getting involved. mPhase, for example, is partnering with Lucent's Bell Labs to make smaller batteries with longer shelf lives. The "nanograss post" technology will reduce the internal packaging to allow practically all of the battery to be filled with chemicals, says Bell Labs.

The nanograss posts, so called because they look like grass when seen under a microscope, are made of silicon and are 30 times thinner than a red blood cell. Their pointy shape adds reactive surface area to a smaller space, making them more efficient. Those same posts keep the chemicals separated when the battery is not being used, increasing shelf life. mPhase says its first products will come out around 2007 and target the military and government markets.

BatMax uses a new nanoceramic material called IonXR to make battery boosters for a number of consumer electronics, and Toshiba in March announced a breakthrough using nano-particles, which boost the power density of Li-ions and allow them to recharge 60 times faster than today's Li-ions.

Sometimes the main problem isn't size, but shape, however. Medical devices, along with small consumer electronics and military devices, have weird shapes that often don't work with standard batteries. One solution in development is the lithium-polymer (Li-polymer) battery, which looks like a thin film and is moldable, fitting inside products of all shapes.

One such battery comes from Biophan Technologies, a company based in West Henrietta, New York. The company develops batteries for implantable medical devices, a market it estimates at $500 million. Biophan's thin-film battery would use the difference between the temperature inside the body and the temperature at the surface of the body to create energy for low-power, implantable medical devices like pacemakers, sensors, or miniature drug pumps, says CEO Michael Weiner. The battery would be about the size of a matchbook cover, about one-tenth of the thickness of today's pacemaker batteries, and would contain no chemicals, using existing energy rather than creating new energy, he says.

Companies such as Solicore, Cymbet, Excellatron Solid State, and Great Power Battery are among those developing thin-film Li-polymer batteries. But they have less energy density, so more of the film must be used to power the same device, compared with Li-ions, says Mr. Enderle. Sony, Hitachi, Toshiba, and BYD already make Li-polymer batteries.

Quality of Shelf Life

Critical medical devices, such as implantable cardioverter defibrillators that save patients from sudden cardiac death, depend on batteries. So do weapons, communications equipment, and other military gear. In both cases, the stakes are high-if batteries fail, people could die-but so are the margins. Both the medical industry and the military are willing to pay for high reliability.

So manufacturers have much to gain by making batteries more dependable. Ultralife Batteries, EaglePicher, BST Systems, and Yardney Technical Products' Lithion division are all companies that have successfully thrived on the military market, which Mr. Ozbek puts in the tens of millions of dollars.

Micro Power, a company that integrates battery packs into medical devices, is profiting on the medical side. CEO Greg Love says the company's margins are around 30 to 40 percent, compared with about 5 percent for laptop batteries. Micro Power estimates the 2004 market for battery packs in the medical industry is $406 million, and expects that market to grow to $711 million by 2008.

Biophan is also taking action. The company has a thin-film Li-polymer technology, and its goal is to double or triple the life of implantable batteries in low-power devices such as pacemakers, says Mr. Weiner. When used to top off a rechargeable battery, Biophan's technology could also potentially extend battery life in medium-power devices, such as implantable defibrillators, to 10 to 20 years, he says.

Valence is increasing reliability by making Li-ions safer, and could eventually succeed in powering airplanes and military vehicles, which can handle larger batteries, as long as they are safe, says Mr. Enderle. "You don't really want something else on a military vehicle that can explode," he says.

This is a growth decade for batteries in all sectors, adds Mr. Enderle. We're hungry little consumers. We like lots of power.

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Subject: [FE_updates] Wave Buoys; News Archives; Rediscovering Fire; Prius Spotlight
From: "Free Energy News" <sterlingda@pureenergysystems.com>
Date: Wed, 18 May 2005

Wave buoys - Convert the ocean or sea wave energy into electricity. The flotation portion undulates with the waves, while a shaft fixed to the sea floor provides the counter-active force from which energy can be generated. (PESWiki; May 18)

Today in Free Energy(tm) May 18

(8 mins)- Sterling D. Allan discusses today's news. Bacteria as a workhorse in alt energy -- not to be concerned; Wave buoys; news archives; rediscovering fire; Prius spotlight. (OSEN) speedstream.netro.ca/osen/TIFE050518.wma

This Week in Free Energy(tm) report: May 15- Starting a Today in Free Energy; MagCorp pollution, Paul Pantone solution poo pooed; Home biodiesel brewer. (PESN)

Featured Archive -- January - March 2005- Stories that appeared at the heading of FreeEnergyNews.com.

Rediscovering Fire in 21st Century- "Clean, modern technology, including the emerging fields of biotechnology and nanotechnology, could greatly improve the quality of life for nearly 60 per cent of humankind by providing cleaner, safer and more effective alternatives." (SciDev.net; May 6) (Thanks ZPEnergy)

The original Green Car- Launched in 1997, Toyota Prius is the most popular hybrid, with 250,000 on the road, making ~500/day. Automatic parking. Can go up to 100 mph. (DiscoveryChannel.ca; May 10, 2005) [Best mileage of the hybrids, at 62 mpg]

Trends
Thais to Invest $20 Billion in Energy Sector in 4 Years- Energy Master Plan will focus on three areas -- optimizing use of hydrocarbon fuels, boosting energy efficiency and increasing the use of renewable energy resources. (Reuters; May 17)

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Subject: The Geothermal Power Tube
From: RemyC <remyc@optonline.net>
Date: Thu, 19 May 2005

From:

www.powertubeinc.com

Power Tube Inc.
11811 North Freeway Suite 200
Houston, TX 77060
(281) 820-6622 Ext. 105
FAX: (281) 820-8979
info@powertubeinc.com

The Power Tube Argus is a GEOMAGMATIC device that differs from a standard geothermal system in that it does not need water, steam or steam pressure to operate. It uses only the heat of the Earth and low to medium temperature heat, 110-200 C.

The Argus units are designed for the 1-5 and 10 Megawatt market. The installation consists of mostly a down-hole system with a very small surface footprint. Argus operates with a heat exchanger and in addition can also work with a thermal riser. The thermal riser option is used when the required temperatures are further down than the total length of the power plant itself. The thermal riser contains a biodegradable, synthetic, heat exchange fluid that circulates through its coaxial, flexible system which transfers the heat found at lower temperatures into the heat exchanger at the base of the installation.

Power Tube Argus units are designed to be minimal maintenance units. The maintenance is performed by a remote supervisory center via satellite. The system is designed so that the supervising controller can adjust (tweak) the settings of the on-board programmable logic controller (PLC) as needed. If needed, a local technician can be dispatched.

The International Joint Venture program establishing assembly plants in different developing countries was adopted and at present there are a total of 42 countries forming 7 regions that have applied to the Power Tube International Joint Venture Organization.

Dr. Gabriel Vasquez, CEO

Doyle Brewington, a founder, the inventor and CTO: He has over 30 years experience working in the design and implementation of power plants - primarily in developing countries. He was the CEO of an international engineering company - MSI International. His undergraduate education was in Guatemala, where he holds a dual citizenship with the US. He was recently recognized as a Rising Star Finalist, by the Austin Business Journal.

Dr. Patrick Hoskins, President: Also has private practice in civil law. Is former Dean United States Army Reserve Forces School, San Antonio, Texas. Responsible for safety, training, education, accountability, resources, budgeting, travel, allowances, finances of US Reserve Army personnel. Licensed United States Supreme Court; Texas Supreme Court; United States Court of Military Appeals: United States Federal District Courts.

John Rodriquez, Vice President: 20 years as President and CEO of ESOR Consulting Engineers. Civil Engineering firm in Houston, Texas. Is a registered PE, with MS in Civil Engineering from the University of Houston.

Amir Soofi, Vice President International Development

Fred Thompson, Secretary: BS in Civil engineering, from the University of Houston is also a the former city engineer for the City of La Porte, Texas.

Martin Dorantes, Project Resource Engineer

Board of directors

Dr. Patrick Hoskins
John Rodriquez
Fred Thompson

The four primary modules are as follows.

Turbine/Generator: The prime power source in the Power Tube system is the turbine, or turbo-expander, and is used to drive the electrical generator at speeds up to 10,000 rpm. The working fluid in the turbine is an isopentane/isobutane mixture. The pure superheated vapor (working fluid) will be present at the inlet and exit, without liquid (droplets) present. As a general rule, higher temperatures increase turbine efficiency. A unique feature of the Argus configuration is the vertical turbine orientation. The generator is directly coupled to the turbine and is used to generate electricity.

Condenser and Pump: The condenser is a cross flow, finned, air cooled heat exchanger used to condense the working fluid into a liquid before entering a high pressure pump. In the current design, working fluid enters the condenser as a vapor at reduced pressure and temperature and should reach full condensation before the condenser exit. The pump then pressurizes the condensed working fluid back to the initial turbine inlet pressure.

Boiler: The boiler is a shell and tube heat exchanger used to convert the working fluid into a high temperature, high pressure vapor for inlet into the turbine. The working fluid is inside the tubes, enters the boiler as a liquid, and exits as a vapor. A heating fluid flows through the thermal riser up from the hot geothermal resource and enters the vertically oriented boiler on the shell side. The heating fluid is in intimate contact with the tubes and heats the working fluid. Heating fluid leaves the boiler and returns to the

bottom of the riser to be reheated by the geothermal resource. Working fluid leaves the boiler as a superheated vapor and enters the turbine.

Thermal Riser: The Power Tube thermal riser is the device which extracts heat from a geomagmatically (geothermally) active region of the earth's subsurface. The current concept uses two concentric tubes to flow a fluid down to the hot region and return the heated fluid back to the boiler. The thermal riser configuration will minimize pumping losses while still providing the necessary cross section and flow velocity to transport the required heat.

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Subject: Puthoff: Earthtech's Latest Paper On EM-Induced Artificial Gravity!
From: victorgm@webtv.net (Victor Martinez)
Date: Thu, 19 May 2005

Content-Disposition: Inline

www.parapsych.org/members/h_puthoff.html

www.earthtech.org

LIST MEMBERS: Make sure and go to the attachment and read Dr Puthoff's latest piece which appears in the current issue of "General Relativity & Gravitation Journal," which is a "Tier 1" peer-reviewed journal.

Dr Puthoff's latest paper addresses what MANY on this list have been waiting with baited breath for: The space-time metric perturbation of artifical gravity induced by strong electric and magnetic fields. It's a fun and highly informative read,... enjoy! -
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WHO IS QUANTUM PHYSICIST Dr HAROLD E PUTHOFF?

Dr. Hal Puthoff is Director of the Institute for Advanced Studies at Austin. A theoretical/experimental physicist, his research ranges from theoretical studies of gravitation, inertia, cosmology and energy research, to laboratory studies of innovative approaches to energy generation.

A graduate of Stanford University in 1967 [the so-called "Harvard of the West Coast"], Dr. Puthoff's professional background spans more than four (4) decades of research at General Electric, Sperry, the National Security Agency, Stanford University, SRI International, and, since 1985, as Director of the Institute for Advanced Studies at Austin.

He has published numerous technical papers and a textbook ("Fundamentals of Quantum Electronics," Wiley, 1969) on electron-beam devices, lasers and quantum zero-point-energy effects; has patents issued in the laser, communications, and energy fields; and is co-author of "Mind Reach: Scientists Look at Psychic Ability," Delacorte Press, 1977, and co-editor of Mind at Large: IEEE Symposia on the Nature of Extrasensory Perception, HAMPTON ROADS Publ. Co., 2002.

[Re-issued by Hampton Roads Publishing

www.hrpub.com

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MIND-REACH: SCIENTISTS LOOK AT PSYCHIC ABILITIES
By Harold E Puthoff & Dr Russell E Targ,
April (c) 2005, ISBN# 1571744142, $16.95, 257 pp.]

Puthoff works closely with NASA's Breakthrough Propulsion Physics initiative; is Chairman of the Science Advisory Board of Bigelow Aerospace, involved in the construction of inflatable modules for space applications; regularly serves various foundations, corporations, government agencies, the Executive Branch and Congress as consultant on leading-edge technologies and future technology trends; is a member and officer of several professional organizations; and is listed in American Men and Women of Science, Who's Who in Science and Engineering, and Who's Who in the World; and has been designated a Fetzer Fellow (1991).

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[Continued in Part 3 of 3.]