WIRED SCIENCE

The Top 10 Green-Tech Breakthroughs of 2008

By Alexis Madrigal | December 29, 2008 | 2:29:56 PM | Categories: Chemistry, Clean Tech, Climate, Energy, Engineering, Environment, Geology, Science, Survival, Sustainability

Green technology was hot in 2008. Barack Obama won the presidential election promising green jobs to Rust Belt workers. Investors poured $5 billion into the sector just through the first nine months of the year. And even Texas oilmen like T. Boone Pickens started pushing alternative energy as a replacement for fossil fuels like petroleum, coal and natural gas.

But there's trouble on the horizon. The economy is hovering somewhere between catatonic and hebephrenic, and funding for the big plans that green tech companies laid in 2008 might be a lot harder to come by in 2009. Recessions haven't always been the best times for environmentally friendly technologies as consumers and corporations cut discretionary spending on ethical premiums.

Still, green technology and its attendant infrastructure are probably the best bet to drag the American economy out of the doldrums. So, with the optimism endemic to the Silicon Valley region, we present you with the Top 10 Green Tech Breakthroughs of 2008, alternatively titled, The Great Green Hope.

10. THE ISLAND OF THE SOLAR

With money flowing like milk and honey in the land of solar technology, all sorts of schemers and dreamers came streaming into the area. One Swiss researcher, Thomas Hinderling, wants to build solar islands several miles across that he claims can produce hundreds of megawatts of relatively inexpensive power. Though most clean tech advocates question the workability of the scheme, earlier this year, Hinderling's company Centre Suisse d'Electronique et de Microtechnique received $5 million from the Ras al Khaimah emirate of the United Arab Emirates to start construction on a prototype facility, shown above, in that country. (Image: Centre Suisse d'Electronique et de Microtechnique)

TEAM

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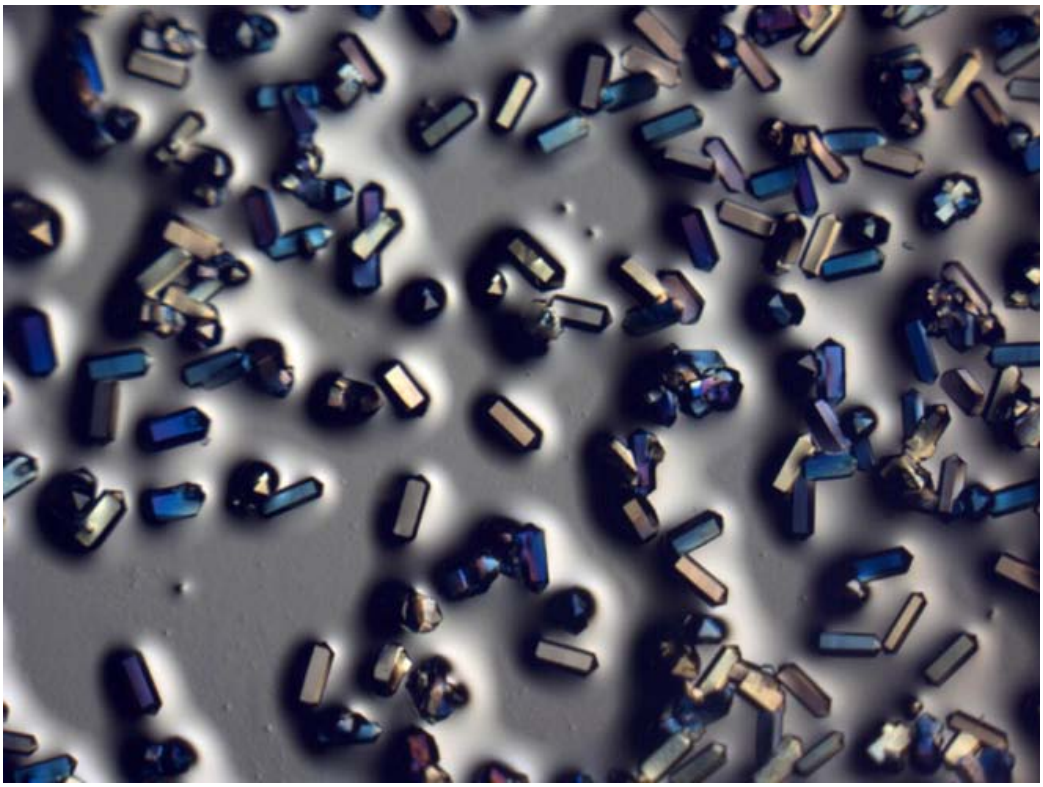

9. NEW MATERIALS CAGE CARBON

Carbon capture and sequestration has a seductively simple appeal: We generate carbon dioxide emissions by burning geology — coal and oil — so to fix the problem, we should simply capture it and inject it back into the ground.

It turns out, however, that it's not quite so simple. Aside from finding the right kind of empty spaces in the earth's crust and the risks that the CO2 might leak, the biggest problem with the scheme is finding a material that could selectively snatch the molecule out of the hot mess of gases going up the flues of fossil fuel plants.

That's where two classes of special cage-like molecules come into play, ZIFs and amines. This year, Omar Yaghi, a chemist at UCLA, announced a slough of new CO2-capturing ZIFs and Chris Jones, a chemical engineer at Georgia Tech, reported that he'd made a new amine that seems particularly well-suited to working under real-world condition. Both materials could eventually make capturing CO2 easier -- and therefore, more cost effective.

Perhaps better still, Yaghi's lab's technique also defined a new process for quickly creating new ZIFs with the properties that scientists — and coal-plant operators — want. Some of their crystals are shown in the image above. (Image: Omar Yaghi and Rahul Banerjee/UCLA)

8. GREEN TECH LEGISLATION GETS REAL

On the federal and state levels, several historic actions put the teeth into green tech bills passed over the last few years. A review committee of the EPA effectively froze coal plant construction, a boon to alternative energy (though earlier this month the EPA ignored the committee's ruling and it is unclear how the issue will be settled). In California, the state unveiled and approved its plan to regulate carbon dioxide emissions, which could be a model for a nationwide system. Combined with the green-energy tax credits in the $700-billion bailout bill, the government did more for green tech in 2008 than in whole decades in the past.

7. THE CATALYST THAT COULD ENABLE SOLAR

In July, MIT chemist Daniel Nocera announced that he'd created a catalyst that could drop the cost of extracting the hydrogen and oxygen from water.

Combined with cheap photovoltaic solar panels (like Nanosolar's), the system could lead to inexpensive, simple systems that use water to store the energy from sunlight. In the process, the scientists may have cleared the major roadblock on the long road to fossil fuel independence: Reducing the on-again, off-again nature of many renewable power sources.

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MOST RECENT ENTRIES

Rare Comet Close-Up Coming to a Sky Near You
Video: Leaping Lizard's Tail-Free Mid-Air Wipeout
These Toes Were Made for Running
Reptiles Needed More Than Feathers to Fly
New Clues for Anti-Aging Therapy
Scientists Exploit Bacterial Laziness to Beat Disease
The New Deal's Lessons for Now
Stem Cell Tumor a Cautionary Reminder
Oh, Hubble, Can This Really Be the End?
High-Resolution Imaging Unlocks Viral Secrets

February 2009

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HOTTEST STORIES

Lost in Space: 8 Weird Pieces of Space Junk
Sure, you know there's a spatula floating in space, but don't forget there's urine and Gene Roddenberry's ashes, too.
The Hunt for E.T. Comes Home — to Earth
Is it possible that life arose multiple times right here on earth and that a shadow biosphere of "weird" life exists? One scientist says he's got a simple test to check.
Scientists Agree: It's in His Kiss
You should probably learn how to kiss, even if you do have pi memorized to 150 digits. It's good to be versatile.
Suntan Drug Greenlighted for Trials
While a compound that darkens the skin from the inside-out is headed towards clinical trials to treat actual skin diseases, thousands of people are already experimenting with the drug, thanks to the pharmacy we call the Internet.
Melting Arctic Prompts Calls for 'National Park' on Ice
The chunks of the arctic that will retain ice in a warming climate need to be preserved for wildlife, say some scientists.

CATEGORIES

ANIMALS
BIOTECH
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EARTH SCIENCE
ENERGY
ENVIRONMENT
FOOD

"You've made your house into a fuel station," Daniel Nocera, a chemistry professor at MIT told Wired.com. "I've gotten rid of all the goddamn grids."

The catalyst enables the electrolysis system to function efficiently at room temperature and at ordinary pressure. Like a reverse fuel cell, it splits water into oxygen and hydrogen. By recombining the molecules with a standard fuel cell, the O2 and H2 could then be used to generate energy on demand.

6. PICKENS PLAN PUSHES POWER PLAYS INTO AMERICAN MAINSTREAM

Texas oilman T. Boone Pickens might be a lot of things, but environmentalist he is not. That's why his support for a nationwide network of wind farms generated so much excitement. While his solution for transportation, natural gas vehicles, may not pan out, his Pickens Plan is the most visible alternative energy plan out there and it began to channel support from outside coastal cities for finding new sources of energy.

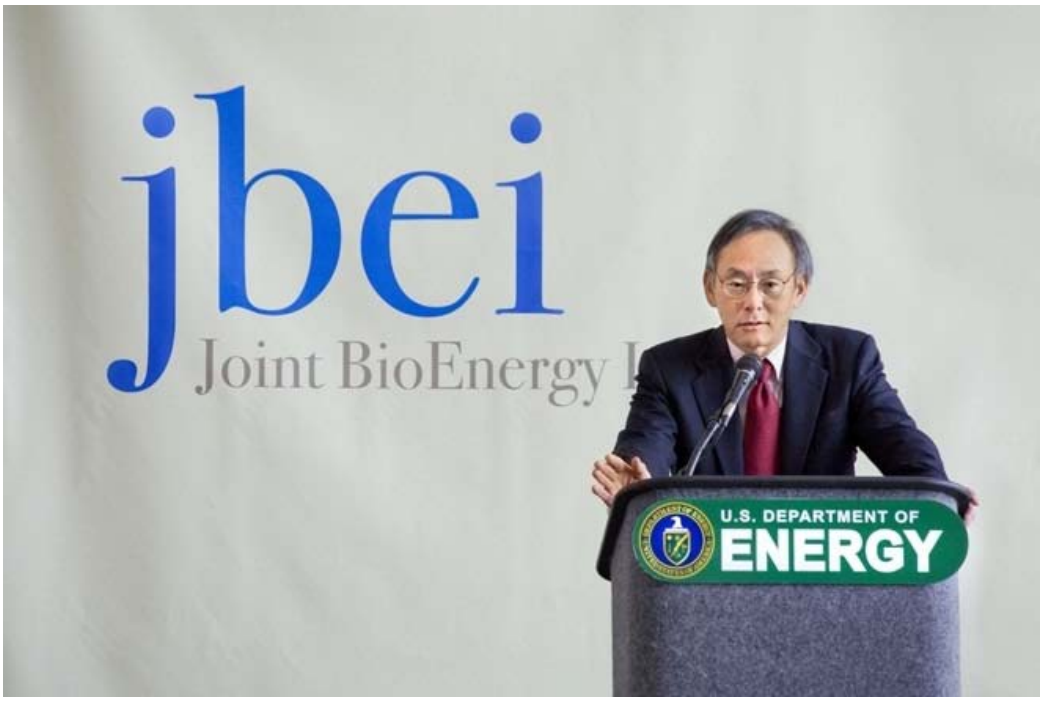
Of course, no one said Pickens is stupid. If his plan was adopted and major investments in transmission infrastructure were made, his wind energy investments would stand to benefit.

5. SOLAR THERMAL PLANTS RETURN TO THE DESERTS

When most people think of harnessing the sun's power, they imagine a solar photovoltaic panel, which directly converts light from the sun into electricity. But an older technology emerged as a leading city-scale power technology in 2008: solar thermal. Companies like Ausra, BrightSource, eSolar, Solel, and a host of others are using sunlight-reflecting mirrors to turn liquids into steam, which can drive a turbine in

the same way that coal-fired power plants make electricity.

Two companies, BrightSource and Ausra, debuted their pilot plants. They mark the first serious solar thermal experimentation in the United States since the 1980s. BrightSource's Israeli demo plant is shown above. (Image: BrightSource)



4. OBAMA PICKS A GREEN TECH EXPERT TO HEAD DOE

President-elect Barack Obama ran on the promise of green jobs and an economic stimulus package that would provide support for scientific innovation. Then, Obama picked Steven Chu, a Nobel-prize winning physicist, to head the Department of Energy. Chu had been focused on turning Lawrence Berkeley National Laboratory into an alternative-energy powerhouse. The green tech community rejoiced that one of their own would be in the White House.

That's because green tech is going to need some help. With the world economy falling into recession, the price of oil has dropped, even though there are serious concerns about the long-term oil supply. When energy prices drop, clean tech investments don't seem quite as attractive, and the renascent industry could be in trouble. It's happened before, after all.

Back in the '70s, geopolitical events sent the price of oil soaring, which, as it tends to, created a boom in green tech. But the early 1980s saw the worst recession since the Depression. Sound familiar? In the poor economic climate, focus and funds were shifted away from green tech. The last nail in the coffin was the election of Ronald Reagan, who immediately pulled off the solar panels Jimmy Carter had placed on the White House. The green tech industry collapsed.

History has given U.S. alternative energy research a second chance and environmental advocates hope that a different president will lead to a very different result. (Image: DOE)

3. SOLAR CELL PRODUCTION GETS BIG, GIGA(WATT)BIG

Every clean tech advocate's dream is a power-generating technology that could compete head-to-head with coal, the cheapest fossil fuel, on price alone. Nanosolar, one of a new generation of companies building solar panels out of cheap plastics, could be the first company to get there. Early this year, the company officially opened its one-gigawatt production facility, which is many times the size of most previous solar facilities.

Nanosolar, in other words, has found a process that can scale: it works as well in production as it does in the lab. That's the main reason that the company has picked up half-a-billion dollars in funding from investors like MDV's Erik Straser.

"[It's the] first time in industry a single tool with a 1GW throughput," Straser wrote in an e-mail. "It's a key part of how the company is achieving grid parity with coal."

2. PROJECT BETTER PLACE FINDS HOMES

Green technologies are dime a dozen, but a business model that could allow an entirely new, green infrastructure to be built is a rare thing.

Doing just that is the centerpiece of ~~Sun Microsystems'~~ SAP veteran Shai Agassi's vision for Project Better Place, a scheme that would distribute charging and swappable battery stations throughout smallish geographies like Israel, Hawaii and San Francisco. So far, there's very little steel in the ground, but in early December, the company's first charging location opened in Tel Aviv, Israel. Agassi's plan is one of several projects — like new biofuels rail terminals — that could create fundamentally new energy ecosystems.

Some of these systems, however, are actually throwbacks to earlier eras. As Peter Shulman, a historian of technology at Case Western Reserve University, likes to remind his students: in the early 20th century, before the Model T, one-third of all cars were electric. (Image: Joe Puglies/WIRED)

1. CALERA'S GREEN CEMENT DEMO PLANT OPENS

Cement? With all the whiz bang technologies in green technology, cement seems like an odd pick for our top clean technology of the year. But here's the reason: making cement — and many other materials — takes a lot of heat and that heat comes from fossil fuels.

Calera's technology, like that of many green chemistry companies, works more like Jell-O setting. By employing catalysis instead of heat, it reduces the energy cost per ton of cement. And in this process, CO_2 is an input, not an output. So, instead of producing a ton of carbon dioxide per ton of cement made — as is the case with old-school Portland cement — half a ton of carbon dioxide can be sequestered.

With more than 2.3 billion tons of cement produced each year, reversing the carbon-balance of the world's cement would be a solution that's the scale of the world's climate change problem.

In August, the company opened its first demonstration site next to Dynegy's Moss Landing power plant in California, pictured here.

See Also:

- Top 10 New Organisms of 2008
- Top Technology Breakthroughs of 2008
- Only Greentech Can Save U.S. Economy, Says Über-Investor

WiSci 2.0: Alexis Madrigal's Twitter , Google Reader feed, and project site, Inventing Green: the lost history of American clean tech; Wired Science on Facebook.

Isn't Pickens' multi-billion dollar grab for tax dollars, err, wind project DOA with the financial bailout? God, I hope so.

Posted by: allen | Dec 29, 2008 12:01:06 PM

This is a great overview, if you want to learn and profit from the rapidly changing landscape of greentech, look no further than:
http://www.greentechmedia.com/

Posted by: John Carter | Dec 29, 2008 12:14:43 PM

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.....
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I agree with the "battery swap" since I've ALREADY suggested in MY July 23, 2007 "cellphoneCAR" article:
.
http://www.gaetanomarano.it/articles/033cellphoneCAR.html
.
then posted in July 24, 2007 in a comment in this Technology Review article:
.
http://www.technologyreview.com/Biztech/19085/
.
it's a great idea to solve the main electric cars' problem: the (4+ hours) too long recharge time but it's NOT a "Shai Agassi's vision" NOR a "Better Place project" (a company born LATER)
.
"sell electric cars without batteries and just swap them" was/is/will be an idea of MINE, while, the only "vision" Mr. Agassi has (probably) had is the READING of MY article or some of my comments and posts on Technology Review and several other forums and blogs!
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.....
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Posted by: gaetano marano - ghostNASA.com | Dec 29, 2008 12:17:56 PM

This is an excellent review of the Green Market in 2008. 2009 would be a turning point for the green economy!

Posted by: Joe Stanley | Dec 29, 2008 1:17:19 PM

This is an excellent review of the Green Market in 2008. 2009 would be a turning point for the green economy! Technologies such as the solar cell and solar thermal plants should be developed further.
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http://www.greeneconomyinitiative.com

Posted by: Joe Stanley | Dec 29, 2008 1:19:50 PM

@gaetano marano: The conspiracy against you continues I see. Hopefully the dastardly villans will soon be crushed. I will you Godspeed....LOL. Nutcase....

Posted by: sci_guy | Dec 29, 2008 1:28:57 PM

@ sci_guy
generally talking, those who have MANY ideas always are systematically plundered by those who do not have NO ONE good idea!
.
however, in my "cellphoneCAR" article there is HALF of MY idea, so, they just have HALF of the "access code" to succeed in this project... :)
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Posted by: gaetano marano - ghostNASA.com | Dec 29, 2008 1:55:27 PM

You're actually trying to cite Congress' actions this past year as a good thing for anything (item #8)?
Congress' actions, especially Chris Dodd's and Barney Frank's, are directly responsible for the financial disaster that our economy has become, and the porkfest spending disasters that all of the bailout bills have been.
When the economy goes south, luxuries are the first thing to go, and make no mistake, environmental spending is a luxury.
As for the EPA's freeze on coal plants, until we actually start using alternatives able to provide baseline power such as nuclear, and, yes, (clean) coal, all we do by restricting ourselves from any energy source is give ourselves more economic trouble down the road.

Posted by: taoist | Dec 29, 2008 2:04:43 PM

Hi, sorry to do this, but spotted an error... Shai Agassi is an SAP veteran not their competitor Sun.

Posted by: Matt | Dec 29, 2008 3:08:38 PM

amazing breakthroughs!
thanks so much for all the wisdom

aromahand

Posted by: aromahand | Dec 29, 2008 3:48:12 PM

I'm surprised that Wired failed to mention the vast amount of underwater renewable energy sources that are coming to the fore. Its a fact that wind turbines are practically useless and only serve as feel-good machines for green fanatics. They cost millions of dollars to erect, maintain, and replace, all the while producing very little energy at all. Water produces much more torque, which equals substantially more energy. We should look into aquatic solutions because water covers 70% of the planet!

Posted by: Eric | Dec 29, 2008 4:02:00 PM

There are no technologies listed here that produces a good EROEI number. Consequently, most of these projects will become deadends or they won't ever scale up.

Posted by: Cinch | Dec 29, 2008 4:15:02 PM

There is a new fuel additive on the market that is a green product, it is called Efuel, from Fuel Legacy, you can take a look at this product at www.fuellegacy.com/kensgreenway
Take a look and see if this product can help cars and trucks to burn cleaner for a healther tommorrow.

Posted by: John K. Wright | Dec 29, 2008 5:07:49 PM

Nothing really exciting to see here. Catalyst guy especially is kind of a joke.
Nuclear power is still the way to go...

Posted by: Ross | Dec 29, 2008 5:29:25 PM

HAHAH. Picking a 'greenie' to head DOE is a 'tech breakthrough'?? Way to make this article worthless.

Posted by: lordmorgul | Dec 29, 2008 5:31:46 PM

we don't need ads for snake-oil fuel additives, thanks
Wired -- please ditch them

Posted by: zeke | Dec 29, 2008 5:33:17 PM

..What Was Start Learning..
..It was End Of Equations..
..This remind me of, what was tools makers are griping two different markets..I like the tool and drill for the bankings..And some lost in tools for home industry, before market home leaving..Some tools for most lady driving big buck corps..I know many people looking at lost and every other ladies and everyone can use the code systems..

Posted by: ..What Was Start Learning..It Was End Of Equations.. | Dec 29, 2008 5:48:10 PM

I'm not entirely sure it fits into Green Tech, specifically, but what about Daniel Burd's "using bacteria to decompose plastic bag" project/discovery?

http://blog.wired.com/wiredscience/2008/05/teen-decomposes.html

Posted by: Justin | Dec 29, 2008 5:50:29 PM

Article on solar houses, solar water heaters, or indoor sunlighting might be interesting

Posted by: username | Dec 29, 2008 6:42:04 PM

@Eric: I think hydrokinetic power is going to be a big story in 2009. Right now, it's a little early, I think. And I wouldn't write off wind so quickly. It is cheap and we know how it works; been harnessing it in very large amounts in the US for more than a hundred years. That goes a long way.

Posted by: Alexis Madrigal | Dec 29, 2008 8:16:08 PM

@lordmogul: It's kind of a fallacy that tech acts on its own. It's pretty clear that government has and will play a role in the future of the technologies used on the planet. Chu will enable more green tech to be developed than most other candidates, we think, so his appointment is on the list. It's not new tech, per se, but it enables new tech.

Posted by: Alexis Madrigal | Dec 29, 2008 8:19:11 PM

Great information thanks heaps

Posted by: Nigel | Dec 29, 2008 9:17:11 PM

"The green tech community rejoiced that one of their own would be in the White House."
To be nitpicky about it, the energy secretary isn't physically based in the White House, although he probably travels there regularly for meetings. The Secretary of Energy's office is at the Forrestal Building in downtown D.C., which is a few blocks south and east of the White House.
This was a great article for someone like me who hasn't had the time to keep up with green tech developments lately.

Posted by: Drew | Dec 29, 2008 9:40:09 PM

Really, Pickens? As far as green energy goes a metaphor for Pickens is he's the weird Uncle that your family puts up with his inappropriate touching of the children because of the big checks he puts in the birthday and Christmas cards. The good parts of his plan marginally outweigh the bad parts of his plan. He's like Microsoft with all advertising to stimulate demand and no real working reasons to prefer them over others. Thumbs down to Wired for not looking into Pickens enough; or did he pay you to put him on the list?

Posted by: Mike | Dec 30, 2008 7:50:10 AM

@Mike: We didn't say that Pickens plan was perfect — or even that we liked — but more that it was visible and heavily marketed. That's all we said. And in pushing energy problems, and maybe some pieces of the solution, in front of people, the Pickens plan was important.
Also: what admirable belief you have in the free market that you think Microsoft's business model of "advertising to stimulate demand and no real working reasons to prefer them over others" isn't the standard method of operation for corporations around the world.

Posted by: Alexis Madrigal | Dec 30, 2008 8:02:44 AM

Your number six story (PICKENS PLAN PUSHES POWER PLAYS INTO AMERICAN MAINSTREAM) might not be about wind power. A story from JunkScience.com suggests Pickens might be using it as a ruse to get water rights. The story is at (**http://www.junkscience.com/ByTheJunkman/20080731.html).** I am neutral on this suggestion, but from what the article says, I want more information about his intentions.

Posted by: Smorgasbord | Dec 30, 2008 9:43:33 AM

You forgot to mention the creation of the fabulous green social network **http://www.greenwala.com**

Posted by: Leora | Dec 30, 2008 10:50:15 AM

You forgot to mention the creation of the fabulous green social network **http://www.greenwala.com**

Posted by: Leora | Dec 30, 2008 10:50:27 AM

Alexis is right to pick Pickens. The Pickens plan matters because he pushed green energy to a level where 10 million Californians got to vote on whether or not we would mandate green.
People like me debated between shutting down a self-serving jerk and sending a loud message to foot-dragging govt and power cos. that we WILL have renewable energy whether they drag their feet or not. Most of the money against it came from big power cos., who would have sued to shut it down had the initiative passed.
I voted yes to send the message that we want an end to burning coal and I was delighted to have the chance on Pickens' dime.

Posted by: lucybarker | Dec 30, 2008 11:44:19 AM

here i was expecting wired to put the iphone at the number one spot, for whatever reasons could be drummed up.

Posted by: dnynumberone | Dec 30, 2008 12:41:56 PM

One again Wired Magazine proves it is the Tech resource for Liberal Arts majors.

Posted by: Deborah Gold | Dec 30, 2008 1:01:43 PM

“Investors poured $5 billion into the sector just through the first nine months of the year,” reads the article.
Since investors are motivated by expectations of a return on their investments (i.e., profit), then their having invested is indication that they believe the technologies have true market merit. That is, private market initiative will deliver the technologies that are needed/useful and that make economic sense – as it always has. Those technologies will, consequently, be the ones that create sustainable employment and a net benefit to consumers. If those investments fail to make a good return, they are abandoned, and the money is invested in more promising endeavors.
So, why do so many look to government to make “investments” in technology”? What business or competence does government have making such “investments”? How can we expect the entity that brings us the efficiencies and blessings of the US Postal Service, the IRS, FEMA, Fannie Mae, Freddie Mac, etc., be expected to make good judgments about investments? How can we expect an entity whose decisions are driven by politics, back-scratching, and pork be expected to make good investment decisions, especially when those making the decisions are spending other peoples' money and assume no financial risk themselves for bad decisions?
And Pickens was trying to use his ”green” message as a smoke screen to get a government-mandated monopoly on water supplies in west Texas. He is a corporate rent-seeker, using politicians to grant him a gold-egg-laying goose – as have other self-promoted “greens,” both individuals and corporations.
If a program truly has economic and technical merit, private industry will be in it. If a program has been rejected by private industry as having no such merit, the charlatans behind the program will tap their politicians to have the government step in to save it. And the taxpayers pay the bill, and consumers will see little/no benefit.

Posted by: techgm | Dec 30, 2008 7:02:31 PM

krapt
http://www.FilthyRichmond.com

Posted by: pewpd | Dec 31, 2008 1:49:40 PM

Not bad, I think you might have hit the nail right on the head!
Jess
http://www.online-privacy.cz.tc

Posted by: John Watson | Dec 31, 2008 2:01:10 PM

Nothing about the Japanese Water Car?
http://www.youtube.com/watch?v=CrxfMz2eDME

Posted by: J-Dogg | Jan 1, 2009 1:33:57 AM

Excellent post. Its good to see so much progressed made in 2008 towards a greener world. I think the ridiculously high fuel prices during the mid-2008 help spur consumer demand for alternative fuel as well.
http://www.greendustbin.com

Posted by: greengoblin | Jan 1, 2009 7:22:14 AM

great information shared...thanks a lot for posting.

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Regards,
Ashok Gunasekaran
http://www.ashokgunasekaran.blogspot.com
http://www.health-capsule.blogspot.com
http://www.quality-excellence.blogspot.com

Posted by: Ashok | Jan 1, 2009 9:43:50 AM

This is a pretty good list.
http://how-to-get-free-xbox-360-games.blogspot.com
http://free-xbox-360-elite-free.blogspot.com
http://free-apple-ipod-gear.blogspot.com

Posted by: Free Xbox 360 Games | Jan 1, 2009 3:50:46 PM

What a great variety of topics! summarization is quite impressive to learn new topic.This article is totally amazing to read which is done in prospective manner.

Posted by: | Jan 1, 2009 11:03:55 PM

If those are 2008, 2009 ones would be amazing!
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http://free-xbox-360-premium.blogspot.com/

Posted by: | Jan 2, 2009 7:39:01 AM

No matter how many dollars Obama promises to spend on green jobs, none of these technologies is going to be practical during the next four years of the Obama administration. Most of them will probably never be economically viable, that's why the people developing them have to be leeches and get money from the taxpayers.

Posted by: Jason | Jan 3, 2009 8:59:53 AM

Great list of green topics...To bad the powers that be really don't care about any of this!
http://www.thinkgreenarticles.com

Posted by: Brock | Jan 4, 2009 8:21:11 AM

This article really gives me hope that America is waking up. Let's hope the $'s follow the innnovation.

Posted by: ElizabethM | Jan 4, 2009 11:14:07 PM

This article is quit interesting it shows the world is waking up its America which have waked up for green technology.Hope say it may furnish through out.

Posted by: Clean coal companies | Jan 5, 2009 4:08:17 AM

Good piece of information. Awakening facts and more such inputs can wake up the world from its slumber on these aspects.

Posted by: P S Kandanathan | Jan 5, 2009 9:02:59 AM

Life Science ecological environment;生态平衡 ecological balance

Posted by: dandanyu | Jan 9, 2009 11:50:15 PM

i think that klean energy development may continue, but will not be applied until the very last minute, when the population begins to complain about the rising cost of energy/fuel due to the slowing down of oil extraction, because we've already reached peak production. and a lot of these energy generating processes are pretty inefficient anyways, at least compared to sterling engines (about 20-30%, compared to the 10-20%of solar panels) and they will probably remain more expensive than fossil fuels, due to the lack of green energy plants.

Posted by: harley(conspiracy theorist) | Jan 15, 2009 9:32:45 AM

New Aerospace Technology, “Aerogel”, the Highest Insulating material in existence, now available to the Building Industry

(Tampa, Florida) With energy costs continually on the rise and taking its toll on the world population and the environment, the need for energy conservation has never been greater. It is estimated that 40% of our energy is used controlling the temperature in buildings. Of this, over 30% escapes from the building primarily through the conventionally insulated walls (metal or wood studs) in a process termed Thermal Bridging.

Taking the newly discovered Aerogel insulation technology developed by NASA, which is the highest insulating material in existence, Thermablok™ developed an amazing product that may soon become a requirement in the building industry. Aerogel, also referred to as "frozen smoke", has been difficult to adapt to most uses because of its fragility. The patented Thermablok material however overcomes this by using a unique fiber to suspend a proprietary formula of Aerogel such that it can be bent or compressed while still retaining its amazing insulation properties.

Now available to the building industry, just one ¼'' x 1 ½'' (6.25mm x 38mm) strip of Thermablok™ added to each stud in a wall before drywall, breaks the “thermal bridging” and can increase the thermal insulation factor of a wall by over 40%!
While sounding too good to be true, for something so simple to produce such incredible results, the figures are substantiated by the U.S. Department of Energy's Oak Ridge Laboratory and J.M. Laboratory. They compared two identical (metal stud/drywall) walls; one with one strip of the material on each 2x4 stud edge (one side only) and the second wall without the material. The results were amazing. A ¼” of the material increased the insulation factor by 30% and 3/8'' increased the insulation factor by an amazing 42%.

Thermablok™ was developed by the international acoustical research company Acoustiblok®. Mark Nothstine,
head of Research and Development at Acoustiblok stated, “Thermal transmission is greater through solid objects, and of course, the least through air or a vacuum. Thus, in a regular wood or metal stud wall, the area
that continues to conduct thermally are the studs which mechanically connect one side of a wall to the other.
On an infrared thermal test of a wall, the studs show up very clearly as the points of conductivity. Thermal
bridging is the prime energy loss in a building. As the Thermablok™ Aerogel material is 95% air, and is between the stud and the drywall, it breaks the mechanical connection (thermal bridging) exceptionally well.”

NASA has been developing Aerogel insulation technology for several years, using it on the space shuttle, space suits, and for many other advanced insulation requirements, including the last Mars mission. This technology has the potential to revolutionize energy conservation. As recently reported on the “Science Channel”, Aerogel will be the breakthrough in building energy conserving buildings.

Nothstine also stated, “The thermal increases achieved with Thermablok will provide continuing energy cost and environmental savings. As an example; a Midwest residential home, 2,400 sqft with 16'' on center stud framing, R13 insulation and wood siding should result in a $746 per year in energy cost savings with a reduction of 3.9 tons of CO_2 emissions. Add to this the many tax deductions offered by the government and
you should recover your entire cost in the first year.”

C.E.O. & Founder of Acoustiblok, Lahnie Johnson, who has worked in the Aerospace industry is very enthusiastic about their new product, which is an extension of the company's already environmentally friendly product, Acoustiblok. Johnson takes pride in developing products that are not only environmentally friendly, but also energy conserving. He said, “The applications of this product are endless. It solves major energy
conservation issues in conventional construction as well as increasing privacy through increased acoustic performance. Considering that over 50% of energy in the U.S. is used within buildings (not transportation).
Thermablok™ has the capability to drastically alter our expectations on energy conservation and CO_2 emissions.”
Johnson believes in conserving energy versus producing more. Stating, “Real energy conservation is far better and less expensive than producing more for that which is wasted. Thermablok's technology couldn't have come at a better time.”

Review of Benefits:
• Very significant saving in energy costs
• 100% recyclable
• Contains no ozone depleting substances
• Uses 30% recycled content
• Composite material consisting of over 95% air
• Hydrophobic, unaffected by moisture, mold or water
• Easily applied via stick-on-back
• “Class A” fire rated
• Economical
• Virtually no weight means low cost (& low emissions) shipping
• Adds acoustical isolation
• Not affected by age as it does not react with moisture of the atmosphere
• Made in USA
Acoustiblok, Inc. International Headquarters
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Posted by: Cindy Taliaferro | Jan 30, 2009 11:18:58 AM

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