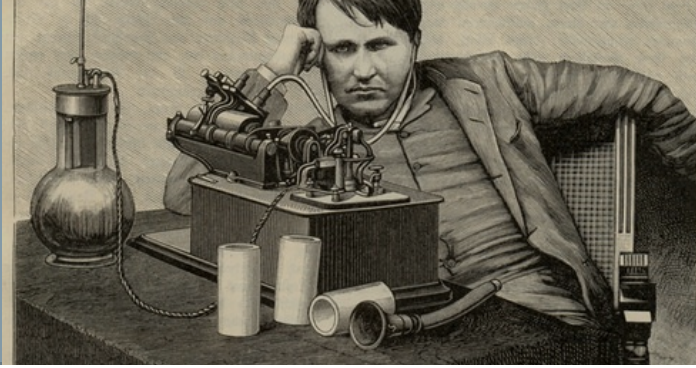


Energy-Storage/Transmission

by TidewaterCurrent

News and information on sustainable endeavors relating to energy storage/transmission.

⊕ Part of Energy



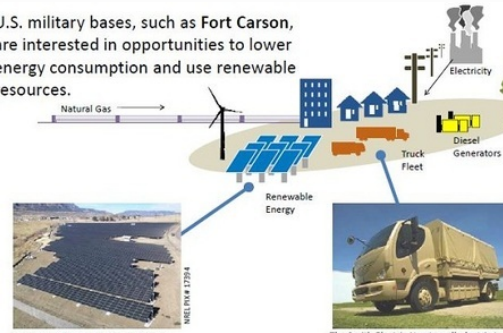
Concentrated solar power with thermal energy storage can help utilities

ewind.es



TidewaterCurrent 12.21.12 - "The storage capacity of concentrating solar power (CSP) can add significant value to a utility company's optimal mix of energy sources, a new report by the U.S. NREL suggests."
January 5, 2013

U.S. military bases, such as Fort Carson, are interested in opportunities to lower energy consumption and use renewable resources.



Electric Vehicles Enlisted For Military Base Grid Security «

earthtechling



TidewaterCurrent 11.29.12 - Fort Carson to integrate electric vehicles into the microgrid. Used for power storage when parked, they can provide energy to the grid when needed.

November 30, 2012



North American Windpower: German Project To Test New Methods Of Storing Excess Wind Power

nawindpower



TidewaterCurrent 1.7.13 - "The new system, which is currently being built at the Coal Innovation Centre in Niederaussem, Germany, comes with a proton exchange membrane (PEM) and enables electric power to be converted into hydrogen. The electrolysis system is located in a standard container and, after commissioning, is due to be tested from January to October of this year."
January 8, 2013



Energy Efficiency Saves New England \$260 Million In Transmission Costs

cleantechnica



TidewaterCurrent "State and private programs designed to reduce consumer energy demand have recently cut the need for \$260 million in planned transmission system upgrades across the six states within the ISO-New England (ISO-NE) region."
December 30, 2012



More than 700 Energy Storage Projects are Announced or Operating around the World, According to Pike Research Tracker

greenbuildingelements



TidewaterCurrent 12.19.12 - "Traditional pumped storage still leads the market in terms of megawatts installed (with 10,359 MW from 2007 to 2012)"
December 20, 2012



The battery that could power the world - CNN.com Video

cnn



TidewaterCurrent 11.16.12 - Video - "MIT Professor Donald Sadoway explains the liquid metal battery and how it could change the way we store and use energy."
November 18, 2012



Artificial Donut-Shaped Island Will Store Belgian Offshore Wind Power

spectrum.ieee



TidewaterCurrent 1.17.13 - "This would play a big role in Belgium's transition away from nuclear power. In the wake of the Fukushima disaster, the country was one of several countries—others included Switzerland, Mexico, and most notably, Germany—to disavow the use of nuclear energy. In 2011, nuclear accounted for more than half of Belgium's electricity generation." Excess energy provided by wind would be used to pump water out of a reservoir created in a sand island, when wind production is low or demand high, water would be allowed to flow into the reservoir to spin turbines and create energy.
January 18, 2013



For Solar Storage, Researchers Offer Concrete Idea «

earthtechling



TidewaterCurrent 11.10.12 - "It's concrete – a "special mixture," mind you, that's arrayed in a very particular way. Not only is it effective and safer, it's also cheap, the researchers say."
November 11, 2012



Entire Cities Could Run on Compressed Air

cleantechnica



TidewaterCurrent 11.10.12 - Compressed Air Energy Storage - Danielle Fong's Lightsail Energy Storage.
November 11, 2012



MHI and SSE Partner to Bring Cargo Container Battery Storage to Orkney Islands Power Grid

renewableenergyworld



TidewaterCurrent 11.29.12 - "energy storage demonstration project that will use two 40-foot cargo containers full of thousands of lithium-ion rechargeable batteries to store as much as 800 kWh of generated clean energy, with a maximum power output capacity of 2 megawatts"
November 29, 2012



Community-Owned Transmission? «

earthtechling



TidewaterCurrent 11.20.12 - "Germans are committed to letting ordinary citizens reap the economic benefits of the "energy change," announcing a new plan to let citizens invest in transmission lines....The German concept would allow up to 15% community ownership in a transmission line, with a guaranteed return of 5% for local investors"
November 21, 2012



Peter Thiel, Bill Gates, Khosla Get Behind Energy Storage Start-Up LightSail in \$37M Deal

blogs.wsj



TidewaterCurrent 11.5.12 - More news on Danielle Fong's Lightsail energy storage technology.
November 5, 2012



Greener storage for green energy

nanowerk



TidewaterCurrent 11.29.12 - Chemists at Harvard are working on a new battery. "Called a flow battery, the technology offers the prospect of cost-effective, grid-scale electrical energy storage based on eco-friendly small organic molecules. Because practical implementation is a core driver for the program, the researchers are collaborating with Sustainable Innovations, LLC, a commercial electrochemical system developer." November 30, 2012



The Secret to HVDC Grids: ABB Unveils HVDC Circuit Breaker

greentechmedia



TidewaterCurrent 11.9.12 - "The power automation giant just announced that it has cracked the code on building circuit breakers for HVDC power lines" November 9, 2012

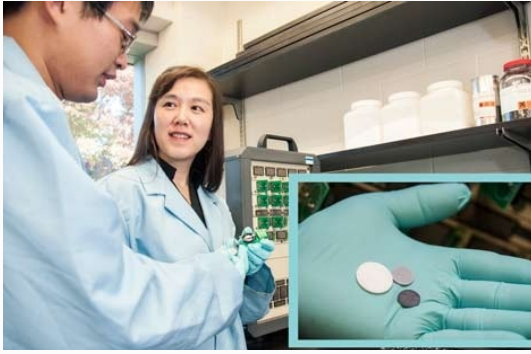


Storing That Power: Flywheels -

revmodo



TidewaterCurrent "Although the initial capital costs for these systems are higher than other battery systems, the flywheels take up less space and need much less maintenance than battery systems, which makes them cost-effective over their lifespan....The largest flywheel storage facility is a 20 megawatt plant at Stephentown, New York which is connected to the New York state grid." October 18, 2012







WVU at leading edge of grid-scale energy storage

statejournal



TidewaterCurrent 10.25.12 - WVU researchers are developing sodium-glass composite electrolytes for utility-scale batteries. The materials are ubiquitous and therefore less costly than materials used currently. In addition to supporting renewable energy's integration to the grid, the batteries can also reduce inefficiencies at fossil fuel plants.
October 26, 2012



-  WESTERN INTERCONNECTION
-  EASTERN INTERCONNECTION
-  TEXAS INTERCONNECTION (ERCOT)
-  TRES AMIGAS, CLOVIS, N.M.

Tres Amigas to Link Major US Power Grids

enr.construction



TidewaterCurrent Linking the 3 main power grids in New Mexico will support the renewable energy industry. Producers and consumers will be able to sell and purchase power from anywhere.
October 31, 2012



The ZEN of battery storage breakthroughs

smh.com.au



TidewaterCurrent 10.10.12 - Household and utility scale battery management.
October 12, 2012



Why a Revolutionary Approach for Electrical Transmission Lines Matters

switchboard.nrdc



TidewaterCurrent "Order 1000 is critical in helping our nation increase transmission reliability and security, and reduce greenhouse gas emissions but also revolutionary because of its new perspective on what must be included – and valued – in building transmission lines in the United States. Getting more renewable energy onto the grid while increasing sensitivity to the cultural and environmental impacts as we modernize and expand our transmission system will benefit all of us long into the future."

November 9, 2012



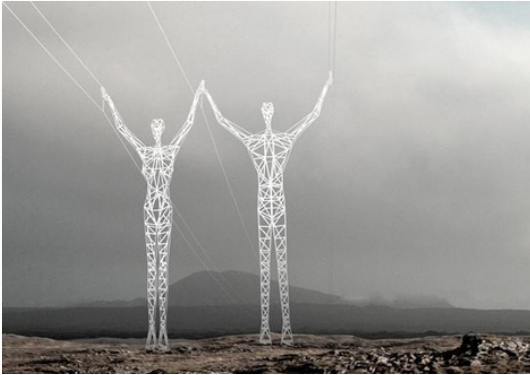
Regenerative air energy storage

energyharvestingjournal



TidewaterCurrent 10.9.12 - Lightsail system will be available in late 2013 and the company claims it will be cheaper than batteries.

October 9, 2012



Designing the grid for renewables | SmartPlanet

smartplanet



TidewaterCurrent 10.3.12 - Great post on grid management. Opponents to renewables have long argued that the US grid cannot handle the fluxes in generation capacity created by renewables. The author here points out that they have very effectively been able to manage variables in Europe, with existing grid infrastructure handling major inputs of renewable in very short time frames, while at the same time phasing out fossil fuel or nuclear generation. We too have the ability, perhaps just not the will.
October 3, 2012



World's 1st Intelligent Energy-Storage-Powered High Rise Unveiled at Barclay Tower

cleantechnica



TidewaterCurrent 10.5.12 - The system can store 2 megawatt hours for release when demand and energy costs are high.
October 5, 2012



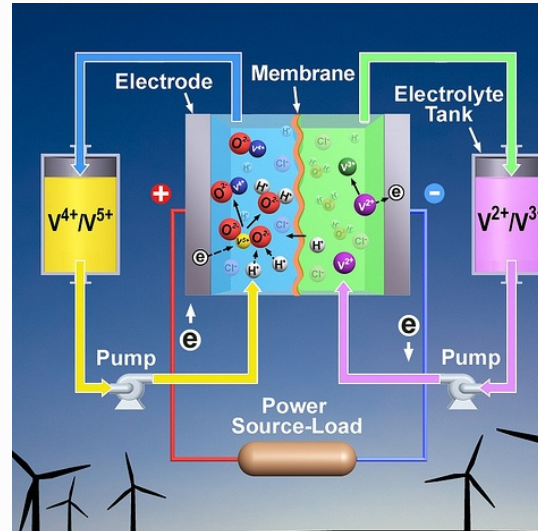
Liquid air 'offers energy hope'

bbc.co.uk



TidewaterCurrent 10.1.12 - "IMechE says "wrong-time" electricity generated by wind farms at night can be used to chill air to a cryogenic state at a distant location. When demand increases, the air can be warmed to drive a turbine. Engineers say the process to produce "right-time" electricity can achieve an efficiency of up to 70%."

October 2, 2012



Smooth Sailing for Wind Power with New Flow Battery... or Not

cleantecnica



TidewaterCurrent 10.5.12 - "The new grid-scale flow batteries can store huge amounts of energy from wind turbines, which basically eliminates the herky-jerky, unpredictable nature of "raw" wind power straight from the skies and packages it into a steady, reliable stream. Unfortunately, that new battery could find itself all dressed up and nowhere to go, because "the usual suspects" in Congress are stalling a crucial tax credit for the U.S. wind power industry."

October 7, 2012



UK-Ireland Energy Cable Opens to Bolster Wind Power

cleantecnica



TidewaterCurrent 9.26.12 - First step toward a European Super Grid.

September 26, 2012

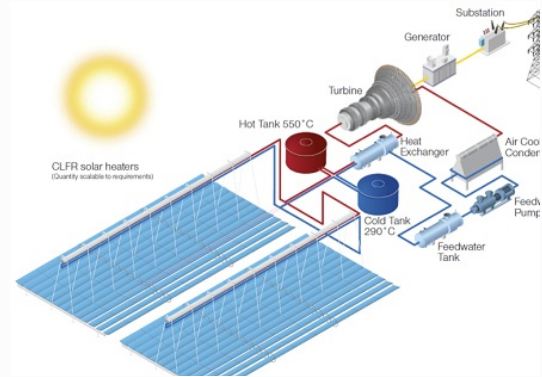


Storing That Power: Pumped Hydro -

revmodo



TidewaterCurrent 9.25.12 - This is the first in a multipart series covering storage technology needed for the widespread utilization of renewable energy. See more in Energy-Storage/Transmission collection. September 27, 2012



Areva Solar, US Sandia Labs Join Forces for CLFR Molten-Salt Storage

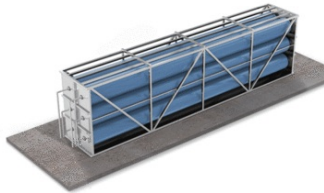
solarnovus



TidewaterCurrent 9.12.12 - "The system draws molten salt from a cold (290°C, 554°F) tank, uses the temperature from the mirrors to heat it to as high as 550°C (1022°F) and passes that hot liquid to a separate tank for storage. When needed, the high-temperature molten salt passes through a heat exchanger to produce steam for electricity generation." September 13, 2012

Storage

Air can be stored in simple, low cost air storage tanks, packed in a convenient shipping container form factor using industry standard pipes and matching ASME and ISO safety standards. For truly massive installations, air can be stored in underground caverns which is the standard for large scale natural gas storage.



Compressed air may be solution to energy storage

thechronicleherald.ca



TidewaterCurrent Nova Scotia, CA-Dartmouth-based Watts Wind is partnered with LightSail Canada Inc. of Halifax on a trial that will use a compressed air system. The technology, will take electricity produced by wind turbines and turn it into compressed air that is stored in metal tanks. When the energy is needed, a generator is used to convert it back into electricity that can be put on the grid. September 30, 2012



Sun-drenched Southwest needs more transmission lines to become nation's solar powerhouse

washingtonpost



TidewaterCurrent 9.18.12 - NREL reports that renewable energy could supply 80% of electricity demand in the US by 2050, but in order for that to happen the aging transmission infrastructure needs to be upgraded. Transmission capacity is already an issue. In Arizona, the system will be overloaded by only half the projects in the works and in the North East, the lack of capacity has limited wind development.

September 19, 2012



Renewable standards boosted 'green' energy. Are storage standards next?

csmonitor



TidewaterCurrent 9.18.12 - California is looking to create the nation's first grid scale energy storage portfolio standard. The utilities are not on board but as the author notes: "Given that GE (NYSE: GE) is now working on a grid-scale battery technology, given how much GE's wind business has benefited from the expansion of RPS policies over the last decade, and given how active GE tends to be in energy policy circles, it's not a stretch to think that there will be a push for SPS-like policies" across the U.S."

September 19, 2012



Iron-air batteries: 'Eco-friendly' storage solutions for renewable power

ecoseed



TidewaterCurrent 9.11.12 - "Cheap, rechargeable and eco-friendly means to store energy from solar and wind power plants."

September 11, 2012



New Water-Based Salt Battery for Renewables -

revmodo



TidewaterCurrent 8.8.12 - Developed at Murdoch University in Australia, the affordable batteries are meant for large scale generation systems.
August 9, 2012



As smart electric grid evolves, engineers show how to include solar technologies

phys



TidewaterCurrent 8.17.12 - VT team discusses large scale distributed energy storage system for solar energy in an award winning student paper. The team developed an algorithm for managing a fleet of batteries connected to distribution transformers so solar energy stored in the batteries can be withheld for peak demand. Hope Dominion/Virginia Power has the vision to work with these guys.
August 18, 2012



The Deal: European Supergrid Sets High Expectations

renewableenergyworld



TidewaterCurrent 8.13.12 - Undersea network of transmissions line will promote renewable development, reduce energy costst and provide energy stability.
August 13, 2012



Drexel develops storage device to keep renewable energy flowing

ecoseed



TidewaterCurrent 8.24.12 -"

Engineers from Drexel University are looking to provide the grid what it needs with an electrochemical flow capacitor technology which combines the principles behind two energy storage techniques, the flow battery and the supercapacitor."

August 24, 2012



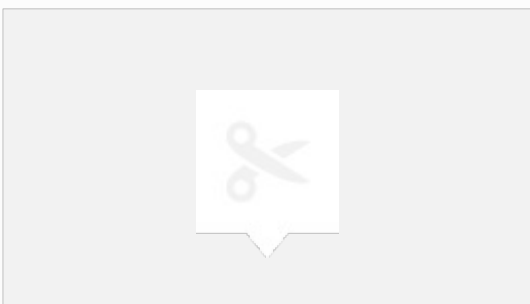
Oregon BEST awards commercialization grants for green roofs, energy storage | Sustainable Business Oregon

sustainablebusinessoregon



TidewaterCurrent 9.11.12 - Applied Exergy of Oregon is working with OSU to develop energy storage technology in ice slush. Their technology is particularly favorable for use where waste heat is generated, such as data centers, which would use the heat to release energy.

September 12, 2012



Houston company building compressed air energy storage plant

examiner



TidewaterCurrent 7.15.12 -

Underground storage in a salt dome.
July 16, 2012

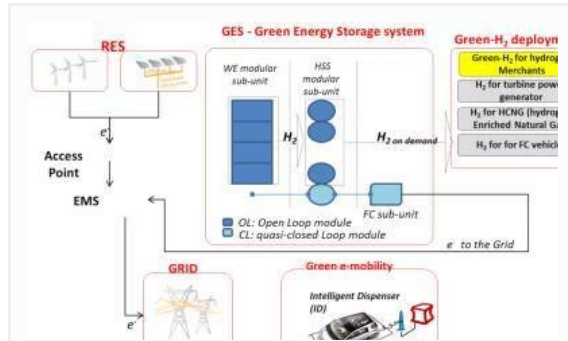


Grid Scale Energy Storage: The Holy Grail of America's Energy Revolution

greentechnologyinvestments



TidewaterCurrent 7.13.12 - Good review of renewable storage issues. Company push for Vanadium flow battery technology.
July 14, 2012

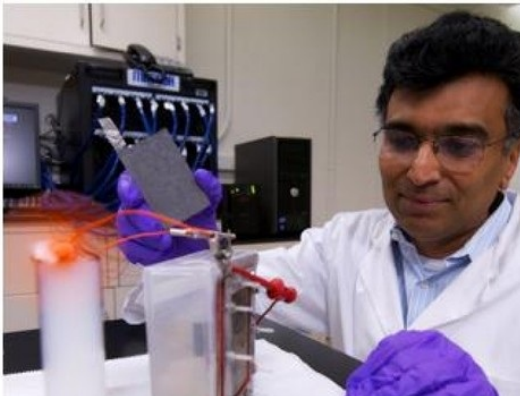


Europe launches grid-connected renewable energy storage project

eetimes



TidewaterCurrent 7.23.12 - Ingrid project slated for development in the Puglia region of Italy that uses hydrogen based storage and electrolysis with fuel cell power for distribution.
July 24, 2012

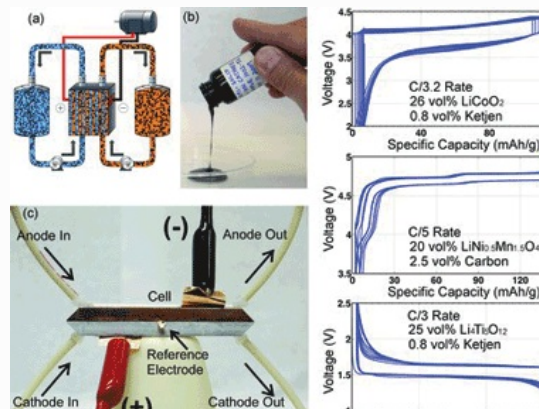


Low cost energy storage

energyharvestingjournal



TidewaterCurrent 8.6.12 - USC team creates an iron air battery that is cheap and stores 8-24 hours worth of energy.
August 6, 2012

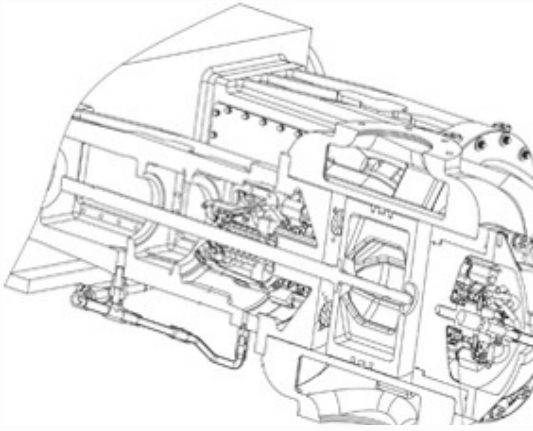


EV battery refuels like gasoline - Electronic Products

www2.electronicproducts



TidewaterCurrent MIT Semi-solid "flow" batteries, "could provide a lightweight and inexpensive alternative to existing batteries for electric vehicles." Larger scale devices could be used for renewable storage too.
July 26, 2012



Steam Punk Remakes Power Grid With Compressed Air

wired



TidewaterCurrent For renewable power technologies to play a more significant role in any grid, efficient storage is essential. One young entrepreneur has started a company and developed a compressed air storage system that is twice as efficient as other systems. LightSail Energy has the backing of Khosla Partners and with numerous countries turning to renewables for their energy future, they are in a good business position. More in Energy-Storage/Transmission.

July 31, 2012

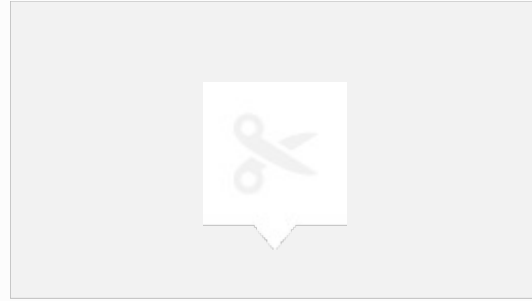


HVDC Takes Offshore Wind Farther in Germany

theenergycollective



TidewaterCurrent 7.9.12 - July 9, 2012

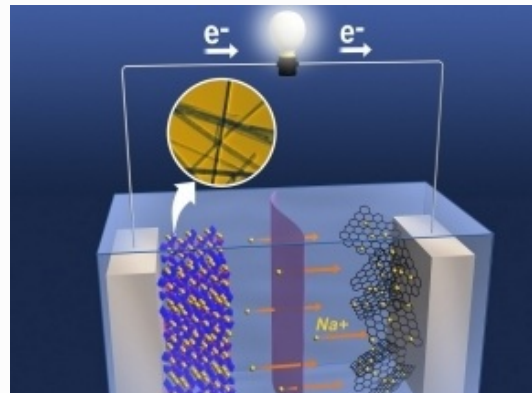


DDW: Steel cut on World's Largest Wind Power HVDC Offshore Platform

marinelink



TidewaterCurrent 6.19.12 - <http://www.marinelink.com/news/offshore-platform-worlds345674.aspx>
June 21, 2012



Energy Storage Update: Zinc-Air and Frozen Air Move Forward

greentechmedia



TidewaterCurrent 7.7.12 - Review of emerging technologies: Zinc-air and cryogenic.
July 7, 2012



Renew Grid: HVDC Transmission Project In New Mexico Moves Ahead

renewgridmag



TidewaterCurrent 6.19.12 - 900 line to deliver power to California.
http://www.renewgridmag.com/e107_plugins/content/content.php?content.8578
June 20, 2012

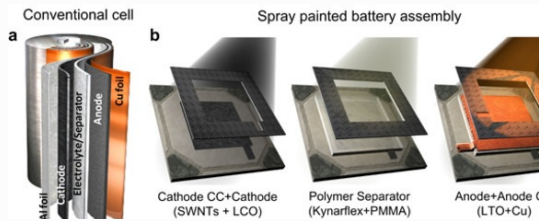


How Norway can help Germany store green energy

dw.de



TidewaterCurrent 6.26.12 - Excess renewable energy created in Germany will be transmitted through an underwater cable to Norway reservoirs for storage. When needed, like at night, Norway will transmit it back.
<http://www.dw.de/dw/article/0,,16050689,00.html>
June 29, 2012

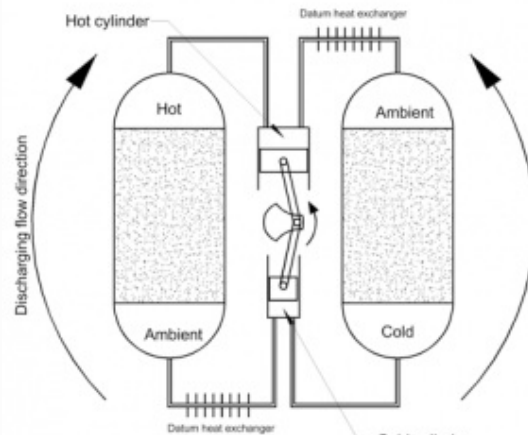


Spray Paint Battery Could Turn Any Surface Into Power Storage

webpronews



TidewaterCurrent 6.29.12 - Rice University researchers have developed a spray painted battery that they envision could be used with paint on solar cells for building exteriors making solar energy production and storage very affordable. Video included.
<http://www.webpronews.com/spray-paint-battery-could-turn-any-surface-into-power-storage-2012-06>
July 3, 2012



The new hotness in energy storage: gravel

gigaom



TidewaterCurrent 6.12.12 - Isentropic heat pump
June 12, 2012



Cheap Solar Power at Night - Technology Review

technologyreview



TidewaterCurrent 5.30.12 - Halotechnics has developed a thermal storage material more efficient than salt for use at concentrated solar facilities, reducing cost and potentially reaching the sunshot initiative goal of producing energy at 6 cents per kW hour. May 30, 2012



Duracell With a Twist: Researchers Find Fix for Grid-Scale Battery Storage

insideclimatenews



TidewaterCurrent 5.24.12 - CUNY researcher are developing nickel zinc battery technology that is both cheap and long lasting. Urban Electric Power a startup of CUNY plans to commercialize the product. <http://insideclimatenews.org/news/20120524/renewable-energy-battery-storage-cleantech-utilities-cuny-zinc-solar-wind-farms-dendrites-duracell> May 24, 2012



Any Deepwater Wind competitors must step forward

renewablesbiz



TidewaterCurrent 5.23.12 -

Transmission process started in Rhode Island for the Block Island Offshore Wind Farm. Before BOEM can approve Deepwater Winds proposed transmission line, they need to ensure there is no competitive interest in the projects. <http://www.renewablesbiz.com/article/12/05/any-deepwater-wind-competitors-must-step-forward>
May 26, 2012



Energy storage: Could hydrogen be the answer?

solarnovus



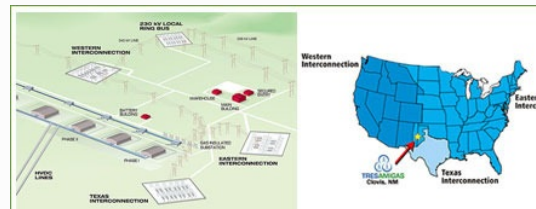
TidewaterCurrent 6.4.12 -

Hydrogen is not the most efficient means to store energy, but it does have several advantages over other storage technologies, including cost - especially for large scale applications.

[http://www.solarnovus.com/index.php](http://www.solarnovus.com/index.php?option=com_content&view=article&id=5028:energy-storage-could-hydrogen-be-the-answer&catid=38:application-tech-features&Itemid=246)

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option=com_content&view=article&id=5028:energy-storage-could-hydrogen-be-the-answer&catid=38:application-tech-features&Itemid=246

June 4, 2012



SuperStation Grid Connecting Project Moves Forward in New Mexico

ecogeek



TidewaterCurrent

May 21, 2012

Webinar Available

"Considerations For Successfully Connecting Renewables To The Grid"

Hosted by

ABB

in association with

north american
WINDPOWER



North American Windpower: Clean Energy Transmission Line To Be Opened Up To Wind Energy Developers

nawindpower



TidewaterCurrent 5..24.12 - 500 mile HVDC Rock Island Clean Line will run from NW Iowa to Chicago to deliver 3.5 GW of wind energy from Iowa, Nebraska, South Dakota and Minnesota.

http://www.nawindpower.com/naw/e107_plugins/content/content.php?content.9890
May 25, 2012



Google-Backed Offshore-Wind Grid Gets Environmental Review

bloomberg



TidewaterCurrent

May 17, 2012



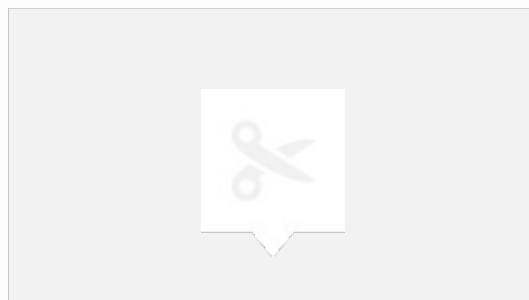
European Renewable Energy SuperGrid Comes Into Focus

sustainablebusiness



TidewaterCurrent

May 11, 2012



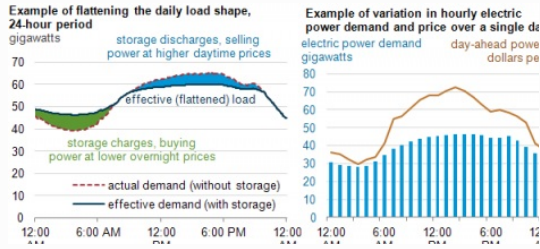
China kicks off work on "world's largest" transmission line

businessgreen



TidewaterCurrent 5/15/12 - 2,200 Km long giant ultra HVDC lines to connect solar, wind and coal power stations to coastal cities in China. -

<http://www.businessgreen.com/bg/news/2174778/china-kicks-world-s-largest-transmission-line>
May 15, 2012



Electricity Storage Can Take Advantage of Daily Price Variations

cleantechnica



TidewaterCurrent 5.22.12 - Storage operations can buy electricity when it's cheap and sell it at peak times when it's expensive. Author also looks at the mainstream storage technology options.
<http://cleantechnica.com/2012/05/22/electricity-storage-can-take-advantage-of-daily-price-variations/>
 May 22, 2012

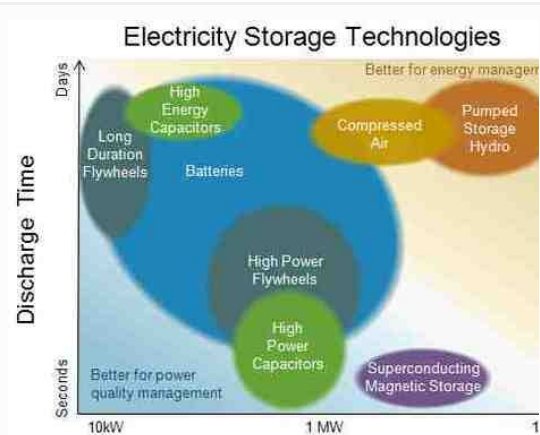


GE's Hybrid Train Batteries Will Back Up Solar and Wind Power

treehugger



TidewaterCurrent 4/26/12 - <http://www.treehugger.com/clean-technology/ges-hybrid-train-batteries-will-back-solar-and-wind-power.html>
 May 2, 2012

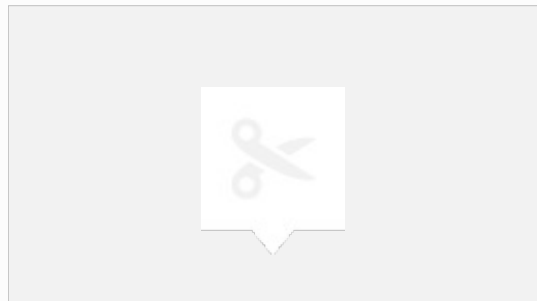


Energy Storage – For More Than Renewables | Plugged In, Scientific American Blog Network

blogs.scientificamerican



TidewaterCurrent 5.14.12 - Energy Information Administration visual depicting energy storage technologies capacity and discharge time. - <http://blogs.scientificamerican.com/plugged-in/2012/05/14/energy-storage-for-more-than-renewables/>
 May 18, 2012

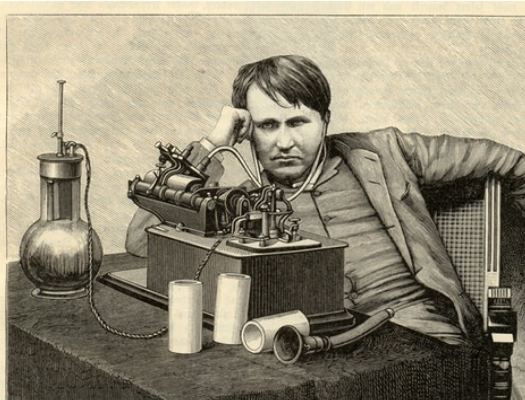


HVDC - High Voltage Direct Current Transmission from Iceland to Europe - Iceland firm to study green energy cable

upi



TidewaterCurrent 4/30/12 - http://www.upi.com/Business_News/Energy-Resources/2012/04/30/Iceland-firm-to-study-green-energy-cable/UPI-17351335781800/?spt=hs&or=er
 April 30, 2012



Edison's Revenge: The Rise of DC Power (HVDC - high voltage direct current on its way).

technologyreview



TidewaterCurrent 4/24/12 -
<http://www.technologyreview.com/business/40023/?mod=chfeatured>
April 29, 2012



Taking chargePowerHub Systems of Blacksburg has developed a device that can store electricity in a box small enough to fit in a residential yard. - www.roanoke.com

roanoke



TidewaterCurrent 5/1/123 -
PowerHub energy is being tested by SMUD (the Sacramento Municipal Utility District). Fully charged, the battery can power 6-10 homes during peak demand or during outages.
May 2, 2012



Energy Storage: It's All About The Software

forbes



TidewaterCurrent 5/8/12 - Growing Energy Labs developing an operating system to manage battery banking system for renewables. -
<http://www.forbes.com/sites/uciliawang/2012/05/08/meet-geli-and-its-operating-system-for-clean-power-storage/>
May 8, 2012



Power storage buffers fluctuating solar power

phys



TidewaterCurrent 5/11/12 - The Siemens energy storage system serves as a buffer for renewable energy production fluctuations caused by brief disruptions such as clouds passing over PV modules. - <http://phys.org/news/2012-05-power-storage-buffers-fluctuating-solar.html>
May 11, 2012