

Summary:

For the November 25th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt Index increased 5.4%, while the U.S. and Asia Indices declined 3.8% and 6.4%, respectively. The S&P500 and Russell 2000 Indices were down 4.7% and 4.2%, respectively.

Executive Director James Greenberger suggests that the difficulty that electric utilities are having in selling smart grid technology to consumers may be an opportunity for storage advocates to advocate a more consumer-friendly version of the smart grid, based on storage technology, to the public. Read "***The Smart Grid's Problems Should Be Storage's Opportunity***" in the Executive Director's Notes portion of this newsletter below.

Key Highlights:

- **car2go N.A.** (a wholly owned subsidiary of **Daimler North America**), and the **City of San Diego** have launched North America's first all-electric car sharing network. car2go began deploying 300 **smart fortwo** electric drive vehicles, which are now in service and available for use.
- **Mitsubishi Motors** is planning to supply the electric **Minicab-MiEV** to **Suzuki Motor** on an OEM (original equipment manufacturer) basis starting in February. Suzuki will market it under its own brand name, which will be the first electric vehicle (EV) in its lineup.
- **Volkswagen AG** has stated plans to locally produce EVs in **China** starting in 2014. The company could build two electric models with venture partners in China.
- Consumer confusion is the main reason why EV sales have failed to spark, according to a survey of motorists by **GfK Automotive**. The lack of understanding about the practicalities of EVs is deepest among those keen to buy one.
- **Stanford** researchers have developed a new electrode that employs **crystalline nanoparticles** of a **copper** compound. In laboratory tests, the electrode survived 40,000 cycles of charging and discharging, after which it could still be charged to more than 80% of its original charge capacity.
- **WAVE** is attempting to commercialize a wireless power transfer technology in order to reduce the need for large banks of batteries in EVs. The spinout from **Utah State University** embeds inductive charging technology at bus stops that allows ebuses to charge while sitting above a special location installed within bus stops.
- **Grand Blanc Township** and the **Michigan Department of Transportation** are showcasing **Genesee County's** first public charging station. The free charging station, located at the **I-75/Dixie Highway** carpool lot off **Exit 106**, will offer an easily accessible plug-in charging.
- **Amptan** is close to finalizing a deal that would make **San Diego** the site for its EV. The company is developing **lithium-air** technology that draws on the surrounding oxygen to power the battery.
- **Zonda USA** could be moving its headquarters to **Boise** and eventually manufacture some of its ebuses in southwestern **Idaho**. The company is the authorized representative of the **Zhongda Industrial Group** based in **China**.

- **Seneca, South Carolina** has received a \$4,118,000 grant from the **Federal Transit Administration** to replace diesel buses with ebuses. Seneca will buy three 35-foot electric buses from **Proterra**.

A Few More Details:

car2go N.A. (a wholly owned subsidiary of Daimler North America), and the City of San Diego have launched North America's first all-electric carsharing network. The entire city will have on-demand access to a large network of electric drive cars. car2go began deploying 300 smart fortwo electric drive vehicles, which are now in service and available for use.

Source: eMercedesBenz

Mitsubishi Motors is planning to supply the electric Minicab-MiEV to Suzuki Motor on an OEM (original equipment manufacturer) basis starting in February. Suzuki will market it under its own brand name, which will be the first electric vehicle (EV) in its lineup. Mitsubishi plans to build around 4,000 of the vehicles during its fiscal year.

Source: Reuters

Volkswagen AG has stated plans to locally produce EVs in China starting in 2014. The company could build two electric models with venture partners in China. The models may have a range of up to 200 kilometers (124 miles). VW produces cars and sport-utility vehicles in China through ventures with SAIC Motor Corp. and China FAW Group Corp. The two ventures have each created a prototype EV and will introduce test fleets next year. VW aims to have 10,000 EVs in the country by 2018.

Source: Bloomberg

Consumer confusion is the main reason why EVs have failed to spark, according to a survey of motorists by GfK Automotive. The lack of understanding about the practicalities of EVs is deepest among those keen to buy one. Only 8% of the 3,161 motorists polled said they would definitely or probably buy an electric car at some stage. The survey also highlighted that the vast majority of those planning a purchase underestimated the cost and the time it took to charge the vehicles, as well as overestimating their range.

Source: The Press Association

Stanford researchers have developed a new electrode that employs crystalline nanoparticles of a copper compound. In laboratory tests, the electrode survived 40,000 cycles of charging and discharging, after which it could still be charged to more than 80% of its original charge capacity. The average li-ion battery can handle about 400 charge/discharge cycles before it deteriorates too much to be of practical use. The electrode's durability derives from the atomic structure of the crystalline copper hexacyanoferrate used to make it. The crystals have an open framework that allows ions – electrically charged particles whose movements en masse either charge or discharge a battery – to easily go in and out without damaging the electrode. Most batteries fail because of accumulated damage to an electrode's crystal structure

Source: Stanford University

WAVE is attempting to commercialize a wireless power transfer technology in order to reduce the need for large banks of batteries in EVs. The spinout from Utah State University embeds inductive charging technology at bus stops that allows ebuses to charge while sitting above a special location installed within bus stops. The company has electrified sections of roadway at specific intervals at the University of Utah, including where buses load, and where they wait for their next route.

Source: The Republic

Grand Blanc Township and the Michigan Department of Transportation are showcasing Genesee County's first public charging station. The free charging station, located at the I-75/Dixie Highway carpool lot off Exit 106, will offer an easily accessible plug-in charging. Coulomb Technologies provided the charging station

Source: WNEM Saginaw

Ampttran is close to finalizing a deal that would make San Diego the site for its EV. The company is developing lithium-air technology that draws on the surrounding oxygen to power the battery. Ampttran says their motors will translate into about 400 miles on a single charge. The EV is in the proof-of-concept phase with manufacturing to potentially start in two to four years.

Source: 10News

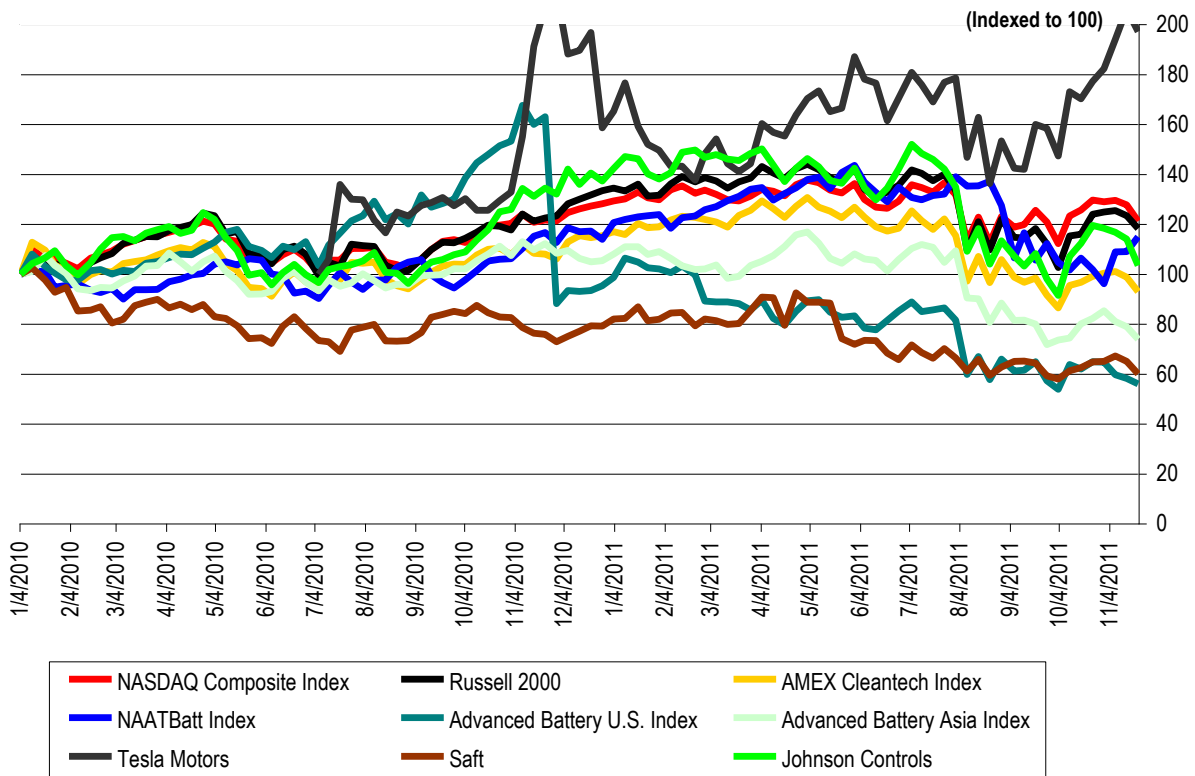
Zonda USA could be moving its headquarters to Boise and eventually manufacture some of its ebuses in southwestern Idaho. The company is the authorized representative of the Zhongda Industrial Group based in China. The China facilities have the capacity to produce 15,000 large and medium-sized passenger buses annually.

Source: The Idaho Statesman

Seneca, South Carolina has received a \$4,118,000 grant from the Federal Transit Administration to replace diesel buses with ebuses. Seneca will buy three 35-foot electric buses from Proterra. The buses will be operated by Clemson Area Transit, which is one of the largest public fare-free transit services in the U.S., serving an estimated 2 million passengers a year

Source: Independent Mail

Exhibit 1: Indices Performance
(From January 4, 2010)

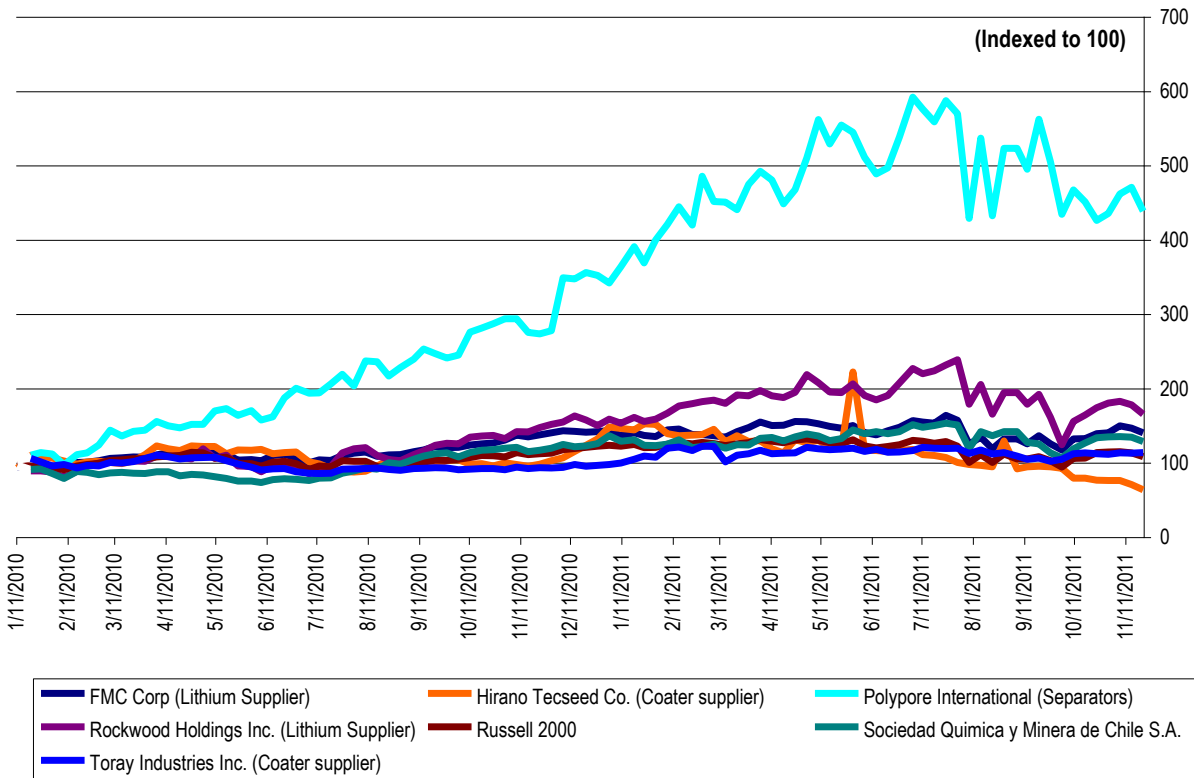


Index	Close on 11/21/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	11,547.3	12,928.5	89.3%	3.1%	(1.1%)	(4.4%)
S&P 500	1,193.0	1,370.6	87.0%	(0.4%)	(6.2%)	(4.7%)
NASDAQ	2,523.1	2,887.8	87.4%	0.5%	(6.3%)	(5.0%)
Russell 2000	701.9	868.6	80.8%	(2.8%)	(12.1%)	(4.2%)
AMEX Cleantech Index	912.2	1,298.6	70.2%	(13.9%)	(20.6%)	(5.8%)

Source: Bloomberg and ThomsonOne

Note: The select NAATBatt Index is a market-value-weighted average and includes ALTI, BASF, COP, ENS and XIDE. The Advanced Battery U.S. Index is a market-value-weighted average and includes HEV, MGA, MXWL, UQM and VLNC. The Advanced Battery China Index is a market-value-weighted average and includes BYD, CBAK, GS Yuasa, LG Chem and Panasonic.

**Exhibit 2: Supplier Performance
(From January 4, 2010)**



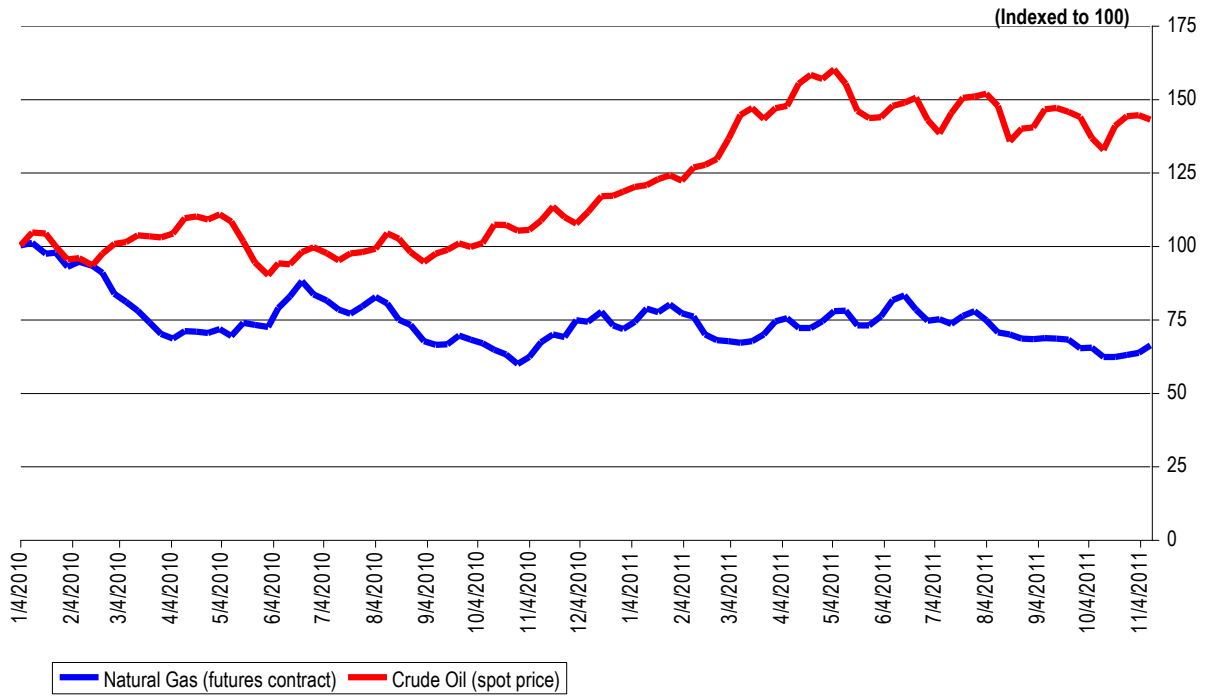
Source: Bloomberg

Exhibit 3: Commodity Prices

Commodity	Price on 11/21/2011	Price on 11/14/2011	Price on 10/21/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	7,301	7,731	7,062	(5.6%)	3.4%
LME Lead (cash, \$ per tonne)	2,000	1,990	1,841	0.5%	8.7%
LME Nickel (cash, \$ per tonne)	17,645	18,070	18,670	(2.4%)	(5.5%)

Source: LME

Exhibit 4: Natural Gas and Crude Oil
(From January 4, 2010)



Source: EIA

Executive Director's Notes



THE SMART GRID'S PROBLEMS SHOULD BE STORAGE'S OPPORTUNITY

I recently attended a conference on smart grid technology in Chicago. Following the conference, I had lunch with another attendee and asked him what he thought about the conference. My lunch guest, who is a smart fellow and has worked for many years in the cleantech and sustainability fields, just rolled his eyes. The conference was fine, he said. But the problem with the conference is that we just spent two days talking about how we make what is in effect a problem for utilities into a problem for consumers. That project he felt might be of interest to utilities and smart grid advocates, but has little hope for success in the real world.

My lunch guest summarized in a few short words the principal challenge of the smart grid, as most utilities are thinking about it today. Our national grid infrastructure is largely antiquated and, as electricity use grows over coming decades, utilities face what is in effect a political problem: Billions of dollars of unpopular new infrastructure spending is needed in order to upgrade the grid. Those expenditures can, however, at least in theory be reduced if electricity consumers can be persuaded or compelled to use electricity differently. Much of smart grid technology, which is referred to as demand response, is about trying to make that happen.

Properly understood, demand response is not really about saving costs, but about moving costs from one party onto another. Compelling a consumer to charge a vehicle or wash clothes at night, rather than at 6:00 p.m. in the evening, means that a utility will have to spend less money to accommodate peak load. But compelling a consumer to act differently is a cost to that consumer. Technology might be able to take some bite out of that cost by eliminating uses of electricity that consumers may agree are unnecessary. Installing a motion sensor on a light switch is a good example. But the question of who has to buy the motion sensor remains.

Utilities and smart grid advocates are not likely to give up on demand response initiatives anytime soon. But, as my lunch guest surmised, they face an uphill battle.

Energy storage advocates have a different story to tell and by many measures a more compelling one. With energy storage, a utility or electricity service provider manages the challenge (and, yes, the cost) of drawing electricity from the grid in the most efficient way possible. The electricity is then stored locally, by means of a distributed energy storage system, which the consumer draws from when and as the consumer wants. Peak electricity usage on the grid is reduced and greater energy efficiency is achieved through the utility's management of the storage resource without involving the consumer.

This is a good news story for consumers and one which energy storage advocates must be more proactive in telling. Consumer upset about smart meters and concerns virtually beg energy storage advocates to set out a their own, different vision of the smart grid of the future: a smart grid that truly values consumer choice and that leaves power management to the experts—the utilities—rather than imposes it on retail consumers. The smart grid's problem should be storage's opportunity. We must seize it.



James J. Greenberger
Executive Director

November 25, 2011

NAATBatt Membership Applications for 2011

2012 Membership Applications and Dues Structure

NAATBatt is now accepting applications for membership for the 2012 calendar year. Membership dues for 2012 are \$10,000 for Corporate Members, \$10,000 for OEM Members, \$10,000 for Utility Members, \$5,000 for Associate Members, \$1,000 for Individual Members, and \$500 for Non-Profit/Government Members. Companies purchasing 2012 memberships will be entitled to the benefits of membership during the balance of the 2011 calendar year. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a 2012 membership.

Why Join NAATBatt?

NAATBatt's mission is to grow the market for advanced electrochemical energy storage technology in North America. We concentrate primarily on two markets: electric drive for motor vehicles and distributed, grid-connected electricity storage.

NAATBatt members enjoy a variety of exclusive benefits including: discounted admission to NAATBatt conferences; admission to by invitation-only NAATBatt workshops, such as the Workshop on Distributed Energy Storage that NAATBatt co-sponsored last April in Chicago with the U.S. Department of Energy; admission to Members-Only Site Visits, at which one NAATBatt firm will host all other NAATBatt members for a tour of the host's facility; the opportunity to announce news and new product developments in the Member's News section of the widely read NAATBatt Advanced Battery Weekly; free access to speaker presentations made at NAATBatt programs and workshops; and invitations to attend private meetings with government leaders, such as the NAATBatt-sponsored trip to Washington last year to meet with Chairman Jon Wellinghoff of FERC.

NAATBatt membership also helps support the development of an important industry that could just change the world. NAATBatt provides educational programming on topics of interest to the advanced battery community, a weekly newsletter chronicling developments in the North American advanced battery market, networking opportunities for industry participants and their customers, and thought leadership on issues relating to energy storage markets and technology through the NAATBatt blog.

NAATBatt recently held its 2nd Annual Meeting and Conference in Louisville, Kentucky, which included the 1st Industry-Academic Advanced Battery Summit. The Summit is a new program that NAATBatt has started to encourage the more efficient transfer of advanced battery technology from leading U.S. research universities to industry. NAATBatt identified and brought to Louisville representatives from 15 of the top university advanced battery programs around the country to make flash presentations to industry about what those programs are working on and what technology they have available to license. In all there were 48 high quality presentations made at the Conference and the Summit, copies of which are available to conference attendees and NAATBatt members only.

NAATBatt will soon announce two other initiatives for the benefit of its members that will increase their access to capital and play an important role in growing the market for advanced electrochemical energy storage. Please stand by for some very interesting developments.



NAATBatt is a not-for-profit trade association qualified under Section 501(c)(6) of the Internal Revenue Code that is working for the benefit of the entire industry. Every dollar spent on NAATBatt memberships and programs goes to recouping program costs and to supporting activities intended to benefit the entire advanced battery industry. At a time when it seems that the only people making money on advanced lithium-ion technology are professional conference organizers, the advanced battery industry should take control of its own market and its own future. NAATBatt exists to market for the industry, not to the industry. But NAATBatt needs your support to do it. Please join us.

North American Industry Announcements and Calendar

Presentations from the NAATBatt 2011 Annual Meeting and Conference Now Available:

Speaker presentations, speaker bios and attendee lists from the just concluded NAATBatt's 2011 Annual Meeting and Conference are now available on the NAATBatt Web site. Go to www.naatbatt.org and navigate to the 2011 Annual Meeting and Conference link to view them. The links are password protected, and the password is available to NAATBatt members and conference attendees for no charge. Others may purchase access to the presentations for \$250. Please contact Jim Greenberger at jgreenberger@naatbatt.org for your password. Photos from the conference will be posted shortly.

Presentations from the Workshop on Distributed Energy Storage Posted: Presentation materials, handbooks, attendee lists and working group discussion summaries from the April 21, 2011 DOE/NAATBatt Workshop on Issues in Distributed Energy Storage have been posted on the NAATBatt Web site at: www.naatbatt.org. The materials are available for review to all Workshop registrants and to all NAATBatt members. Please contact Jim Greenberger at jgreenberger@naatbatt.org for your password.

Presentations from the NAATBatt 2010 Annual Meeting and Conference are Available:

NAATBatt's 2010 Annual Meeting and Conference entitled "The Impact of PEV's on T&D Systems: Challenges and Solutions" was a great success. More than 40 industry experts presented and the conference on topics relating to how the grid was going to accommodate the new load that will be generated by plug-in electric vehicles. Copies of the speaker presentations are available on a secured portion of the conference Web site. Access to the Web site is free to NAATBatt members and conference attendees. Access to the presentations is now available to all other for the price of \$250. Please contact Jim Greenberger at jgreenberger@naatbatt.org for more information about accessing the presentations.

NAATBatt Membership Information. NAATBatt is taking applications for membership from well qualified industry participants and supporters. Membership in NAATBatt is a great way to keep abreast of developments in advanced technology batteries and to support the growth of a market for products that could change the world. Your support for NAATBatt programs, newsletters, and committees is essential to the success of our organization and our industry. To inquire about membership, please complete the following inquiry form: <http://naatbatt.org/membership-inquiry/>. NAATBatt will respond with additional information about membership.

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- ***1st North American & Asian Lithium-Ion Technology Conference:*** The North American & Asian Lithium-Ion Technology Conference will be held on **January 12, 2012** at the University of Nevada Las Vegas in Las Vegas, Nevada. The conference is co-sponsored by UNLV and an affiliate of the Lion Battery Industry Association of South China. More information about the conference can be found at: <http://lbiana.org/industry-events/>
 - ***International Battery Association – Pacific Power Source Symposium Joint Meeting 2012:*** The 2012 meeting of the International Battery Association and Pacific Power Source Symposium

will be held on **January 9-13, 2012** at the Hilton Waikoloa Village in Hawaii. Information about the program may be viewed at: <http://www.soest.hawaii.edu/PPSS/index.htm>.

- **IEEE PES Conference on Innovative Smart Grid Technologies:** The IEEE PES Conference on Innovative Smart Grid Technologies will be held on **January 16-20, 2012** at the Washington Marriott Wardman Park hotel in Washington, D.C. The conference will examine a wide range of smart grid technologies, including energy storage. Information about the conference can be found at: <http://www.ieee-isgt.org/>
- **2nd Annual 10X Advanced Battery R&D:** The 10x Advanced Battery R&D conference: Breaking Barriers in Advanced Battery Performance and Value will be held on **January 23-24, 2012** in Santa Clara, California. The conference will examine next generation technologies that may dramatically reduce battery costs and/or increase battery energy density. NAATBatt is a supporting organization of the conference.
- **12 International Advanced Automotive Battery Conference:** The 2012 International Advanced Automotive Battery Conference (AABC) will be held on **February 6-10, 2012** in Orlando, Florida. The program will feature five days of intensive meetings, symposia and tutorials. Information about the program can be found at: <http://www.advancedautobat.com/>.
- **Electric Vehicle & Infrastructure Summit:** The Electric Vehicle & Infrastructure Summit will be held on **February 22-23, 2012** at the Double Tree Toronto Airport in Toronto, Canada. The Summit will focus on the collaboration necessary to implement electric cars in Canada. Information about the program can be found at: http://www.evehiclesummit.com/?utm_source=streamsend&utm_medium=email&utm_content=15056571&utm_campaign=EV%20Summit%202012.
- **The 29th International Battery Seminar & Exhibit:** Powersources.net will present the 29th International Battery Seminar & Exhibit at the Broward County Convention Center in Fort Lauderdale, Florida on **March 12-15, 2012**. The Seminar will discuss the state of the art of worldwide energy storage technology developments for portable products, power and vehicular applications. The Web site for the conference can be found at: <https://powersources.net/florida/frameset.html>.
- **International Electric Vehicle Symposium:** The Electric Drive Transportation Association will produce the 26th international Electric Vehicle Symposium and exposition (EVS26) on **May 6-9, 2012** in Los Angeles, California. Information about EVS26 can be found at www.EVS26.org.
- **IEEE PES Transmission and Distribution Conference and Exposition:** The IEEE PES Transmission and Distribution Conference will be held in Orlando, Florida on **May 7-10, 2012**. The conference will focus on innovation in power delivery systems, including storage systems. Information about the conference can be viewed at: <http://www.ieeet-d.org/>.
- **5th Symposium on Energy Storage: Beyond Lithium Ion:** The 5th Symposium on Energy Storage: Beyond Lithium Ion will be held in Berkeley, California on **June 5-7, 2012**. The Symposium will focus on next generation battery technologies, such as silicon anode technology, lithium sulfur batteries and lithium air. More information can be found at: <http://bestar.lbl.gov/bli5/program/>.

- **45th Power Sources Conference:** The 45th Power Sources Conference will be held at Bally's Las Vegas Hotel in Las Vegas on **June 11-14, 2012**. The meeting will focus on energy generation and storage technology (largely, but not exclusively, electrochemical), which is of interest to the U.S. Department of Defense, other government agencies, and to the civilian marketplace. More information can be found at: <http://www.powersourcesconference.com/>.
- **ITEC 2012:** The 2012 IEEE Transportation Electrification Conference and Expo will be held on **June 18-20, 2012** at the Hyatt Regency Dearborn, in Dearborn, Michigan. ITEC is focused on components, systems and standards for efficient power conversion for all types of electrified transportation. More information can be found at: <http://itec-conf.com/>
- **The Battery Show:** The Battery Show: The Expo for Advanced Batteries will return to Novi, Michigan on **November 13-15, 2012** and will be co-located with a new event, entitled "Charging Infrastructure Expo 2012." More information about the show and expo can be found at: <http://www.thebatteryshow.com/>.



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