

Summary:

For the November 4th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt Index declined 5.6%, the U.S. Index was flat and Asia Index increased 3.8%. The S&P500 and Russell 2000 Indices were both flat.

Executive Director James Greenberger highlights two major developments this week that should have a positive impact on the energy storage market. Read "**The Good News Energy Storage Story**" in the Executive Director's Notes section of this newsletter below.

Key Highlights:

- The **French government** has ordered 18,711 electric vehicles (EVs) from **Renault** and **PSA Peugeot Citroen**. **LG Chem Power** is the supplier of the lithium-ion (li-ion) batteries for Renault.
- **Tesla Motors** announced that it has a tentative agreement to supply batteries and motors for an electric **Mercedes-Benz** model. The new deal could add about \$100 million to revenues.
- **A123 Systems**, **Hydro Quebec**, and the **Board of Regents of the University of Texas System**, on behalf of the **University of Texas at Austin (UT)** announced a settlement has been reached over the disputes regarding lithium metal phosphate technologies. The organizations have entered into a **Settlement Agreement** and related **Patent Sublicense Agreement** that will resolve the existing litigations and create licenses going forward.
- **Ford** has priced the **Focus Electric** at \$39,995. The EV is using a 23 kilowatt-hour (kWh) li-ion battery pack that is being supplied by **LG Chem Power**.
- **East Penn Manufacturing** and subsidiary **Ecoult** announced the launch of **Public Service Co. of New Mexico's Prosperity Energy Storage Project** in **Albuquerque, New Mexico**. The project will integrate an Advanced Valve-Regulated Lead-Acid and **UltraBattery** energy storage solution with a separately installed 500 kilowatt (kW) solar plant.
- Military vehicle assembler **AM General** has been contracted by **Bright** to build the **Idea** plug-in hybrid work truck. AM General will build the Idea at its commercial assembly plant in **Mishawake, Indiana** under a contract agreement.
- **Nissan** has unveiled a trio of electric trucks (etruck) such as the **Atlas e-NT400**. The etruck is powered by a li-ion battery pack that the could provide 62 miles on a single charge and carry a 1322-pound load.
- **T3 Motion** announced that a second shipment of **T3 Electric Stand-up Vehicles (ESV)** has arrived in **Chile**. The vehicles will be sold to law enforcement, military and private security companies throughout the country by **Telestop**.

A Few More Details:

The French government has ordered 18,711 electric vehicles (EVs) from Renault and PSA Peugeot Citroen. The EVs will be supplied to government entities and corporations in the first tranche of a collective order designed to jump start France's nascent EV industry. Renault is to supply 15,637 plug-in electric versions of its Kangoo light van (as shown in **Exhibit 1**). The lithium-ion (li-ion) batteries are being supplied by LG Chem Power. The order for Peugeot Citroen is for 3,074 Peugeot Ions, which are rebadged versions of the Mitsubishi i-MiEV.

Source: Dow Jones

Exhibit 1: Electric Renault Kangoo



Source: Renault

Tesla Motors announced that it has a tentative agreement to supply batteries and motors for an electric Mercedes-Benz model. Details are limited with more news potentially by year-end. The new deal could add about \$100 million to revenues.

Source: Bloomberg

A123 Systems, Hydro Quebec, and the Board of Regents of the University of Texas System, on behalf of the University of Texas at Austin (UT) announced a settlement has been reached over the disputes regarding lithium metal phosphate technologies. The organizations have entered into a Settlement Agreement and related Patent Sublicense Agreement that will resolve the existing litigations and create licenses going forward. All litigations will be dismissed and a license under these patents will be granted to A123, as agreed by the parties, under the settlement. Under the terms of the Patent Sublicense Agreement, A123 receives rights to lithium metal phosphate patents developed at UT, a family of electrode material carbon-coating patents, and several lithium metal phosphate patents licensed to Hydro-Quebec by Nippon Telephone and Telegraph (NTT). In return, LiFePO₄+C Licensing AG receives rights to two recent battery material patents from A123. The A123 patents cross-licensed in this agreement are separate from the original Nanophosphate(R) patents from the Massachusetts Institute of Technology (MIT), which are not included as part of this settlement. The financial terms of the settlement are not being disclosed at this time.

Source: A123 System

Ford has priced the Focus Electric at \$39,995. The EV is expected to compete against the Nissan Leaf, which has an EPA rating of 73 miles per charge. The Focus is using a 23 kilowatt-hour (kWh) li-ion battery pack that takes up to 20 hours to recharge with a 120-volt outlet, but less than four when plugged into a 240-volt fast charger, twice as fast as the Leaf. The Focus Electric is based on the standard five-

door version of the Focus (as shown in **Exhibit 2**). Ford has indicated that the EV would be available in 19 launch markets.

Source: Fox News

Exhibit 2: The Ford Focus



Source: Ford

East Penn Manufacturing and subsidiary Ecoult announced the launch of Public Service Co. of New Mexico's Prosperity Energy Storage Project in Albuquerque, New Mexico. The project will integrate an Advanced Valve-Regulated Lead-Acid and UltraBattery energy storage solution with a separately installed 500 kilowatt (kW) solar plant. Its purpose is to provide voltage smoothing for consistent energy levels and peak shifting to deliver needed energy. This project was achieved with the collaboration of many key partners, led by PNM and including the Department of Energy Smart Grid Storage Demonstration Program, the University of New Mexico, Northern New Mexico College, Sandia National Laboratories, and Electric Power Research Institute.

Source: East Penn Manufacturing and Ecoult

Military vehicle assembler AM General has been contracted by Bright to build the Idea (as shown in **Exhibit 3**), an all-new plug-in hybrid work truck. Current manufacturing plans call for the Idea to be available for sale as early as 2014 to government and commercial fleets. AM General will build the Idea at its commercial assembly plant in Mishawake, Indiana under a contract agreement.

Source: Autos.ca

Exhibit 3: The Ideal



Source: Bright Automotive

Nissan has unveiled a trio of electric trucks (etruck) such as the Atlas e-NT400 (as shown in **Exhibit 4**). The etruck is powered by a li-ion battery pack that could provide 62 miles on a single charge and carry a 1322-pound load. In addition, the company showcased a refrigerated truck and a Power Supply Truck, which acts as an emergency power source. A 72-kWh lithium-ion battery pack reportedly provides enough electricity to operate a 20-person office space for four hours.

Exhibit 4: The All-electric Atlas e-NT400



Source: Nissan

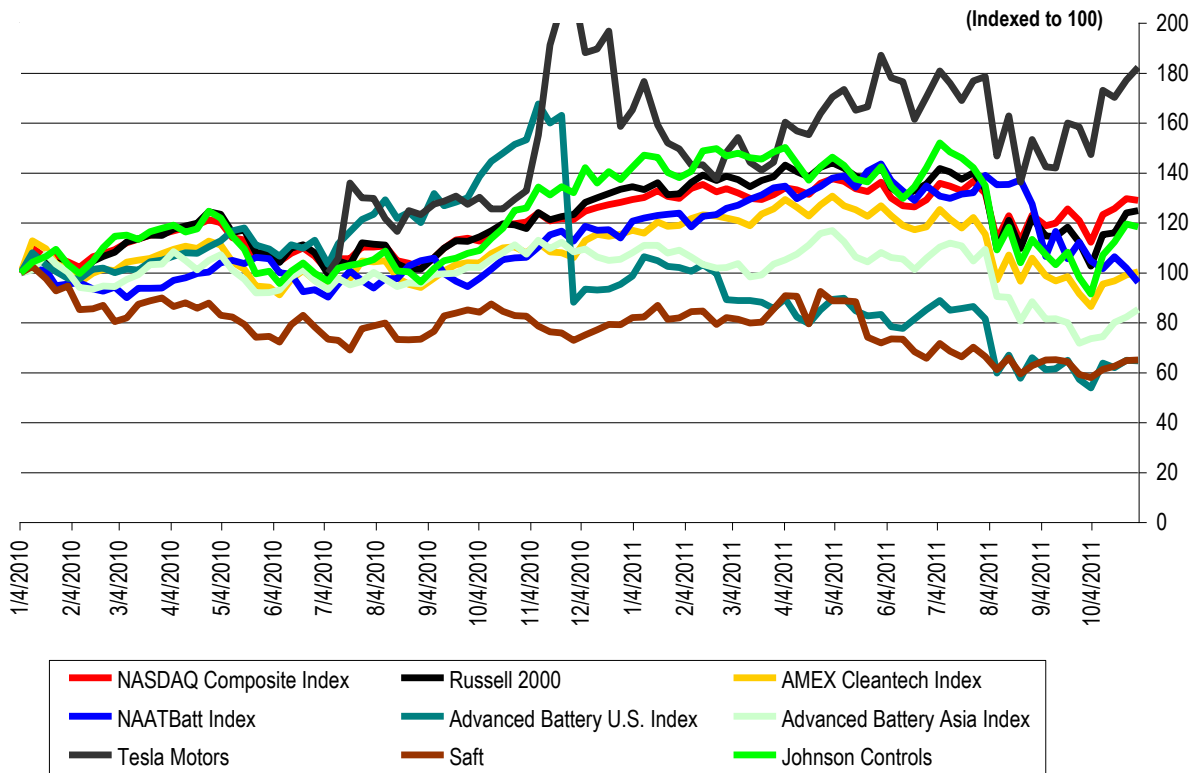
T3 Motion announced that a second shipment of T3 Electric Stand-up Vehicles (ESV) has arrived in Chile. The vehicles (as shown in **Exhibit 5**) will be sold to law enforcement, military and private security companies throughout the country by Telestop. Six initial vehicles were purchased by Parque Arauco, one of Chile's largest shopping mall companies with properties in Chile, Argentina, Columbia and Peru. The T3 ESVs have been used for parking structure security initiatives since their delivery in March.

Exhibit 5: T3 Electric Standup Vehicles



Source: T3 Motion

**Exhibit 6: Indices Performance
(From January 4, 2010)**

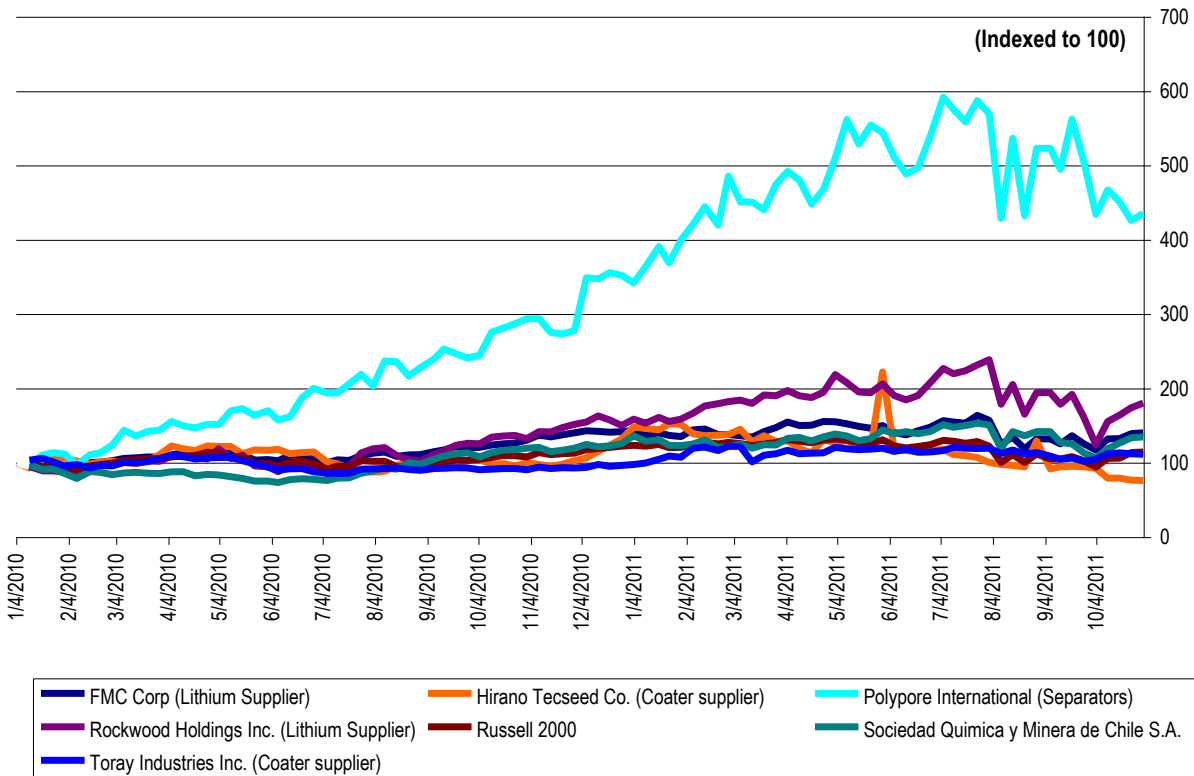


Index	Close on 10/31/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	11,955.0	12,928.5	92.5%	7.5%	2.4%	0.3%
S&P 500	1,253.3	1,370.6	91.4%	5.7%	(1.5%)	(0.1%)
NASDAQ	2,684.4	2,887.8	93.0%	6.5%	(0.3%)	(0.6%)
Russell 2000	741.1	868.6	85.3%	4.9%	(7.2%)	0.7%
AMEX Cleantech Index	984.3	1,298.6	75.8%	(7.4%)	(14.3%)	1.2%

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 7: Supplier Performance
(From January 4, 2010)**



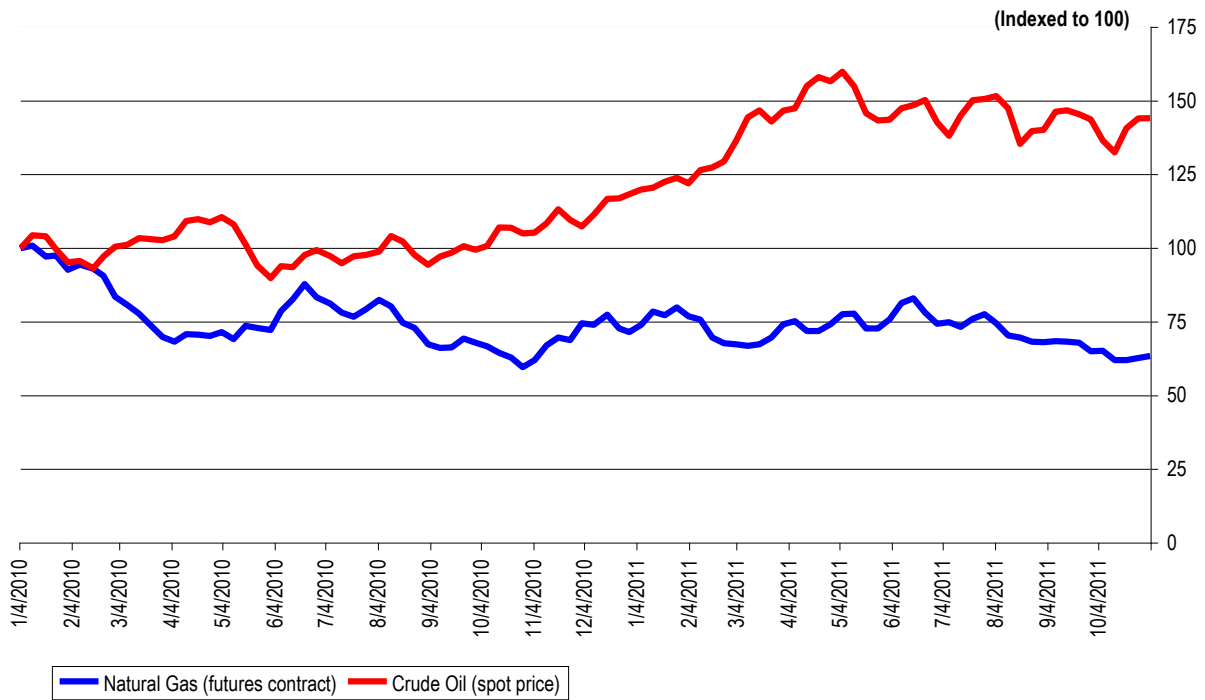
Source: Bloomberg

Exhibit 8: Commodity Prices

Commodity	Price on 10/31/2011	Price on 10/24/2011	Price on 9/30/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	7,900	7,380	7,131	7.0%	10.8%
LME Lead (cash, \$ per tonne)	1,980	1,940	2,060	2.1%	(3.9%)
LME Nickel (cash, \$ per tonne)	19,220	19,030	18,300	1.0%	5.0%

Source: LME

Exhibit 9: Natural Gas and Crude Oil
(From January 4, 2010)



Source: EIA

Executive Director's Notes



THE GOOD NEWS ENERGY STORAGE STORY

This week was a great week for energy storage. Despite the bankruptcy of Beacon Power and the delisting of Ener1, which received inordinate attention from those looking for bad news stories in renewable energy, a game-changing regulatory decision in Washington and a record breaking storm on the East Coast signal a coming of age for energy storage technology. It is important that the energy storage industry tell its good news stories and break the doom-and-gloom Solyndra Syndrome that has come to dominate the media and the political chattering class.

Last week, the Federal Energy Regulatory Commission (FERC) released its long anticipated Final Order No. 755 on frequency regulation compensation. FERC determined that the current frequency regulation compensation practices of regional transmission organizations (RTOs) and independent system operators (ISOs), which do not account for the inherently greater amount of frequency regulation service provided by faster-ramping resources, are unjust, unreasonable and unduly discriminatory. This decision, which rights a longstanding regulatory wrong, opens a profitable new market for energy storage technology.

Operators of wholesale electricity systems, such as RTOs and ISOs, must buy a certain amount of power each day in order to maintain the frequency of the electricity being wheeled over their systems. Regulating frequency by adding electricity to transmission systems at specific times and at specific places is a complicated affair. As a general rule, the faster and more accurately that current can be added, the more effectively it can rectify frequency problems on the grid. Frequency problems undermine the stability of the grid and can in the extreme lead to system failures, such as blackouts.

RTOs and ISOs are obligated by federal law to purchase electricity fairly and without discrimination among vendors. Prior to Order No. 755, most RTOs and ISOs interpreted this to mean that they had to pay the same amount of money per kilowatt for electricity used for frequency regulation purposes regardless of how quickly or accurately the vendor of that electricity was able to add it to the grid. This practice effectively shut energy storage technologies, such as power-oriented advanced batteries, out of the frequency regulation market. Although batteries can add electricity to the grid quickly and accurately, the per kilowatt cost of the electricity they sell is generally higher than the power produced by natural gas peaker generators, even though that power takes longer to be ramped up and placed on the grid. Because energy storage providers could not be compensated for the quality of the power they provide relative to the power provided by natural gas generators, energy storage was effectively shut out of the frequency regulation market.

New FERC Order No. 755 changes this. Pursuant to the Order, RTOs and ISOs not only can consider the quality of frequency regulation service in setting the prices they pay for it, they must. This change will put electricity vendors who use energy storage systems into the frequency regulation business, and into the money.

Many commentators have bemoaned the purportedly small size of the frequency regulation market. In 2009, GTM Research estimated the size of that market at 7,137 MW in the United States and 37,828 MW worldwide. Considering that the effective size of the frequency regulation market for energy storage providers has previously been -0- MW (except for some government-funded demonstration projects), the small market criticism rings hollow.

Moreover, the need for frequency regulation service will rise as variable, renewable energy is added to the grid. Each 100 MW of wind energy requires about 3-5 MW of additional frequency regulation. Today thirty-two states and the District of Columbia have renewable portfolio standards. Those standards will require the addition of huge amounts of renewable energy over the coming decade. The frequency regulation market will grow along with it.

In addition to government mandates, normal market forces will encourage the addition of level-cost renewable energy to the grid and expand the size of the frequency regulation market. The big (by volume) energy story of the next decade is likely to be the increasing use of natural gas for base load electricity generation. This is good news for wind and solar energy. While natural gas may have certain advantages as a fuel, its historic price has unquestionably been highly volatile. There is little reason to expect that natural gas prices will be less volatile in the future and much to reason to fear the impact of that volatility on electricity prices as natural gas becomes a more significant portion of the base load fuel mix. Utilities will hedge against that volatility by entering into long term supply contracts with renewable energy generators, whose fuel cost is always fixed (at \$-0-). The frequency regulation market will be a direct and substantial beneficiary.

The second good news story for the energy storage industry this week was, paradoxically, a very bad news story for many electricity consumers on the East Coast. An early October Nor'easter last weekend knocked out power to about 3.8 million consumers. Many of those consumers went without power for days. And just about all of them are angry and looking for solutions.

Distributed energy storage (DES) is unquestionably one of the solutions. DES describes the practice of placing energy storage devices, usually a battery, in the distribution portion of the grid out near the ultimate electricity consumer. One of the many benefits of DES systems is that they can provide backup power for consumers. When there is a fault in a transmission or distribution line, whether caused by a storm or some other disruption, a DES system can ensure that consumers will, for some predictable time, continue to have access to electric power.

Of course, DES systems are not a magic bullet solution to the problem of system reliability. A 25 kWh battery buried in a neighborhood or installed in a basement will not provide unlimited power over a several day outage to multiple households. But the significance of this limitation is often exaggerated. The greatest source of power outages in the United States is transient faults on distribution feeders and about 70 percent of these outages are restored within three hours. And even in the case of longer, multi-day outages, DES systems can give consumers the option of conserving power by directing it only to critical operations. At worst, consumers would have time to plan for outages that are unavoidable. After this past week, a good portion of the 3.8 million consumers affected by the East Coast storm would appreciate the value of this service and would probably demand it from their electric service providers, if given the chance.

NAATBatt is trying to engage our friends in the electric utility industry in an effort to talk to consumers about DES. This will be a difficult discussion for many utilities, as it focuses, in effect, on system failures, which no one wants to talk about. But DES is an important technology that offers immediate, tangible benefits to electricity consumers and substantial additional benefits to the grid, a discussion of which is beyond the scope of this column. Electricity consumers have a right to know about DES and to ask for it from their electric service providers. The benefits that DES systems offer to electricity consumers who are frustrated today by system outages is another good news story for the energy storage industry and one we must be proactive in telling.

The commentators are right about one thing, however: When the DES market develops, it will make the frequency regulation market look small. This is, perhaps, the best news of all for the industry.



James J. Greenberger
Executive Director

November 4, 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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- ***Lithium Battery Power Conference:*** Knowledge Foundation will host the Lithium Battery Power Conference on **November 7-8, 2011** in Las Vegas, Nevada. The conference will provide a general survey of the lithium-ion battery industry. The conference Web site can be accessed at: http://www.knowledgefoundation.com/viewevents.php?event_id=254&act=evt.
 - ***Battery Safety Conference and Global Battery Tutorial:*** Knowledge Foundation will host the Battery Safety Conference followed by Shmuel De-Leon Energy's Global Battery Tutorial on **November 9-10, 2011** in Las Vegas, Nevada. The conference will discuss safety incidents and

product recalls regarding lithium-ion batteries. The conference Web site can be accessed at: http://www.knowledgefoundation.com/viewevents.php?event_id=254&act=evt.

- **1st NY-BEST Regional Technology Conference:** The 1st NY-Best Regional Technology Conference, highlighting developments in energy storage technology at leading New York universities, will be held on **November 15-16, 2011** at Woodcliff Hotel & Spa in Rochester, New York. Information about the conference can be found at: <http://www.ny-best.org/civicrm/event/info?id=7&reset=1>
- **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/>.
- **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/>.



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