

## Summary:

For the July 1<sup>st</sup> issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt, U.S. and Asia Indices all increased by at least 4.5%. The Russell 2000 was up 2.1% while the S&P 500 was flat.

Executive Director James Greenberger writes about the purpose and origin of the 1st Industry-Academic Advanced Battery Summit, which will be part of this year's NAATBatt Annual Meeting and Conference this September in Louisville. Read "**1st Industry-Academic Advanced Battery Summit to Headline NAATBatt Annual Meeting**" in the Executive Director's Notes section of this newsletter below.

## Key Highlights:

- **Johnson Controls** announced plans to invest \$138.5 million to convert its battery plant near **Toledo, Ohio** into an **Absorbent Glass Mat (AGM)** facility. This would be the company's first AGM plant in the **United States**.
- **Sumitomo Electric Industries** has developed a porous "**Aluminum-Celmet**" material that could triple the capacity of lithium-ion (li-ion) batteries. The higher porosity material (up to 98% more) enables the battery to hold more lithium compound that contributes its ions to electrical flow.
- **Maxwell Technologies** will receive over \$500,000 in state and federal funding for collaborative energy storage R&D programs with three U.S. based companies. The company will be working with **Yardney Technical Products, Calgon Carbon** and **Nanotek Instruments**.
- **Mazda** expects gasoline engines will still power 80% to 90% of the world's autos even in 20 years time. The company's go to market strategy revolves around its "**Skyactiv**" efficient gas engine.
- A technical breakthrough at **Utah State University (USU)** could enable the construction of an electric road to charge electric vehicles (EVs). The goal is to make highways a source of energy.
- **FedEx Express** is planning to place 24 all-EVs into service within the next two months. The company is bringing the new EVs to **New York City, Chicago** and **Memphis**.
- Two charging stations were unveiled at **Union Station** in **Washington D.C.** The **Car Charging Group** installed the equipment from **Coulomb Technologies**.
- **Johnson Controls' Power Solutions** business is working with the **University of Wisconsin System** on a plan to advance research in energy storage technologies. The plan will include new research faculty and laboratory space at **UW-Madison** and **UW-Milwaukee**.
- **ABB** acquired **Epyon B.V.** for an undisclosed amount. Epyon's DC fast-charging stations have been in commercial use since May 2010.
- **Exide Technologies** announced plans to make changes at its **Salina, Kansas** plant in order to meet the new **National Ambient Air Quality Standards (NAAQS)** around the facility for lead-in air before the statutory deadline of Dec. 31, 2016. The company is currently compliant with all the State's requirements to bring the area around the facility into attainment.

- **Kansas City Power & Light** will have 10 charging stations in place across the metro area by the end of the summer. The locations range from an upscale shopping center in **Leawood** to the **Harley-Davidson** motorcycle factory.
- **Shanghai** has converted its gasoline-powered trolley buses on the **Nanjing Road** into EVs in an effort to reduce emissions. The trolley bus is able to run for about 60 kilometers (or 37 miles).

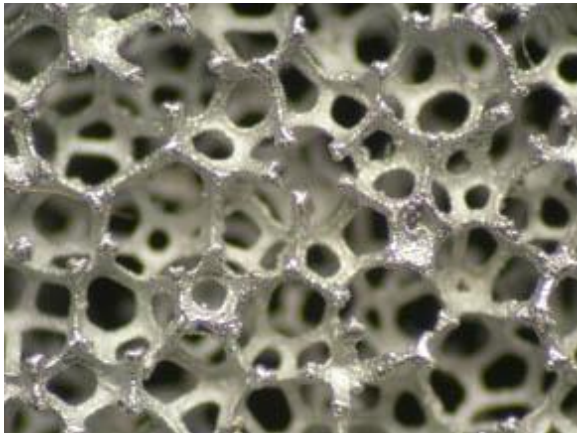
## A Few More Details:

Johnson Controls announced plans to invest \$138.5 million to convert its battery plant near Toledo, Ohio into an Absorbent Glass Mat (AGM) facility. This would be the company's first AGM plant in the United States. The company's investment will add 6 million units of AGM battery capacity to the company's North American AGM footprint by 2013.

*Source: Johnson Controls*

Sumitomo Electric Industries has developed a porous "Aluminum-Celmet" material (as shown in **Exhibit 1**) that could triple the capacity of li-ion batteries. The material porosity is up to 98% higher and could be used in place of the aluminum foil anode and would allow the battery to hold larger amounts of the lithium compound that contributes its ions to the electrical flow. Celmet is a porous metal made from nickel or nickel chrome alloy. The porous metal manufacturing process comprises electro conductive coating to plastic foam, followed by nickel plating and plastic foam removal by heat treatment. The company has set up a "small-scale production line" at its Osaka Works R&D center to produce the advanced material. Sumitomo Electric's development of the Aluminum-Celmet material is an outgrowth of Sumitomo Electric's prior work on similar nickel and nickel-chromium "Celmet" materials.

### Exhibit 1: Aluminum-Celmet



*Source: Sumitomo Electric*

Maxwell Technologies will receive over \$500,000 in state and federal funding for collaborative energy storage research and development programs with three U.S. based companies. Maxwell will be collaborating with Yardney Technical Products on the integration of its high power density ultracaps with Yardney's high energy density batteries. In addition, the company will work with Calgon Carbon to evaluate advanced activated carbons and with Nanotek Instruments on testing of graphene material.

*Source: Maxwell Technologies*

Mazda expects gasoline engines will still power 80% to 90% of the world's autos even in 20 years time. The company's go to market strategy revolves around its "Skyactiv" efficient gas engine. Mazda currently

has no hybrid vehicle in its lineup and plans to start selling a hybrid by 2013. Hybrids still require gas engines and Mazda considers those as part of the majority percentage.

*Source: San Francisco Chronicle*

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A technical breakthrough at Utah State University (USU) could enable the construction of an electric road to charge EVs. The objective is to make highways a source of energy. USU researchers have managed to transfer 5 kilowatts (kW) of electricity upto 10 inches high with 90% efficiency – enough to light up two dozen light bulbs. A receiving pad goes on top of the cylinders (as shown in **Exhibit 2**). Electric current in the lower pad creates a magnetic field that bridges the gap. If transmitting coils were placed under the road pavement at fixed intervals, the EV could charge without having to stop.

#### **Exhibit 2: The Key To a Recharging Highway?**



*Source: Deseret News*

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FedEx Express is planning to place 24 all-EVs (as shown in **Exhibit 3**) into service within the next two months. The company is bringing the new EVs to New York City, Chicago, Memphis and diversifying the existing Los Angeles fleet. FedEx will add the vehicles to complement the current 19 all-EVs deployed in Los Angeles, London and Paris. The additions will include:

15 Navistar eStar EVs;  
2 Freightliner Custom Chassis Corporation (FCCC) eCell EVs and 2 FCCC EV retrofits; and,  
5 Ford Transit Connect Electric vans to complement the current 19 all-electric vehicles deployed in Los Angeles, London and Paris.

#### **Exhibit 3: FedEx Electric Trucks**



*Source: FedEx*

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Two charging stations were unveiled at Union Station in Washington D.C. The Car Charging Group installed the equipment from Coulomb Technologies. The stations are located on the first and second levels of the garage.

*Source: The Washington Post*

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Johnson Controls' Power Solutions business is working with the University of Wisconsin System and its two largest campuses on plans for a statewide partnership to advance research in energy storage technologies. The partnership's objective is to foster collaborative research that will position the state of Wisconsin as an emerging technology leader. The Johnson Controls-UW partnership will include a new research facility and laboratory space at UW-Madison and UW-Milwaukee.

*Source: Milwaukee Journal Sentinel*

ABB acquired Epyon B.V. for an undisclosed amount. Epyon's DC fast-charging stations have been in commercial use since May 2010, and reduce charging time to 15 minutes compared to 6-8 hours using a standard alternating current (AC) charger outlet. Epyon's equipment and software also enables the charging station owner to monitor conditions and requirements of the station, linking billing and administrative needs.

*Source: ABB*

Exide Technologies announced plans to make changes at its Salina, Kansas plant in order to meet the new National Ambient Air Quality Standards (NAAQS) around the facility for lead-in air before the statutory deadline of Dec. 31, 2016. The company is currently compliant with all the state's requirements to bring the area around the facility into attainment. The effort is in response to the EPA announcing it is proposing to designate an area around the Exide facility in Salina as non-attainment for lead-in-air emissions. As part of a periodic review of standards, the EPA announced changes to the NAAQS standard for lead-in-air in October 2008, lowering the standard ten-fold from 1.5 micrograms of lead per cubic meter of air to 0.15 micrograms of lead per cubic meter of air.

*Source: Exide Technologies*

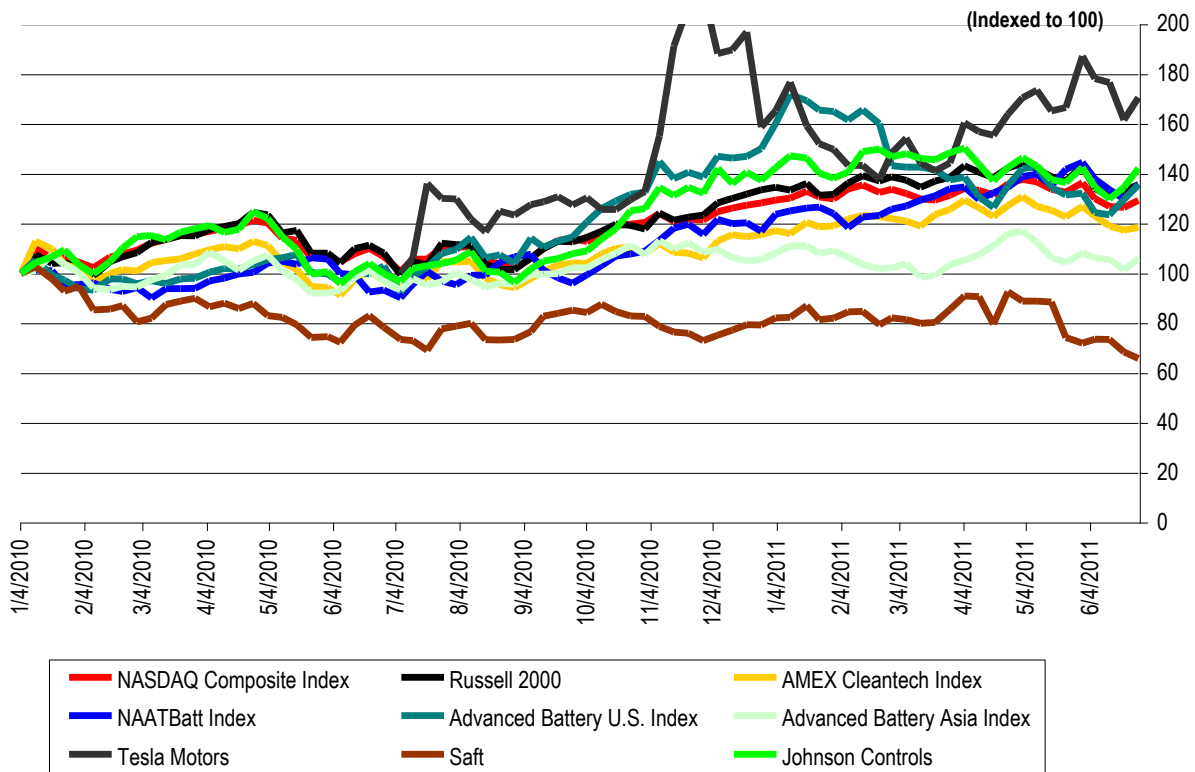
Kansas City Power & Light will have 10 charging stations in place across the metro area by the end of the summer. The locations range from an upscale shopping center in Leawood to the Harley-Davidson motorcycle factory in Kansas City north of the river. The chargers will be available to the public and will offer free electricity until the end of 2013.

*Source: The Kansas City Star*

Shanghai has converted its gasoline-powered trolley buses on the Nanjing Road into EVs in an effort to reduce emissions. The trolley bus, nicknamed "Clang, Clang", has 24 batteries (~50 kWh) that will enable it to run for about 60 kilometers (or 37 miles).

*Source: China Central Television*

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

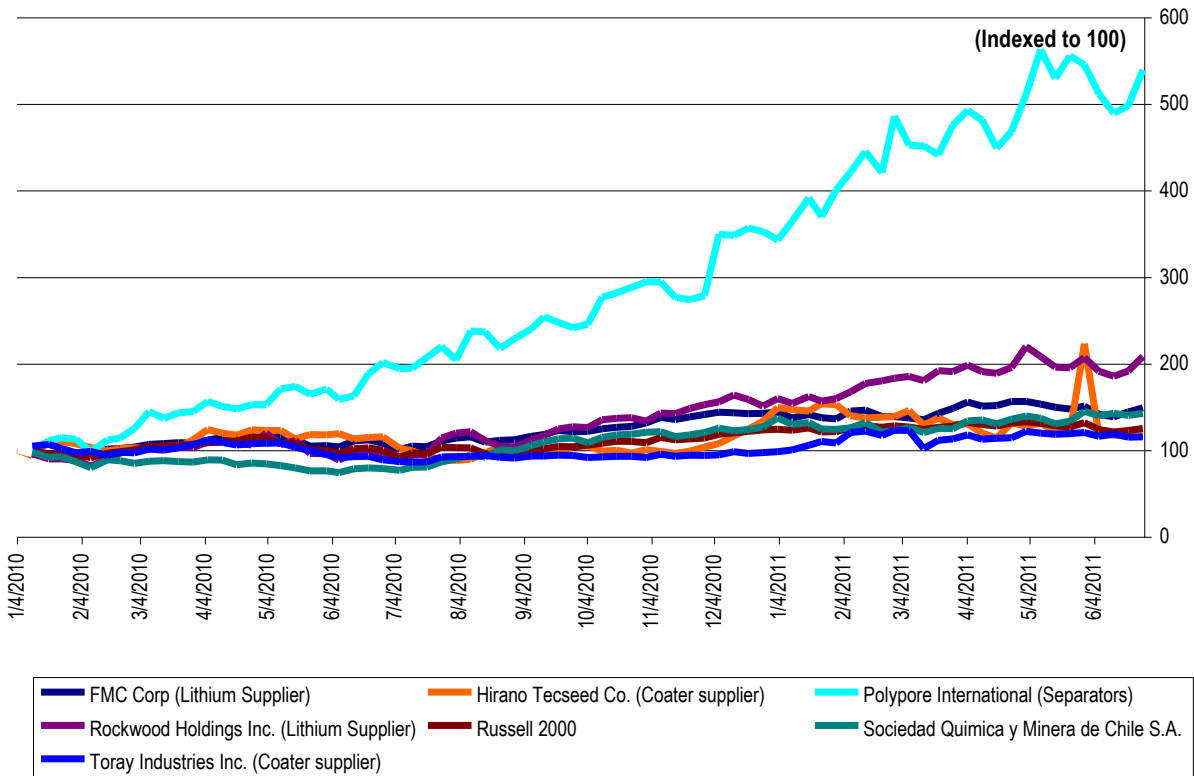


Index	Close on 6/27/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	12,043.6	12,928.5	93.2%	18.7%	3.2%	(0.3%)
S&P 500	1,280.1	1,370.6	93.4%	18.8%	0.6%	0.1%
NASDAQ	2,688.3	2,887.8	93.1%	20.7%	(0.1%)	2.2%
Russell 2000	805.1	868.6	92.7%	25.0%	0.8%	2.1%
AMEX Cleantech Index	1,161.4	1,292.4	89.9%	23.3%	1.1%	1.0%

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



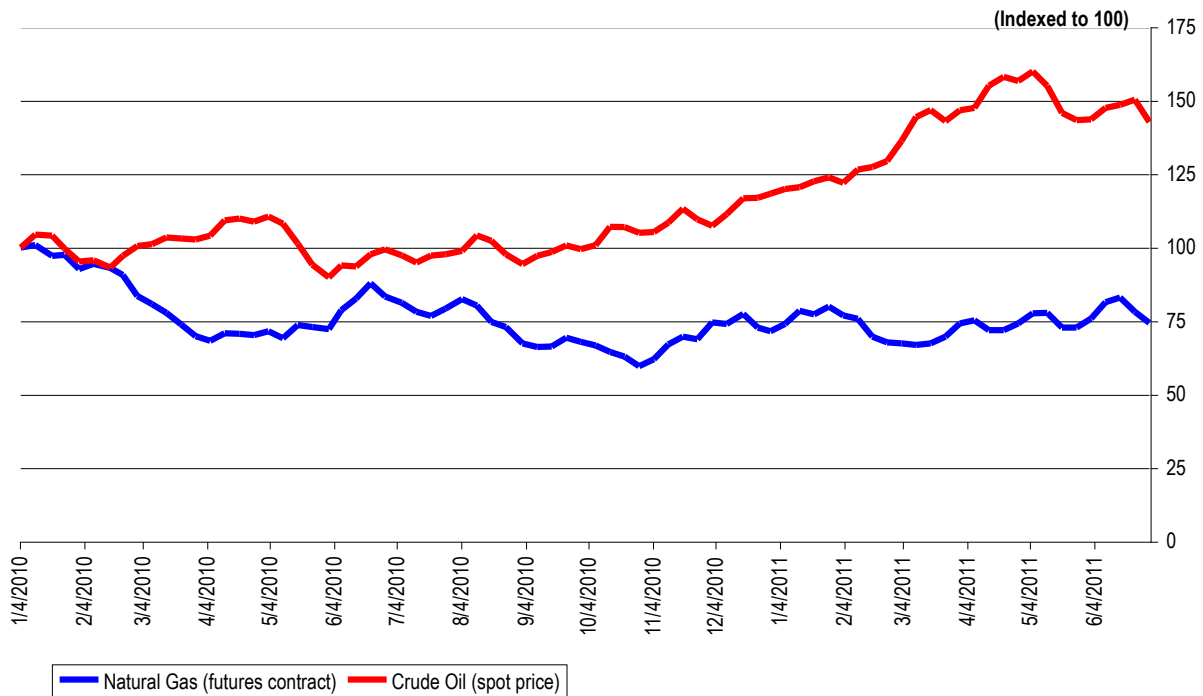
Source: Bloomberg

**Exhibit 6: Commodity Prices**

Commodity	Price on 6/27/2011	Price on 6/20/2011	Price on 5/27/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	9,000	8,935	9,150	0.7%	(1.6%)
LME Lead (cash, \$ per tonne)	2,545	2,375	2,540	7.2%	0.2%
LME Nickel (cash, \$ per tonne)	21,945	21,405	23,120	2.5%	(5.1%)

Source: LME

**Exhibit 7: Natural Gas and Crude Oil**  
**(From January 4, 2010)**



Source: EIA

## Executive Director's Notes



### **1<sup>ST</sup> INDUSTRY-ACADEMIC SUMMIT TO HEADLINE 2011 NAATBATT ANNUAL MEETING**

NAATBatt will hold its 2011 Annual Meeting and Conference in Louisville, Kentucky on September 7-8, 2011. Our primary challenge in planning the conference has been how to make it different from the dozens of other battery conferences produced each year in the North America by for-profit conference companies. We measure the success of our programs, not by the number of booths sold, but by whether our members and attendees leave with new ideas and new contacts that will help their businesses be more profitable. So what could we do at the 2011 Annual Meeting that would be different?

The answer came from a request made several months ago by one of our member companies. After a tour of the member's facility, its head of business development pulled me aside and asked if there was anything I could do to help introduce him to some good university battery research programs. He said that his company valued contacts with the academic community, because it gave his company insight into new developments and new technologies that would eventually impact its business. He noted that it was increasingly difficult to keep track of who was doing what in advanced battery research because of the constant influx of new programs and new researchers into the field. In addition, it was impossible to meet with all of those new researchers on a time efficient basis.

From that request, the idea for the 1<sup>st</sup> Industry-Academic Advanced Battery Summit was born. The Summit, which will be part of the 2011 NAATBatt Annual Meeting and Conference, will consist of about 15 U.S. universities making short presentations to the conference about the advanced battery research that they and their faculty are doing which may be of interest to industry. Some of the presenting institutions will be familiar, some less so—which is, of course, the point. But each of the presenting universities has been recommended to NAATBatt as having one of the best up-and-coming advanced battery research programs in the country. Attendees at the 2011 Annual Meeting and Conference will have a chance to meet them all in one place at one time.

The point of the Summit, however, goes well beyond just trying to organize a good conference. Two years ago when the federal government made a conscious decision to fund the advanced battery industry to the end of bolstering national energy security, many made a sober assessment of where the strengths and weaknesses of the U.S. advanced battery industry really lay. The general assessment made at that time, and which continues to be true today, is that the strength of U.S. companies lays not so much in their ability to produce large quantities of top quality batteries today, but rather in their ability to innovate the top quality battery technologies that will dominate the market tomorrow. (NAATBatt was, in fact, founded on this premise, the truth of which is becoming increasingly clear).



The 2011 NAATBatt Annual Meeting and Conference will refocus on the subject of innovation, and the 1<sup>st</sup> Industry-Academic Advanced Battery Summit will be an important part of that refocus. We hope to make these Summits a regular part of NAATBatt programming going forward. I hope you can join us in Louisville in September. For more information, look for the link to the 2011 Annual Meeting and Conference on our Web site at: [www.naatbatt.org](http://www.naatbatt.org).



James J. Greenberger  
Executive Director

July 1, 2011



## NAATBatt Membership Applications for 2011

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### **2011 Membership Applications and Dues Structure**

NAATBatt is accepting applications for membership for the 2011 calendar year. Membership dues for 2011 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. Please click on <http://naatbatt.org/membership-inquiry/> and indicate that you are interested in a 2011 membership.

### **Why Join NAATBatt?**

NAATBatt's mission is to grow the market for advanced electrochemical energy storage technology in North America. NAATBatt provides regular 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, including our recently concluded conference on PEV's and the grid, and public policy initiatives, such as the recent NAATBatt-sponsored meeting with Chairman Jon Wellinghoff of FERC and production of written comments to FERC in support of distributed energy storage technology.

NAATBatt recently concluded the highly successful meeting and conference entitled "The Impact of PEV's on T&D Systems: Challenges and Solutions", in Louisville, Kentucky. The conference was the largest cross-industry event to date focused on the impact of plug-in electric vehicles on the grid. The conference outlined the improvements and upgrades that utilities must make to the grid in order for it to accommodate mass-market electric vehicles. The conference emphasized the critical role that grid-connected energy storage can play in promoting vehicle electrification in the United States. Emphasizing the necessary relationship between grid-connected storage and electric vehicles is one of NAATBatt's primary missions.

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

**REGISTRATION  
IS OPEN!!**

**NAATBatt 2011 Annual Meeting and Conference:** NAATBatt has announced that its 2011 Annual Meeting and Conference will be held on **September 7-8, 2011** in Louisville, Kentucky. The title of the program is “**New Markets, New Innovations: The Next 5 Years in Advanced Batteries.**” The program will take a hard look at near-term market opportunities for U.S. advanced battery manufacturers and let them hear from potential customers what those customers want now. The annual meeting will also feature a Battery Industry-Academic Advanced Battery Summit with presentations by some of the top university battery research programs in the United States. Attendees will learn who is working on what in the academic world. There is more going on than you think. Information about the 2011 conference is posted on the NAATBatt Web site at: [www.naatbatt.org](http://www.naatbatt.org). Please join us in Louisville in September!

**Presentations and Materials from the Workshop on Distributed Energy Storage Posted:** Presentation materials, handbooks, attendee lists and working group discussion summaries from the recently concluded April 21 DOE/NAATBatt Workshop on Issues in Distributed Energy Storage have been posted on the NAATBatt Web site at: [www.naatbatt.org](http://www.naatbatt.org). The materials are available for review to all Workshop registrants and to all NAATBatt members. If you have lost or never received your password to access these materials, please contact Jim Greenberger at [jgreenberger@naatbatt.org](mailto:jgreenberger@naatbatt.org).

**Speaker Presentations from the NAATBatt 2010 Annual Meeting and Conference are Now 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](mailto: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.

- **Storage Week 2011:** Infocast will host Storage Week 2011 in San Diego on **July 11-14, 2011**. The program, now in its third year, will cover a range of storage policies, markets, project applications and technologies involved in the integration of storage onto the grid. NAATBatt is a Supporting Organization of the program and NAATBatt members will be entitled to a 15% discount on admission.
- **Plug-In 2011 Conference and Exhibition:** The Plug-In 2011 Conference and Exhibition will be held on **July 18-21, 2011** in Raleigh, North Carolina. The Conference Web site can be viewed at: <http://www.plugin2011.com/>.
- **Risk and Reward in the Over-Hyped Electric Vehicle Market:** Lux Research Inc. will present a free webinar entitled "Risk and Reward in the Over-Hyped Electric Vehicle Market" at 11:00 a.m. EDT on **July 19, 2011**. The webinar will discuss the market opportunities for advanced batteries by different vehicle type and the potential for innovation to leverage those opportunities. A link to the registration site may be found by clicking [here](#).
- **1<sup>st</sup> North American & Asian Lithium-Ion Technology Conference:** The North American & Asian Lithium-Ion Technology Conference will be held on **August 24, 2011** 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/>
- **NAATBatt 2011 Annual Meeting and Conference: September 7-8, 2011** in Louisville, Kentucky Registration is now open for the 2011 Annual Meeting and Conference, which will include the 1<sup>st</sup> Industry-Academic Advanced Battery Summit. See the note above for more details, or click [here](#).
- **Battery Power 2011:** Battery Power 2011 will be held on **September 20-21, 2011** in Nashville, Tennessee. The show will highlight the latest capabilities, design issues, trends and market forecasts in batteries and battery-powered products and systems. The conference Web site can be viewed at: [http://www.batterypoweronline.com/bppt-conf11/bp11\\_index.php](http://www.batterypoweronline.com/bppt-conf11/bp11_index.php).
- **4th International EV Battery Tech USA: Global Cost Reduction Initiative:** EV Battery Tech USA will be held on **September 21-22, 2011**, in Detroit, Michigan. The leading automotive OEM's will attend the conference and discuss how to reduce the cost of EV batteries by specifically evaluating near-term advances in energy density, battery life extension, preventative methods for cell degradation and failure, battery safety improvement and testing. NAATBatt is a supporting organization of the conference and NAATBatt members are entitled to a 15% discount on registration. The conference Web site may be viewed at: <http://www.ev-battery-tech.com/>.
- **2<sup>nd</sup> Battery Safety Conference:** Knowledge Foundation will host the 2<sup>nd</sup> Battery Safety Conference on **November 7-8, 2011** in Boston, Massachusetts. 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=253&act=evt](http://www.knowledgefoundation.com/viewevents.php?event_id=253&act=evt)
- **7<sup>th</sup> Lithium Mobile Power Conference:** Knowledge Foundation will host the 7<sup>th</sup> Lithium Mobile Power Conference on **November 9-10, 2011** in Boston, Massachusetts immediately following the battery safety conference. 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](http://www.knowledgefoundation.com/viewevents.php?event_id=254&act=evt).

- **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.ieseet-d.org/>.



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