

Summary:

For the June 10th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities.

The NAATBatt, U.S. and Asia Indices all declined 4.7%, 5.9% and 1.9%, respectively. The S&P 500 and Russell 2000 also fell 4.4% and 6.2%, respectively.

Executive Director James Greenberger writes about the "*Beyond Lithium Ion*" conference this past week at Northwest Pacific National Laboratory and the future of advanced battery technology. Read "*Inspiring Confidence in the Advanced Battery Industry*" in the Executive Director's Notes section of this newsletter below.

Key Highlights:

- **Ford Motor** plans to triple its production of electric vehicles (EVs) to an annual rate of 100,000 by 2013. The company currently sells about 35,000 EVs.
- **Dominion Virginia Power** has outlined a pilot program to utility regulators that would structure rates to encourage recharging of EVs between 10 PM and 6 AM. Owners that charge-up during off-peak periods would pay as little as \$0.34 to "fill up" for a typical 40-mile commute.
- **Mitsubishi** and its **Russian** distributor **Rolf Import** launched "experimental" sales of the **i-MiEV** at an event in **Skolkovo**. The Moscow energy company **MOESK** and privately owned **Revolta** are setting up an experimental network of 28 charge points around **Moscow** and the surrounding region in an 11-month pilot project.
- **Nissan Motor** and the **Japan Automobile Federation** are offering a trial roadside-service (in areas around **Kanagawa prefecture**) to help stranded EVs that have run out of 'juice'. A charger truck will be dispatched to the stranded vehicle to generate electricity with its 3.0-liter diesel engine to provide enough power for the disabled EV to run about 40 kilometers (or 24 miles).
- **Kwik Trip** has started to install electric charging stations at all new stores. 25 locations in **Iowa**, **Minnesota** and **Wisconsin** have the 110-volt charging stations.
- **Mitsubishi Motors** has begun offering the **i-MiEV** for a **\$28,690** MSRP (before tax incentives). The price is for a special built FE (fleet edition) model that includes the features of the ES model with the addition of a DC Fast charge port and the ability to quick charge more than once per day.
- **Advanced Battery Technologies** has signed (through subsidiary--**Wuxi Zhongqiang Autocycle**) a supply agreement with **Wuxi Hao Jie Vehicle**. The contract is for 24,000 EVs (including electric bikes and scooters) for a total value of \$14.7 million (approximately 95,780,000 RMB).
- The **California** rebate program for electric cars is running out of cash. The **California Air Resources Board**, which provides most of the program's funding, is expected to appropriate more money at its July meeting.
- Researchers at **Massachusetts Institute of Technology (MIT)** have proclaimed a significant advance in battery architecture that could be a breakthrough for EVs and grid storage. The potential advantages include reducing the size and the cost of a complete battery system to about 50% of current levels.

- **Oro Valley** is readying for the installation of charging stations through the Electric Vehicle Project. Four stations will be installed at the **Town Hall** at no cost to Oro Valley and owners will also be able to charge their EVs for free.
- **CT&T** plans have stalled to build EVs in **Hawaii, Pennsylvania** and **South Carolina**. However, their American subsidiary CT&T United, still wants to build two-seaters that could cost up to \$20,000 and reach speeds up to 40 mph with li-ion batteries providing 60 miles of range.
- A highly touted program to use **Balqon** electric trucks to cut down on pollution at the **Port of Los Angeles** has stalled because the li-ion batteries couldn't last a full shift (only about 5 hours). The company has developed a charger that will give the new batteries a full 10-hour charge in only one hour.
- Two electric taxis (etaxis), a **Nissan Leaf** saloon and a **Peugeot Expert** wheelchair-accessible vehicle were put into service in **Dublin, Ireland**. The etaxis are part of a joint pilot program between the **ESB** and **National Radio Cabs (NRC)**.
- **Google** has deployed more than 70 charging stations managed by the **ChargePoint Network (Coulomb Technologies)** at its headquarters in **Mountain View, California**. The stations are used by employee-owned EVs along with the company's growing car sharing program for **Googlers (GFleet)**.
- Commercial charging stations debuted in **Seattle** at **Qwest Field**. About 2,000 chargers will be installed in the **Puget Sound** area by the end of the year through the federally funded EV Project.
- The city of **Shenzhen**, which borders **Hong Kong**, has banned electric bikes (ebikes) in main downtown areas due to related traffic accidents. The ban will be effective until December 5th and riders could face fines of 200 yuan (\$31) starting next month, if they fail to comply with the restriction.

A Few More Details:

Ford Motor plans to triple its production of electric vehicles (EVs) to an annual rate of 100,000 by 2013. The company currently sells about 35,000 EVs. The capacity increase is based on customer demand. Ford has also canceled plans for any gas-engine C-Max in North America.

Source: Ford Motor

Dominion Virginia Power has outlined a pilot program to utility regulators that would structure rates to encourage recharging of EVs between 10 PM and 6 AM. Owners that charge-up during off-peak periods would pay as little as \$0.34 to "fill up" for a typical 40-mile commute. Under standard residential electric rates, the cost would be up to \$0.86. The pilot program, however, would charge a premium for charging during peak hours: \$1.23 for the same 40-mile commute. The program could be in place 90 days after regulatory approval. Dominion estimates that the 86,000 EVs (or 5% of all vehicles sales in Virginia) would be on Virginia streets and highways in less than 10 years and would generate demand for 250 megawatts (MW) of power -- approximately equal to the output of a new power plant.

Source: Washington Post

Mitsubishi and its Russian distributor Rolf Import launched "experimental" sales of the i-MiEV at an event in Skolkovo. The Moscow energy company MOESK and privately owned Revolta are setting up

an experimental network of 28 charge points around Moscow and the surrounding region in an 11-month pilot project. The first batch of iMiEVs destined for Russia will roll off production lines in Japan in July. The EV will initially retail in Russia for 1,799,000 rubles (or \$64,768).

Source: *The Moscow Times*

Nissan Motor and the Japan Automobile Federation are offering a trial roadside-service (in areas around Kanagawa prefecture) to help stranded EVs that have run out of 'juice'. A charger truck will be dispatched to the stranded vehicle to generate electricity with its 3.0-liter diesel engine to provide enough power for the disabled EV to run about 40 kilometers (or 24 miles). The charging process takes about 20 minutes.

Source: *WSJ*

Kwik Trip has started to install electric charging stations at all new stores. 25 locations in Iowa, Minnesota and Wisconsin have the 110-volt charging stations. The chain received no tax incentives or government money for installing the chargers. However, the company would not rule out those avenues later on if higher-level stations are needed.

Source: *Midwest Energy News*

Mitsubishi Motors has begun offering the i-MiEV for a **\$28,690** MSRP (before tax incentives). The price is for a special built FE (fleet edition) model that includes the features of the ES model with the addition of a DC Fast charge port and the ability to quick charge more than once per day. The company is targeting U.S. sales of 20,000 units by 2015.

Source: *Mitsubishi Motors*

Advanced Battery Technologies has signed (through subsidiary--Wuxi Zhongqiang Autocycle) a supply agreement with Wuxi Hao Jie Vehicle. The contract is for 24,000 EVs (including electric bikes and scooters) for a total value of \$14.7 million (approximately 95,780,000 RMB). The contract will be fulfilled from June 1, 2011 through May 31, 2012. The contract was placed after a trial order of EVs purchased in April and May of this year by Wuxi Hao Jie Vehicle.

Source: *Advanced Battery Technologies*

The California rebate program for electric cars is running out of cash. The state offers rebates of up to \$5,000 to clean-car buyers, on a first-come, first-served basis. State officials expect the program's \$5 million annual funding will probably be used up shortly. The California Air Resources Board, which provides most of the program's funding, is expected to appropriate more money at its July meeting.

Source: *San Francisco Gate*

Researchers at Massachusetts Institute of Technology (MIT) proclaimed a significant advance in battery architecture that could be a breakthrough for EVs and grid storage. The new design houses the battery's active components — the positive and negative electrodes, or cathodes and anodes — as solid particles suspended in a liquid electrolyte (as shown in **Exhibit 1**). The quicksand-like liquid is pumped through the system during the process of charging or discharging the battery. The potential advantages include reducing the size and the cost of a complete battery system to about 50% of current levels. This would enable 'refueling' by pumping out the liquid slurry and pumping in a fresh, fully charged replacement or quickly swapping out the tanks.

Exhibit 1: The MIT Revolutionary Breakthrough?



Source: MIT

Oro Valley is readying for the installation of charging stations through the Electric Vehicle Project. Four stations will be installed at Town Hall at no cost to Oro Valley and owners will also be able to charge their EVs for free. As part of the \$230 million EV Project charging stations will be installed in major cities in six states and the District of Columbia. The Tucson region could receive as many as 240 charging stations.

Source: Arizona Daily Star

CT&T plans have stalled to build EVs in Hawaii, Pennsylvania and South Carolina. However, CT&T United (an American subsidiary) still wants to build in Hawaii and South Carolina. The two-seaters could cost up to \$20,000 and reach speeds up to 40 mph with li-ion batteries providing 60 miles of range.

Source: Bloomberg

A highly touted program to use Balqon electric trucks to cut down on pollution at the Port of Los Angeles has stalled because the li-ion batteries couldn't last a full shift (only about 5 hours). The company has developed a charger that will give the new batteries a full 10-hour charge in only one hour. The port bought 15 electric trucks at a cost of about \$5 million. However, only one is currently in use.

Source: KABC-TV

Two electric taxis (etaxis), a Nissan Leaf saloon and a Peugeot Expert wheelchair-accessible vehicle were put into service in Dublin, Ireland. The etaxis are part of a joint pilot program between the ESB and National Radio Cabs (NRC). The vehicles are available for general hire and will be charged at night through special power points installed at the drivers' homes. The etaxis are able to travel almost 100 miles before a recharge is required.

Source: Irish Times

Google has deployed more than 70 charging stations managed by the ChargePoint Network (Coulomb Technologies) at its headquarters in Mountain View, California. The stations are used by employee-owned EVs along with the company's growing car sharing program for Googlers (GFleet). The company's plan is to install 250 additional charging stations on its campus with a goal to make 5% of its campus parking EV-ready.

Source: *International Business Times*

Commercial charging stations debuted in Seattle at Qwest Field. About 2,000 chargers will be installed in the Puget Sound area by the end of the year through the federally funded EV Project. Half of those chargers will be in homes, and the others in public hubs such as those at the stadium.

Source: *The Seattle Times*

The city of Shenzhen, which borders Hong Kong, has banned electric bikes (ebikes) in main downtown areas due to related traffic accidents. The city has over 500,000 ebikes and has been blamed for 64 deaths in 268 road accidents last year. The ban will be effective until December 5th when city authorities will review the matter. Ebike riders could face fines of 200 yuan (or \$31) starting next month, if they fail to comply with the restriction.

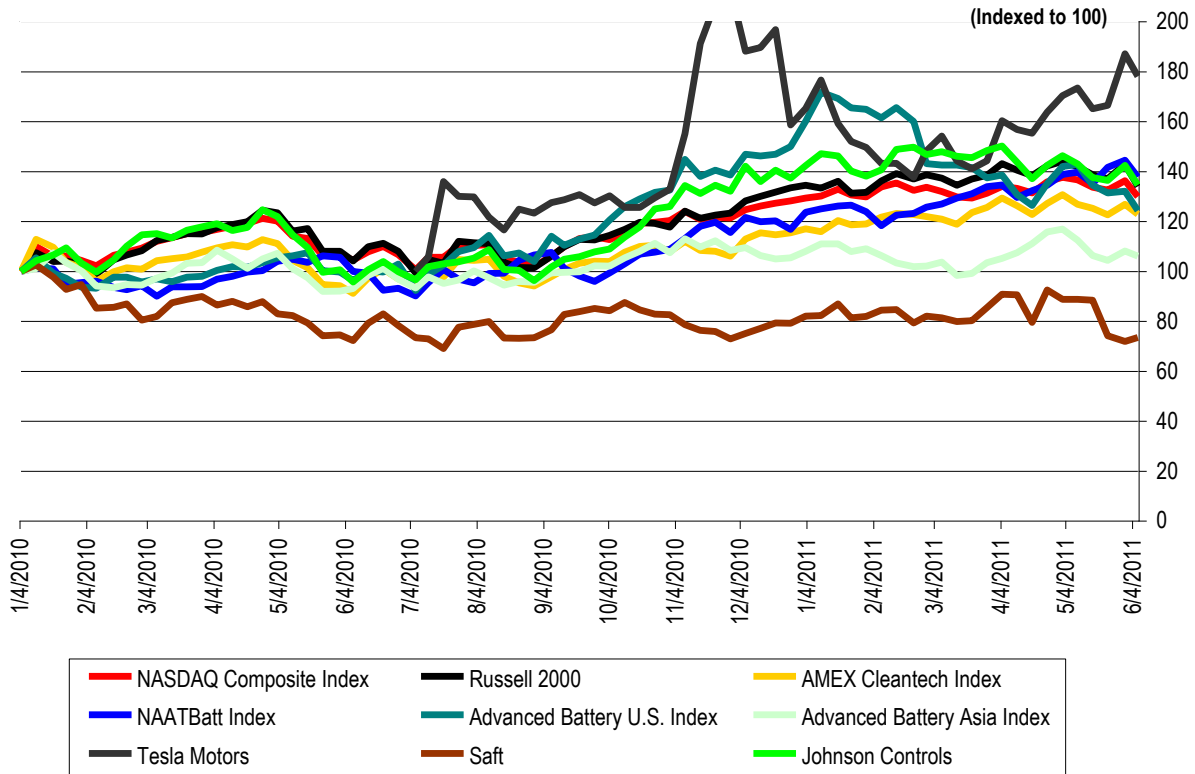
Source: *Xinhua*

Member News:

- MEGTEC Systems announces that International Advanced Research Center for Power Metallurgy and New Materials (ARCI), a Research Institute of the Indian Government, has chosen MEGTEC to supply a complete lithium-ion laboratory battery line for their research and development facility in Chennai. It is planned for the battery line to be installed in the first quarter of 2012. For full release, visit http://www.megtec.com/news_article.php?news_id=65
- Altair Nanotechnologies Inc. (Altairnano) announced it has been awarded a 3-year lease for its new ALTI-ESS Advantage 1.8 MW/ 300 kWh energy storage system. The system will be leased by Energy Storage Holdings, LLC, a unit of a major U.S.-based energy company. The project, to be initially located in New Jersey, will evaluate energy storage technology for large-scale frequency regulation projects, and is expected to be installed in late 2011. For full release, visit www.altairnano.com.

NAATBatt members with news about new products, new sales or other new developments at their company should send the details to jgreenberger@naatbatt.org and vivianyu65@gmail.com in order to have a summary of those developments published in this section of the newsletter.

Exhibit 2: Indices Performance
(From January 4, 2010)

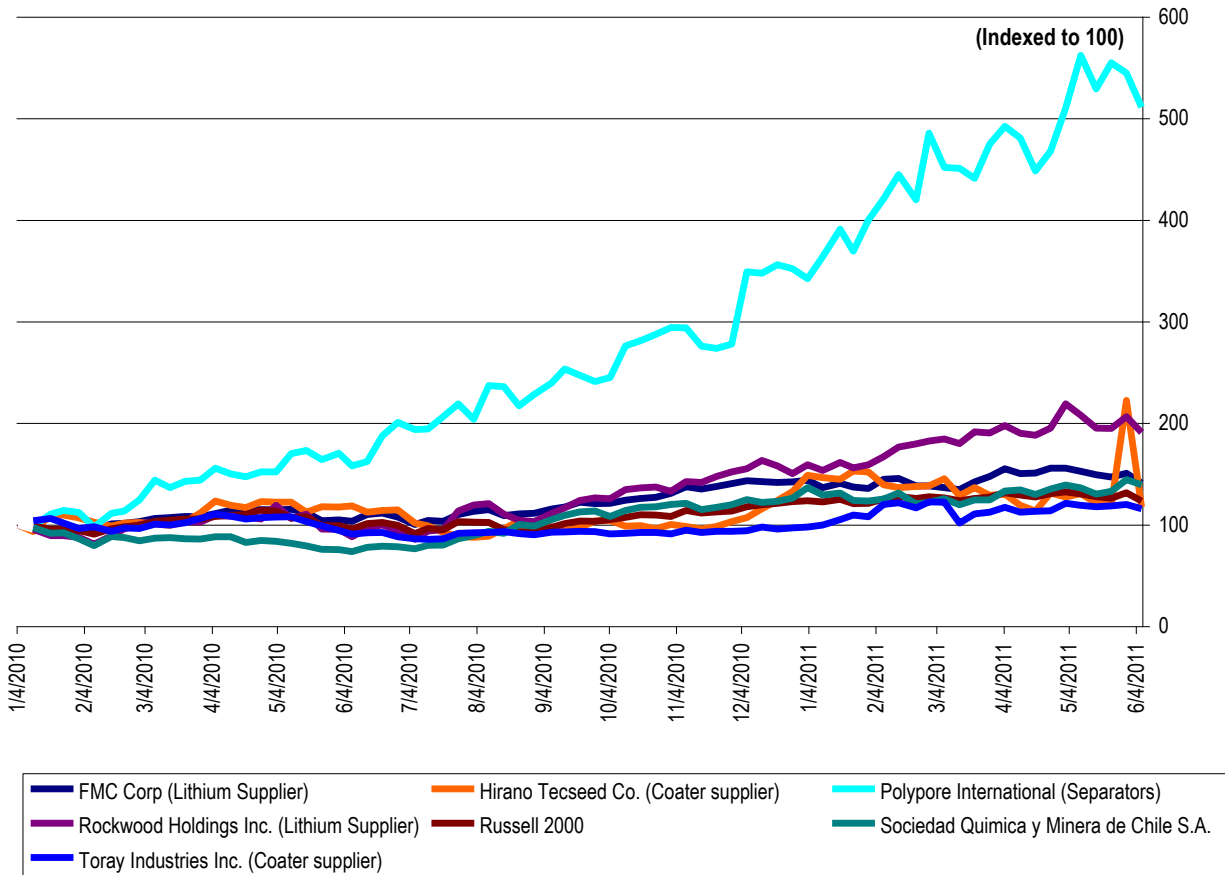


Index	Close on 6/7/2011	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	12,090.0	12,928.5	93.5%	23.2%	3.6%	(3.8%)
S&P 500	1,286.2	1,344.1	95.7%	22.4%	1.1%	(4.4%)
NASDAQ	2,702.6	2,887.8	93.6%	24.3%	0.4%	(4.7%)
Russell 2000	795.5	868.6	91.6%	28.6%	(0.4%)	(6.2%)
AMEX Cleantech Index	1,205.5	1,292.4	93.3%	34.8%	5.0%	(3.1%)

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 3: Supplier Performance
(From January 4, 2010)



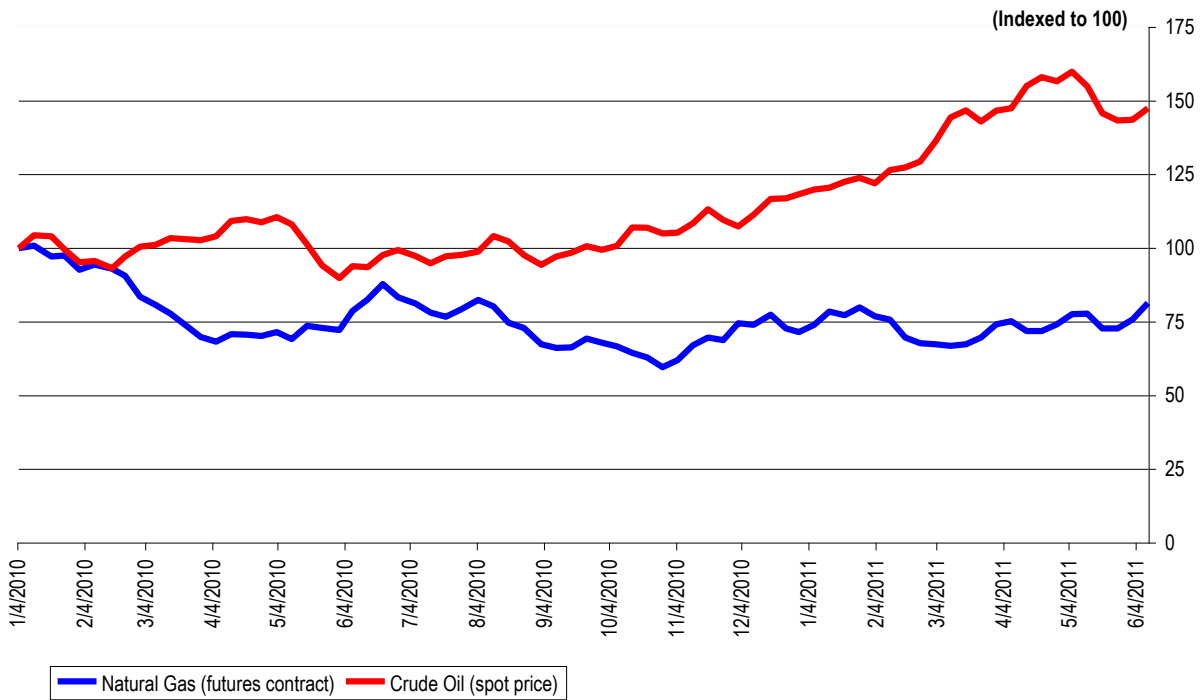
Source: Bloomberg

Exhibit 4: Commodity Prices

Commodity	Price on 6/6/2011	Price on 5/31/2011	Price on 5/6/2011	1 Week Change	1 Month Change
LME Copper (Cash, \$ per tonne)	9,097	9,224	8,789	(1.4%)	3.5%
LME Lead (cash, \$ per tonne)	2,470	2,531	2,294	(2.4%)	7.7%
LME Nickel (cash, \$ per tonne)	22,605	23,150	24,425	(2.4%)	(7.5%)

Source: LME

Exhibit 5: Natural Gas and Crude Oil
(From January 4, 2010)



Source: EIA

Executive Director's Notes



INSPIRING CONFIDENCE IN ADVANCED BATTERY TECHNOLOGY

The past few months have been difficult for many in the advanced battery industry. A discouraging analysis by EPRI as to the relative costs and benefits of grid storage, slow sales of the Chevy Volt and the Nissan LEAF, earnings disappointments at several advanced battery companies and the possible break-up of one of the industry's potential leading players, JCI-Saft Power Systems, cannot help but to call into question the very future of the advanced battery industry. The ability to store electrical energy in an efficient and light weight form has the promise to solve many critical social problems. But the world does not always beat a path to the better mousetrap. The last few months have led me to wonder whether we might not be betting on the wrong technology.

This week, in as much a test of faith as a search for information, I attended the "*Beyond Lithium Ion*" conference at Northwest Pacific National Laboratory in Richland, Washington. The conference discussed the status of research into the battery technologies that are expected eventually to replace lithium-ion chemistries in traction and grid-connected stationary batteries, with a focus on lithium-air and lithium-sulfur systems. I attended for the purpose of discovering how long we will have to wait for the technologies that may one day permit advanced batteries to fulfill their social potential.

I am happy to report that I came away inspired, but not in the way I had hoped. The truth, as near as I can tell it (I suspect I was the only non-scientist at the conference), is that mass-market commercial systems employing lithium-air and lithium-sulfur technology are still years away. There are fundamental scientific problems in both technologies that need to be solved. There is even the possibility of a "show stopper"--a problem in the technologies that might ultimately make them unusable in commercial applications or, more likely, unable to improve significantly on the performance of existing lithium-ion systems. More basic research is needed on both technologies before these systems can be moved into practical, mass market applications.

But what might have been a discouraging trip to Eastern Washington turned out to be the opposite. The encouragement, however, came not from the technology, but from the minds of the people working on it. I knew by reputation such leaders in advanced battery research as Winfried Wilke, Esther Takeuchi, Yet-Ming Chaing, K. M. Abraham, Peter Bruce, Khalil Amine and others. But listening to them speak and explain how they were approaching the complex technological problems they face inspired tremendous confidence. Yet-Ming Chaing's description of the concept behind his new company, 24M Technologies, was a case in point. I have no idea whether Prof. Chaing's lithium-ion flow battery concept will actually work, but I am absolutely convinced that the mind that conceived that novel device will go on to do great things.

My take away from the conference is simply this: Over the past several years advanced electrochemical energy storage has captured the imagination, not just of the public, but of much of the scientific community as well. The problems in advanced battery science are real and in some respects daunting. But the best minds we have are now on the problem. A bet on advanced batteries is less a bet on a technology than a bet on human ingenuity itself. I'll take that bet.



James J. Greenberger
Executive Director

June 10, 2011



NAATBatt Membership Applications for 2011

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

LAST
CHANCE
TO
REGISTER!

NAATBatt Quarterly Members' Meeting, Facility Tour and "Thank You" Dinner: On **June 16, 2011**, NAATBatt will kick off a series of quarterly meetings at facilities of our members around the county. The meetings are intended to deepen relationships among NAATBatt member firms and to promote business opportunities. This quarter's meeting will be held at the offices of **Cabot Corporation in Albuquerque, New Mexico**. Members will tour Cabot's micro-powder manufacturing facility and receive a briefing from NAATBatt and the Electrification Coalition on developments in Washington that could impact the U.S. advanced battery market this year. The meeting includes a group dinner at one of the top New Mexican restaurants in Albuquerque and is open to all NAATBatt members at no cost. NAATBatt members should click [here](#) for more information about the meeting. Non-NAATBatt members should click [here](#) for information on how to join.

SAVE THE
DATE

NAATBatt 2011 Annual Meeting and Conference: NAATBatt has announced that its 2011 Annual Meeting and Conference will be held on **September 7-9, 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 Summit with presentations by the top university battery 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 will be posted soon on the NAATBatt Web site at: www.naatbatt.org. Please save the date!

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. 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.

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 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.

- **Automotive News Green Car Conference:** The Automotive News Green Car Conference will be held in Novi, Michigan on **June 13-14, 2011**. The conference has been expanded to two days and will include a ride and drive event. More information about the conference can be found at: <http://www.autonews.com/Assets/html/green-car-conference/>.
- **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/>.
- **NAATBatt 2011 Annual Meeting and Conference: September 7-9, 2011** in Louisville, Kentucky (see note above).
- **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.
- **EV Battery Tech USA:** EV Battery Tech USA will be held on **September 21-22, 2011**, in Detroit, Michigan. The program will focus on reducing the cost and improving the performance of EV batteries and will feature representatives from the leading automotive OEM's. The conference Web site may be viewed at: <http://www.ev-battery-tech.com/>.
- **2nd Battery Safety Conference:** Knowledge Foundation will host the 2nd 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
- **7th Lithium Mobile Power Conference:** Knowledge Foundation will host the 7th 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.
- **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/>.

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