

Summary:

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

The NAATBatt, U.S. and Asia Indices increased 5.2%, 6.0% and 1.2%, respectively. The S&P 500 and Russell 2000 increased 3.0 and 3.9%, respectively.

Read Executive Director James Greenberger's wrap-up of the annual meeting and conference this week in Louisville. "**NAATBatt 2010 Annual Meeting and Conference Ends in Success**" appears in the Executive Director's Notes section of this newsletter below.

Key Highlights:

- **Kentucky Governor Steve Beshear** told the annual meeting of the **National Alliance for Advance Technology Batteries (NAATBatt)** that the Commonwealth is well-positioned to partner and support the group's mission to lead the efforts to grow a market for advanced energy storage technology in **North America**. The Governor recognized the leadership of the two auto manufacturers in developing and preparing for market the **Chevy Volt** and the **Nissan Leaf**.
- **Altair Nanotechnologies** has been selected by **Inversiones Energéticas, S.A. de C.V. (INE)** to provide a 10 Megawatt (MW) battery system for frequency control. The company expects to finalize the contract terms with the El Salvador electric utility prior to year-end.
- **Ford Motor** has begun shipping the **Transit Connect Electric** to customers. The first all-electric vehicles (EVs) are being delivered to companies that agreed to be early users including **AT&T**, **the Canada Post**, the **New York Power Authority** and **Southern California Edison**. **Johnson Controls-Saft** is supplying the lithium-ion (li-ion) battery for the EV.
- **Hertz** and **Starwood Hotels & Resorts Worldwide** announced a joint partnership to bring in Hertz Global EV to key Starwood select-service hotels in North America. Starwood's select-service portfolio includes the **Element Hotels**, **Aloft Hotels** and **Four Points by Sheraton Hotels brands**.
- The **Korean Government** announced plans to boost the green car industry with a goal of becoming the world's 4th largest manufacturer. Based on a joint plan announced by several ministries including the **Knowledge Economy** and the **Environment**, the government plans to produce 1.2 million green cars by 2015 – targeting 21% share of the domestic vehicle market.
- **SAP** is installing 16 charging stations at the **Palo Alto** headquarters' parking lot and will offer free charging through 2011. The company is adding the stations after a survey of the 2,000 employees at the Palo Alto campus revealed that 10% plan to buy EV next year.
- **Sanyo Electric** estimates the car industry will help li-ion battery makers more than triple sales to 5 trillion yen (\$60 billion) in a decade from 1.5 trillion yen (or \$18 billion) in the year ending in March. Automakers are testing packs of li-ion batteries assembled by **Tesla Motors** that are powering **Daimler's electric Smarts** and **Mercedes-Benz A-class** cars, and eventually **Toyota's electric RAV4** in 2012.
- **Hertz** announced it will offer an electric version of the **Smart Fortwo** for rent in **New York**, **Washington, D.C.**, and **San Francisco**. The EV has an estimated range of 84 miles on a single charge and takes less than 8 hours to charge the car's batteries from a 220-volt outlet.

- **Malaysia's** first EV based on the Proto Saga model has been completed. The EV will be able to travel as far as 160 kilometers using a 15 kWh battery that will take up 7 to 8 hours to re-charge.
- **Nanotek Instruments** has produced **graphene** electrodes that could lead to **ultracapacitors** with more than 5x the energy density of commercial devices. Commercial ultracapacitors hold 5% of the energy of li-ion batteries, providing short power bursts that limit them to uses such as acceleration in hybrid buses.
- The **Norwalk Parking Authority (NPA)** announced it has joined forces with **Car Charging Group** with the installation of the first EV car charging stations in any municipal parking area in **Fairfield County, CT**. The EV charging stations will be installed in three municipal garages in Norwalk: at the **South Norwalk railroad station**, the **Maritime Garage** and **Yankee Doodle Garage**.
- **BYD** has cancelled production of the **F3DM** plug-in hybrid EV due to the combination of poor sales and the lack of an established charging infrastructure. The company is shifting focus from all-EVs to plug-in EVs and from private transport to urban public transport.
- **Mahindra Reva** Electric Vehicles has launched its **Revai** and is targeting a 3-fold volume increase in sales over the next 12-18-months. The company is planning to increase unit shipments to 3,600 with the domestic market constituting 3,000 units.

A Few More Details:

Kentucky Governor Steve Beshear told the annual meeting of the National Alliance for Advanced Technology Batteries (NAATBatt) that the Commonwealth is well-positioned to partner and support the group's mission to lead the efforts to grow a market for advanced energy storage technology in North America. The conference focused on what utilities can and should be doing to prepare for the introduction of mass market Personal Electric Vehicles (PEVs) in their service territories. The Governor recognized the leadership of the two auto manufacturers in developing and preparing for market the Chevy Volt and the Nissan Leaf. He presented representatives from General Motors and Nissan with golden spike replicas, depicting the courage and ingenuity that Union Pacific and Central Pacific railroads displayed in 1869 when the two met at Promontory Summit in the Utah Territory to bring the nation together through the use of the railroads.

Source: Journal Enterprise

Altair Nanotechnologies has been selected by Inversiones Energéticas, S.A. de C.V. (INE) to provide a 10 Megawatt (MW) battery system for frequency control. The company expects to finalize the contract terms with the El Salvador electric utility prior to year-end. Construction of the system is expected to begin in 1H11 and be located at INE's Talnique power station site.

Source: Altair Nanotechnologies

Ford Motor has begun shipping the Transit Connect Electric to a handful of business customers. The first all-EVs are being delivered to companies that agreed to be early users including AT&T, the Canada Post, the New York Power Authority and Southern California Edison. The company is planning to ramp production in April and produce up to 700 units a year initially. The EV has a range of about 80 miles on a 28 kilowatt-hour (kWh) battery that can be recharged using 240-volt systems in about 6 to 8 hours. Johnson Controls-Saft is supplying the li-ion battery for the EV. The cost is \$57,400.

Source: NY Times

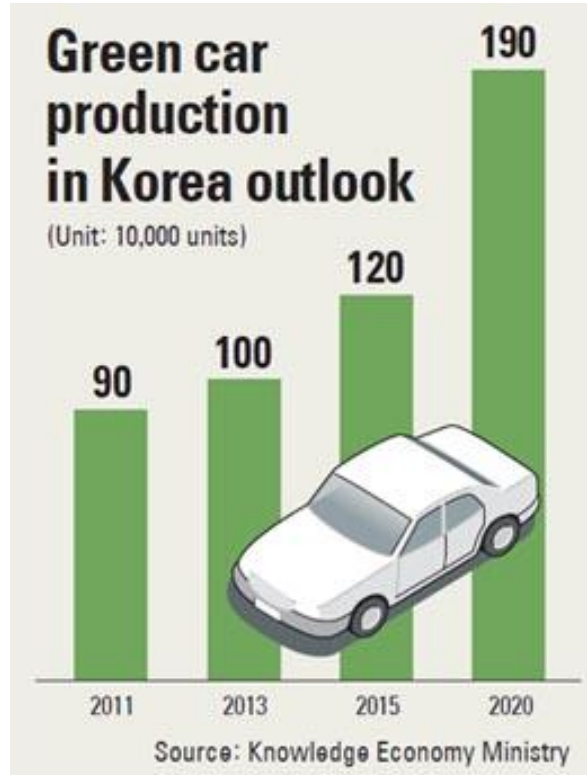
Hertz and Starwood Hotels & Resorts Worldwide announced a joint partnership to bring in Hertz Global EV to key Starwood select-service hotels in North America. Starwood's select-service portfolio includes the Element Hotels, Aloft Hotels and Four Points by Sheraton Hotels brands. The EV program was developed by Hertz using 100% electric and plug-in hybrid vehicles as part of its EV strategy, Hertz is forming partnerships with auto manufacturers, charging station providers, municipalities, NGOs, hospitality chains and other stakeholders.

Source: The Hertz Corporation

The Korean Government announced plans to boost the green car industry with a goal of becoming the world's 4th largest manufacturer. Based on a joint plan announced by several ministries including the Knowledge Economy and the Environment, the government plans to produce 1.2 million green cars (as shown in **Exhibit 1**) by 2015 – targeting 21% share of the domestic vehicle market. The government is developing a roadmap to encourage an increase in investment from the private auto sector to 3.1 trillion won (or \$2.7 billion) from 2011 to 2015 (from 1.3 trillion won or \$1.1 billion between 2006 and 2010).

Source: JoongAng Daily

Exhibit 1: The Korean Government's Outlook



SAP is installing 16 charging stations at the Palo Alto headquarters' parking lot and will offer free charging through 2011. The company is adding the stations after a survey of the 2,000 employees at the Palo Alto campus revealed that 10% plan to buy an EV next year. The company has also ordered 25 EVs for the campus. SAP owns 17,000 company cars globally. Other Silicon Valley companies such as Netflix, Fenwick & West, Advanced Micro Devices and other are installing or have already installed stations.

Source: *San Jose Mercury News*

Sanyo Electric estimates the car industry will help li-ion battery makers more than triple sales to 5 trillion yen (\$60 billion) in a decade from 1.5 trillion yen (or \$18 billion) in the year ending in March. Automakers are testing packs of li-ion batteries assembled by Tesla Motors that are powering Daimler's electric Smarts and Mercedes-Benz A-class cars, and eventually Toyota's electric RAV4 in 2012. Panasonic has boosted its annual production capacity for the small batteries by 9% to 1.4 billion units after opening a plant in Osaka, Japan.

Source: *Bloomberg*

Hertz Corporation announced it will offer an electric version of the Smart Fortwo (as shown in **Exhibit 2**) for rent in New York, Washington, D.C., and San Francisco. The EVs will be available starting Dec. 15 through a car-sharing program in New York, with Washington to follow in 1Q11 and San Francisco in the 2Q11. The electric Fortwo has an estimated range of 84 miles on a single charge and takes less than 8 hours to charge the car's batteries from a 220-volt outlet

Source: *The Detroit News*

Exhibit 2: The SmartFortwo



Source: *Automobile Magazine*

Malaysia's first EV based on the latest Proto Saga model (as shown in **Exhibit 3**) has been completed. The EV will be able to travel as far as 160 kilometers using a 15 kWh battery that will take up 7 to 8 hours to re-charge. The company may enter mass production soon.

Source: *Global Times*

Exhibit 3: The Proton EV Prototype

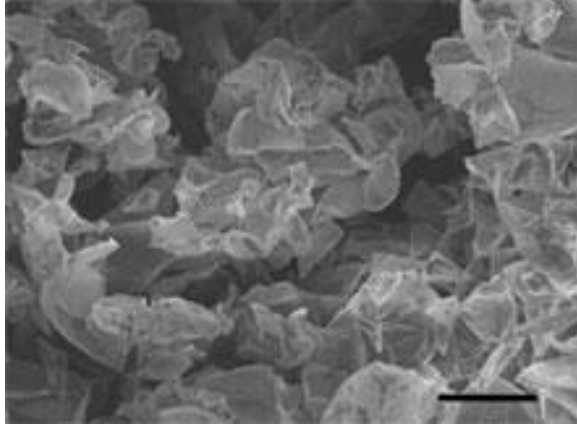


Source: *CNTV.CN*

Nanotek Instruments has produced graphene electrodes that could lead to ultracapacitors with more than 5x the energy density of commercial devices. By using graphene--atom-thick sheets of carbon (example as shown in **Exhibit 4**), the company increases the surface area of the electrodes in the ultracapacitors and boosts the amount of charge that they can store. Commercial ultracapacitors hold 5% of the energy of li-ion batteries, providing short power bursts that limit them to uses such as acceleration in hybrid buses.

Source: *Technology Review*

Exhibit 4: Graphene manufacturing methods typically result in flat, overlapping sheets. But crumpled sheets expose more carbon atoms for storing charge in an ultracapacitor electrode.



Source: *Nano Letters*

The Norwalk Parking Authority (NPA) announced it has joined forces with Car Charging Group with the installation of the first EV car charging stations in any municipal parking area in Fairfield County, CT. The EV charging stations will be installed in three municipal garages in Norwalk: at the South Norwalk railroad station, the Maritime Garage and Yankee Doodle Garage. The car chargers are part of the Norwalk Parking Authority's commitment to making operations more sustainable.

Source: *Connecticut Plus*

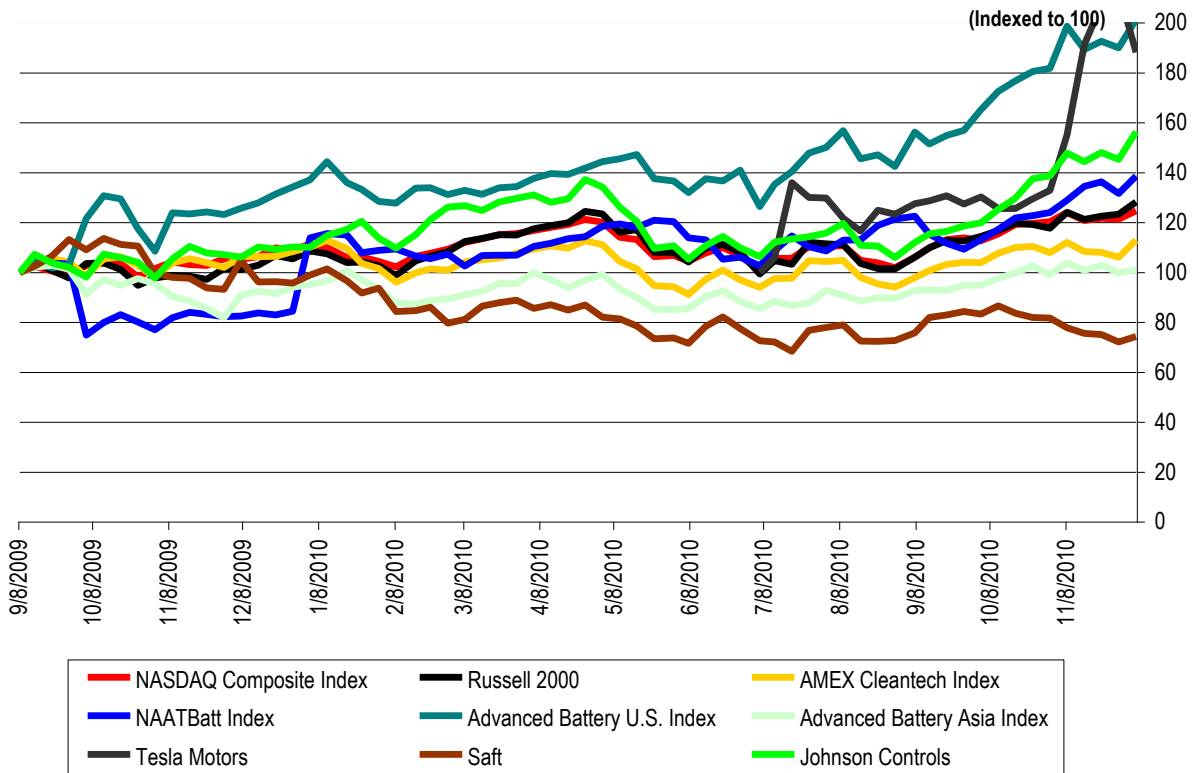
BYD has cancelled production of the F3DM plug-in hybrid EV due to the combination of poor sales and the lack of an established charging infrastructure. The EV was to be powered by an iron phosphate battery that could be recharged to 70% of capacity in 10 minutes. The company is shifting focus from all-EVs to plug-in EVs and from private transport to urban public transport.

Source: *Gasgoo.com*

Mahindra Reva Electric Vehicles has launched its Revai and is targeting a 3-fold volume increase in sales over the next 12-18-months. The company is planning to increase unit shipments to 3,600 with the domestic market constituting 3,000 units. The company also plans to launch a slew of models in the domestic as well as overseas markets in the coming year.

Source: *Economic Times*

Exhibit 5: Indices Performance
(From September 8, 2009)

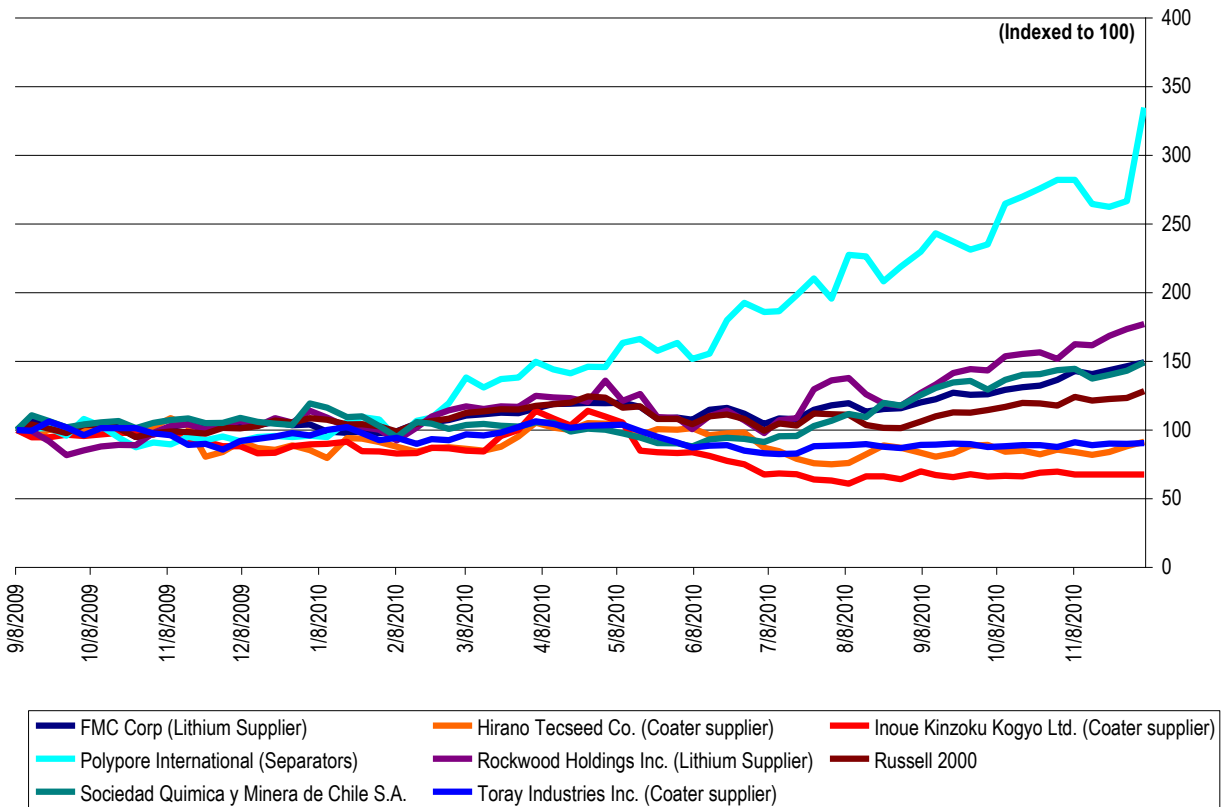


Index	Close on 12/6/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	11,362.2	11,505.8	98.8%	9.4%	8.9%	2.8%
S&P 500	1,223.1	1,227.1	99.7%	10.6%	9.5%	3.0%
NASDAQ	2,594.9	2,593.7	100.0%	18.4%	21.5%	2.8%
Russell 2000	760.9	757.5	100.4%	26.4%	21.1%	3.9%
AMEX Cleantech Index	1,108.3	1,112.5	99.6%	6.9%	3.9%	6.4%

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 6: Supplier Performance
(From September 8, 2009)



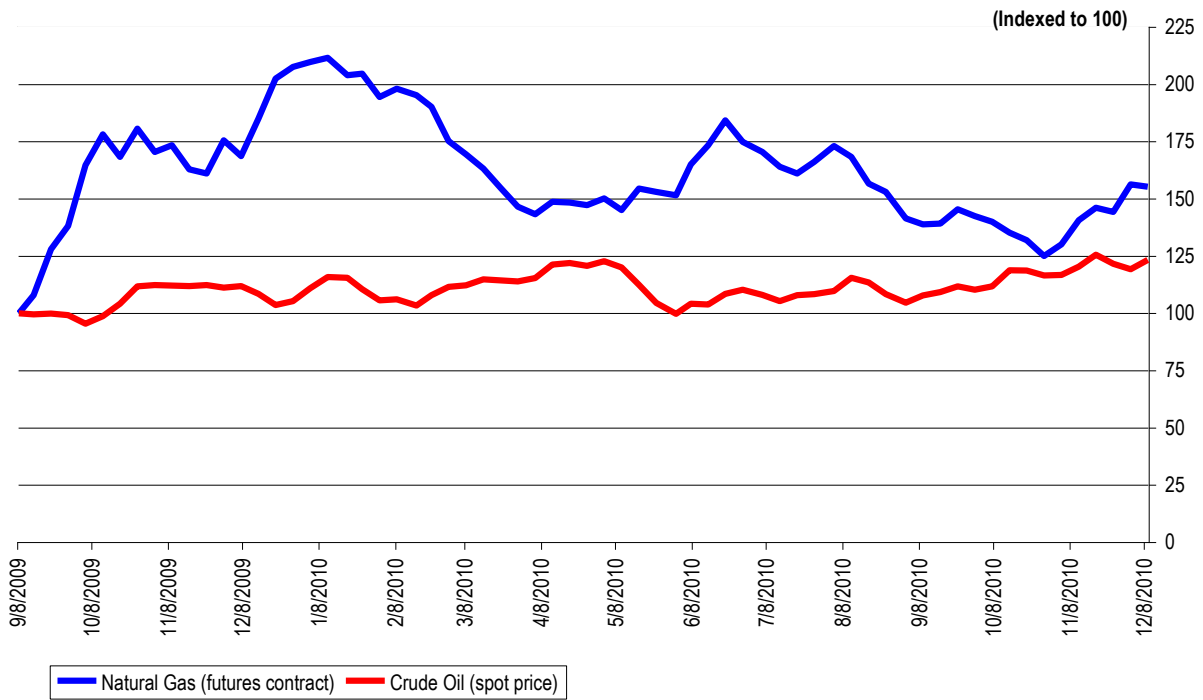
Source: Bloomberg

Exhibit 7: Commodity Prices

Commodity	Price on 12/7/2010	Price on 11/30/2010	Price on 11/8/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	24,025	22,590	24,200	6.4%	(0.7%)
LME Lead (cash, \$ per tonne)	2,401	2,209	2,484	8.7%	(3.3%)

Source: LME

Exhibit 8: Natural Gas and Crude Oil
(From September 8, 2009)



Source: EIA

Executive Director's Notes



2010 NAATBATT MEETING AND CONFERENCE ON PEV'S AND THE GRID ENDS IN SUCCESS

NAATBatt's first annual meeting and conference concluded in Louisville, Kentucky just a few hours ago. The conference was successful beyond all expectations of its organizers. We had over 100 high quality attendees from leading utilities, utility regulatory bodies, auto manufacturers and battery companies from all around the country. Speakers and panelists delivered first-rate presentations on topics that were extraordinary timely. And the award of golden spikes to General Motors and Nissan North America by the Governor of Kentucky to mark the beginning of the Age of Electric Automobiles was a spectacle fitting of the historic event it commemorated.

For me the conference was particularly fulfilling, allowing me to put faces to the voices I have been speaking with on the other end of the phone for so many months. It is too early to say whether the advanced battery industry will soon know success or will have to wait for such success until future a generation. But while we are waiting to find out we can take comfort in the fact that we are working with some of the most pleasant, intelligent, dedicated and articulate individuals on the planet.

The conference, of course, examined the impact that new PEV-generated load is likely to have on the grid. It was the view of most speakers that aggregate first generation PEV load is likely to be too insignificant to jeopardize the stability of the grid overall. Nevertheless, negative impacts on local distribution systems are a very real possibility. Utilities are exploring a number of different tools to mitigate these impacts.

One of those tools, of course, is distributed energy storage technology. While storage is at least on the radar screen of most utilities, it was clear that it is seen by even the most avid of its utility industry advocates only as one of several options that utilities have in addressing new PEV load—a supplement to such things as time of use charging and curtailment schemes rather than a way to make such PEV-unfriendly mechanisms unnecessary.



The conference also revealed the continuing divide in the minds of many companies between storage/smart grid technology, on one hand, and electric vehicles on the other hand. The direct and necessary interrelationship between grid-connected batteries and advanced automotive batteries is a message that NAATBatt must continue to deliver forcefully. This week we made a good start. But we still have a ways to go. Next year should be an exciting one.

My thanks, again, to Marty Tullio, Sandy Kane, Carlos Helou, Ralph Brodd and Michael Lew, who worked tirelessly to make a meeting and conference, which easily could have been a disaster, into an excellent, first-rate program. And thanks to all speakers and panelists and to all of our friends in industry for their support. It was a great event and we could not have done it without you.

I look forward already to our 2011 program. I hope to be making some announcements about it sometime next month. In the meantime, I wish everyone safe journeys home.



James J. Greenberger
Executive Director

December 10, 2010

NAATBatt Board Approves New Member Incentives 2011 Membership Drive Underway

2011 Membership Applications and Dues Structure

The NAATBatt Board of Directors has authorized NAATBatt to begin accepting applications for membership for the 2011 calendar year. Membership dues for 2011 will remain at \$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. Payment of 2011 dues in 2010 will entitle new members to all benefits of membership for the balance of 2010 as well as 2011, 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.

Most importantly, 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 we need your support to do it. Please join soon.

North American Industry Announcements and Calendar

- **10x Advanced Battery R&D:** 10X Advanced Battery R&D: Breaking Barriers in Advanced Battery Performance & Value will be held at the Techmart Meeting Center in Santa Clara, California on **January 10-12, 2011**. The conference will survey technology advances in battery chemistries, ultracapacitors, fuel cells and other technologies that could dramatically reduce the costs of energy storage within a 3-10 year time frame. The conference Web site is: <http://www.infocastinc.com/index.php/conference/414>. NAATBatt is a supporting organization.
- **Advanced Automotive Batteries Conference & Symposium 2011:** The Advanced Automotive Batteries 2011 Conference (AABC) will be held on **January 24-28 2011**, in Pasadena, California. This is the next domestic program in the series of conferences on automotive batteries produced

by Dr. Menahem Anderman and Total Battery Consulting. The conference Web site can be found at: <http://www.advancedautobat.com/automotive-battery-conference-2011/index.html>.

- **Advanced The 28th International Battery Seminar & Exhibit:** Power Source's annual International Battery Seminar & Exhibit will be held on **March 14-17, 2010**, at the Broward County Convention Center in Fort Lauderdale, Florida. A link to the conference Web site can be found at: <https://powersources.net/florida/28th.html>.
- **Plug-In Electric Vehicle Infrastructure USA 2011:** The Plug-In Electric Vehicle Infrastructure USA 2011 conference will examine five key areas of interest to those working with PEV's and their supporting infrastructure. The conference will be held **March 31-April 1, 2011**, at the Hilton Mission Bay in San Diego California. The conference Web site is: <http://www.evupdate.com/electricvehicleusa/index.shtml>.
- **2011 Battery Conference:** The 2011 Battery Congress will be held at the University of Michigan – Michigan League in Ann Arbor, Michigan on **April 11-12, 2011**. Information about the Congress can be found at: <http://batterycongress.org/about-2/>
- **The Battcon™ International Stationary Battery Conference:** The Battcon™ International Stationary Battery Conference is a three day, noncommercial, technical event for storage battery users from a broad range of industries. The conference will be held from **May 16 to 18, 2011** at the Swan and Dolphin Resort, Orlando, Florida. The conference Web site is: <http://www.battcon.com/>
- **Shmuel DE-Leon Energy, Ltd.,** an industry knowledge base company has developed a new power sources DataBase including 28,000 records of industry vendors, cells datasheets with a full parametric searching capabilities. The product provides industry users and companies with a knowledge tool to find the power sources resources and vendors for their EV needs. See: www.batteriesdatabase.com , www.sdle.co.il, or contact: shmueld33@gmail.com.
- **Energy Overviews** a media company which publishes weekly newsletters covering several renewable energy industry verticals, including Clean Transportation, is offering NAATBatt members as a group the opportunity to subscribe to Energy Overviews' newsletters, databases and other services for the price of \$250 per year, a discount from the standard subscription rate of \$587 per year, *provided that* at least 20 NAATBatt member companies accept this offer. See <http://www.epoverviews.com/>. If your company is interested in a subscription, please contact Jim Greenberger at jgreenberger@naatbatt.org.

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, committees and the upcoming roadmap project 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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