

Summary:

For the August 20th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities. On September 2nd, we will be hosting a webinar "Developments in Advanced Lead Acid Batteries: Everything You Thought You Knew But Don't".

The NAATBatt Index was flat while the U.S. and Asia Battery Indices declined 4.2% and 2.5%, respectively. The S&P 500 and Russell 2000 declined 4.3% and 6.7%, respectively.

Key Highlights:

- **16 Chinese state- owned enterprises** have teamed up to form an electric vehicle (EV) industry association based in **Beijing**. The companies are expected to invest a total of 100 billion yuan (\$14.7 billion) on EVs by 2012.
- **Boston-Power** has been selected by **NASA** to participate in **Project M**. The proposed project involves landing a 2.5 kilowatt-hour (kWh) **Swing** battery powered humanoid robot on the moon in 1,000 days.
- **Sanyo Electric** has decided to liquidate its lithium-ion (li-ion) battery joint venture with **GS Yuasa**. Sanyo attributed the decision to deteriorating profitability resulting from price competition with South Korean rivals and other competitors.
- **Mitsubishi** has slashed the launch price of the all-electric **iMiev** in the **U.K.** to £28,990 (\$44,988) from £38,699 (\$60,054) for orders placed with delivery starting in January 2011. The company has already deployed 2,300 EVs as part of a test program in Japan.
- **Lotus** is expected to unveil four new concept cars at the **Paris Motor Show** in October. The "New Lotus" EVs could be showcased in the form of two petrol-electric hybrids - one with two doors, another with four.
- Oldham-based **ePower Trucks** has launched an EV that costs 50% less than the 3.5 tonne electric vans currently on the market. The prices for the **XT320E** prices start at £30,000 (\$46,000+).
- **Car Charging Group (CCG)** announced it has entered into a pilot agreement with **Icon Parking Systems** to provide EV charging stations at select trial locations in **Manhattan, NY**. CCG is planning to install Level II (240 volts) charging stations manufactured by **Coulomb Technologies**.
- **Altair Nanotechnologies** has released an application kit designed to give original equipment manufacturers (OEMs) the ability to apply its advanced **lithium-titanate** battery systems in a test environment simulating real-world operating conditions. The system is scalable to test battery modules in different voltage and amperage configuration.
- **CT&T** announced it has reached an initial deal with a **Kingleo Electric Appliances** to build an electric-car plant in China. The 2 organizations will invest a total of 80 billion won (\$68 million) to build the plant with a production capacity of 60,000 units annually.
- Thirty-one fuel-efficient vehicles have rolled into the **City of Bellevue, Washington's** fleet. The City will acquire 60 more EVs to make 35% of its light-duty vehicles fuel-efficient models as part of its **Environmental Stewardship Initiative**.

- The **Monterey Bay Electric Vehicle Alliance** is planning to finance at least 20 charging stations this year and help retrofit existing ones. The Alliance has received funding for the charging stations from the **Monterey Bay Unified Pollution Control District**.
- **Xtreme Power** has been named as the energy storage system provider to a proposed energy transmission project known as **Tres Amigas**. The project would be built on the plains of eastern **New Mexico** within the next few years.
- **Leo Motors** announced it has developed a 120kW power train that is equivalent to a 5,000cc (or 5.0 liter) internal combustion engine (ICE). The test results indicated the converted bus ran faster and smoother than its ICE counterparts -- without emissions, noise or vibration.
- **Capstone Turbine** has initiated a demonstration project with **TATSA** (an Argentine bus manufacturer) that will use a hybrid electric drive system that features a C65 microturbine range extender. The demonstration project is for a bus operating on natural gas.

A Few More Details:

16 Chinese state-owned enterprises have teamed up to form an EV industry association based in Beijing. The association includes China FAW Group, the Dongfeng Motor Corporation, Chongqing Changan Automobile Co, China National Petroleum Corporation, the National Power Grids, China Petroleum & Chemical Corporation and China National Offshore Oil Corporation. The companies are forecasted to invest a total of 100 billion yuan (\$14.7 billion) on EVs by 2012. The goal is to integrate technological standards and develop an information sharing system amongst automakers, battery producers, related services and government bodies.

Source: *Beijing Times*

Boston-Power has been selected by NASA to participate in Project M. The company is providing a 2.5 kilowatt-hour (kWh) Swing battery system to power a humanoid robot on the moon in 1,000 days. The M is also the Roman numeral for 1,000. The Robonaut 2 (R2) is a highly dexterous human-like robot designed to work alongside humans as a robotic assistant. The robot was developed jointly by NASA and General Motors to support astronauts.

Source: *Boston-Power*

Sanyo Electric has decided to liquidate its li-ion battery joint venture with GS Yuasa. Sanyo attributed the decision to deteriorating profitability resulting from price competition with South Korean rivals and other competitors. The Kyoto-based joint venture, called Sanyo GS Soft Energy, is 51% owned by Sanyo with GS Yuasa holding the remainder. It will terminate business by the end of February 2011 and then be liquidated in March 2011.

Source: *Dow Jones*

Mitsubishi has slashed the launch price of the all-electric iMiev in the U.K. to £28,990 (\$44,988) from £38,699 (\$60,054) for orders placed for delivery starting in January 2011. This excludes a government incentive of £5,000 (\$7,760) incentive for EV purchasers. The price cut brings the iMiev with the Nissan Leaf which is expected to be priced at £23,350 (\$36,235). The company has already deployed 2,300 EVs as part of a test program in Japan.

Source: *Business Green*

Lotus is expected to unveil four new concept cars at the Paris motor show in October. The concepts expected to be on display a combination of "Old Lotus" and "New Lotus". The "New Lotus" could be showcased in the form of two petrol-electric hybrids - one with two doors, another with four. Both would be based on the modular chassis of the Evora 414E (as shown in **Exhibit 1**) concept.

Exhibit 1: The Evora 414E Hybrid Concept



Source: *BBC News*

Oldham-based ePower Trucks has launched an EV (as shown in **Exhibit 2**) that costs 50% less than the 3.5 tonne electric vans currently on the market. The prices for the XT320E prices start at £30,000 (\$46,000+). The EV can travel 60 miles on a full charge using a 13 kWh battery pack and can carry a 1,000kg payload. The battery technology is adapted from military use and the packs can be swapped out in less than 30 minutes, using a forklift truck.

Source: *Logistics Manager*

Exhibit 2: The XT320E Electric Truck



Source: *ePower*

Car Charging Group (CCG) announced it has entered into a pilot agreement with Icon Parking Systems to provide EV charging stations at select trial locations. Icon Parking operates more than 200 parking facilities in Manhattan, New York. CCG is planning to install Level II (240 volts) ChargePoint(R) Networked Charging Stations manufactured by Coulomb Technologies. New York has joined other cities including San Francisco and Detroit in adding an infrastructure for EVs by installing its first public charging station.

Source: *Car Charging Group*

Altair Nanotechnologies has released an application kit designed to give original equipment manufacturers (OEMs) the ability to apply its advanced lithium-titanate battery systems in a test environment simulating real-world operating conditions. The Application Kit includes Altairnano's 24 volt, 50 ampere-hour battery module, a connection and control unit (CCU) including a battery management system, and a NetBook computer configured to control and monitor the system performance. The system is scalable to test battery modules in different voltage and amperage configurations.

Source: *Altair Nanotechnologies*

CT&T Corp. (Korea-based) announced it has reached an initial deal with a Kingleo Electric Appliances (a Chinese manufacturer of vehicle air conditioners) to build an electric-car plant in China. Kingleo Electric Appliances is based in the eastern coastal province of Zhejiang. The 2 organizations will invest a total of 80 billion won (\$68 million) to build the plant with a production capacity of 60,000 units annually. CT&T also has a preliminary deal (signed in April) with the Beijing Automotive Group to build a plant with an annual production capacity of 50,000 units.

Source: *Yonhap News Agency*

Thirty-one fuel-efficient vehicles have rolled into the city of Bellevue, Washington's fleet. The vehicles include the Ford Escape, Ford Fusion and Toyota Camry hybrids. The City will acquire 60 more EVs to make 35% of its light-duty vehicles fuel-efficient models (hybrids, flexible-fuel and electric) as part of its Environmental Stewardship Initiative. Bellevue could also invest in an infrastructure to support an expected surge in EV sales toward the end of this year and into 2011.

Source: *Bellevue Reporter*

The Monterey Bay Electric Vehicle Alliance is planning to finance at least 20 charging stations this year and help retrofit existing ones. The locations are likely to be at both public sites like parking garages and private sites like shopping centers. The Alliance has received funding for the charging stations from the Monterey Bay Unified Pollution Control District, about \$50,000 and the California Energy Commission, a portion of \$500,000 slated for the entire San Francisco region.

Source: *San Jose Mercury News*

Xtreme Power has been named as the energy storage system provider to a proposed energy transmission project known as Tres Amigas. The project would be built on the plains of eastern New Mexico within the next few years. The developers describe the project as an electric power "superstation" that could transport electrical power from wind, solar or geothermal sources to any one of the nation's 3 major electrical grids: the ERCOT grid in Texas and the eastern and western grids that cover most of the rest of the country.

Source: *The Statesman*

Leo Motors announced it has developed a 120kW power train (as shown in **Exhibit 3**), which is equivalent to a 5,000cc (or 5.0 liter) internal combustion engine (ICE). The power trains of this size would be used in the bigger passenger cars, middle-sized buses and trucks. The company's product was tested in a 24-seat bus for more than six months. Leo converted Hyundai's County bus which operated at over 70 miles per-hour (MPH) with the power train. The test results indicated the converted bus ran faster and smoother than its ICE counterparts -- without emissions, noise or vibration.

Exhibit 3: Leo Motors Power Train Product

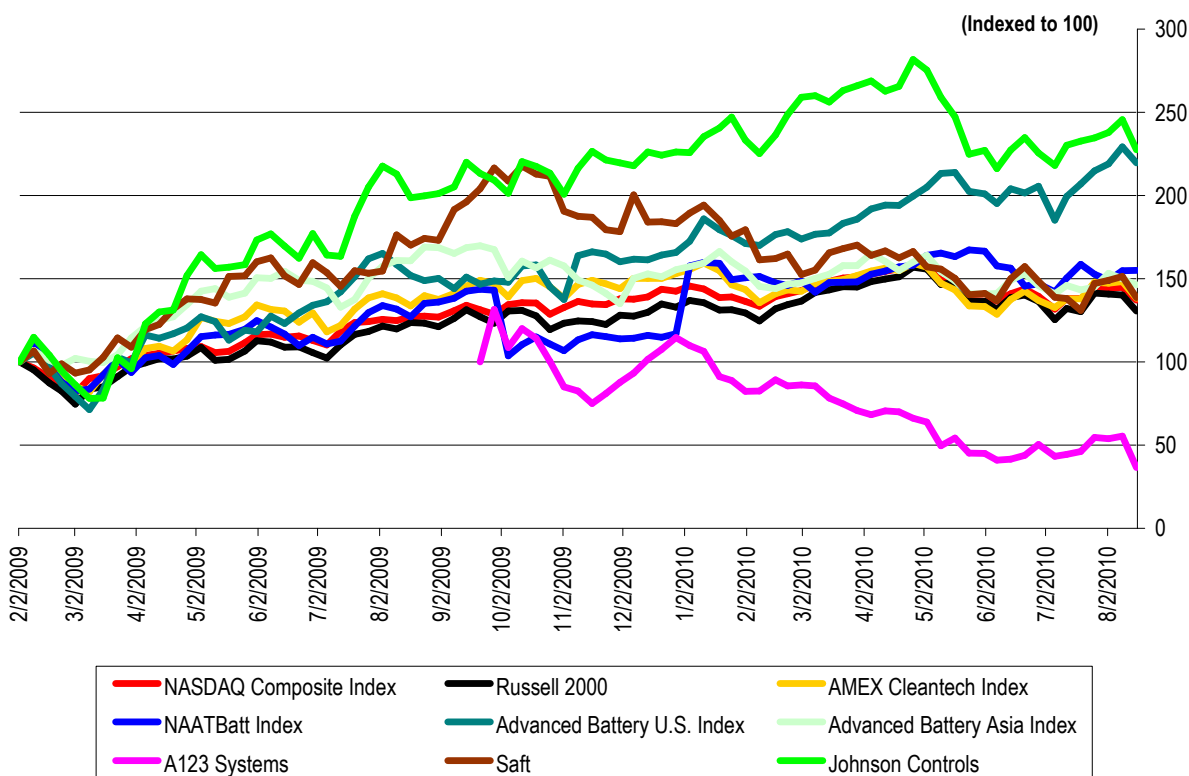


Source: *Leo Motors*

Capstone Turbine has initiated a demonstration project with TATSA (an Argentine bus manufacturer) that will use a Capstone hybrid electric drive system that features a C65 microturbine range extender for a transit bus. The demonstration project is for a bus operating on natural gas along with a 65 kW microturbine.

Source: *Capstone Turbine*

Exhibit 4: Indices Performance
(From February 2, 2009)

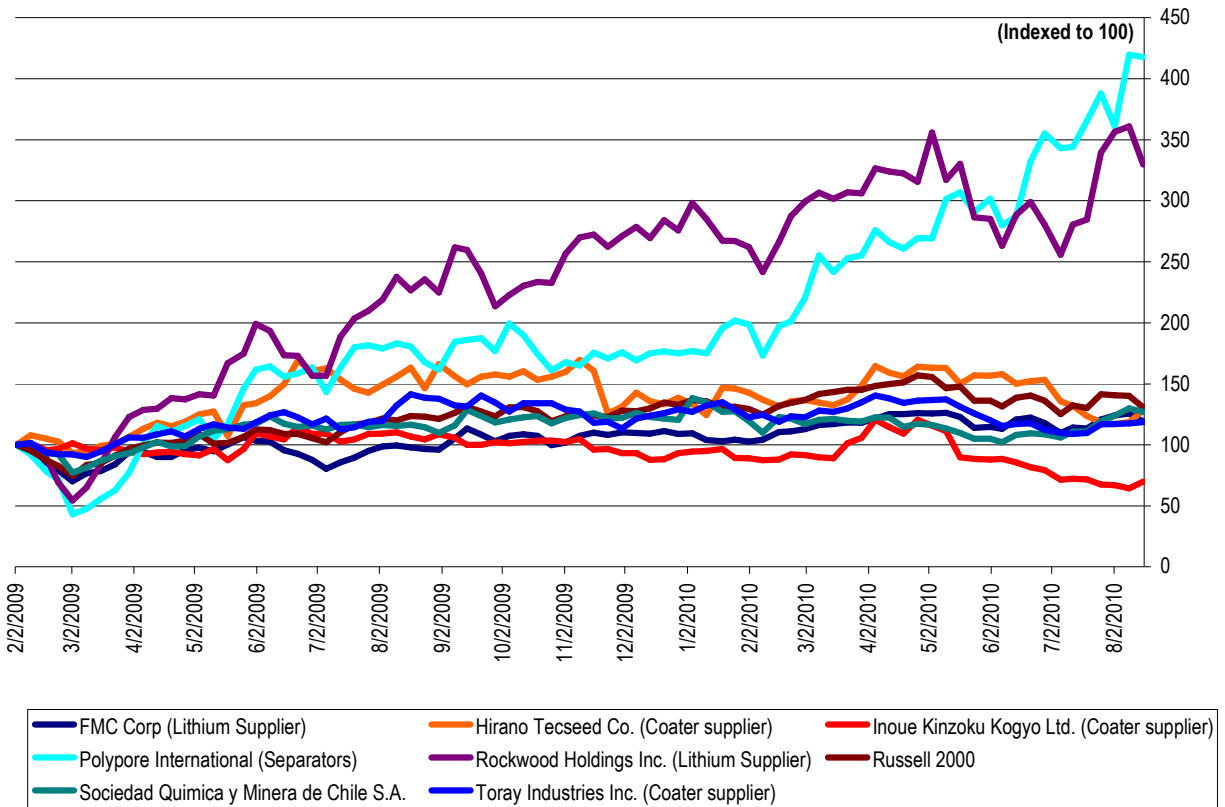


Index	Close on 8/16/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	10,302.0	11,309.0	91.1%	10.6%	(1.2%)	(3.7%)
S&P 500	1,079.4	1,219.8	88.5%	8.1%	(3.3%)	(4.3%)
NASDAQ	2,181.9	2,535.3	86.1%	11.9%	(4.9%)	(5.4%)
Russell 2000	615.1	746.0	82.5%	10.5%	(2.1%)	(6.7%)
AMEX Cleantech Index	961.1	1,112.5	86.4%	1.3%	(9.9%)	(6.6%)

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 February 2, 2009)



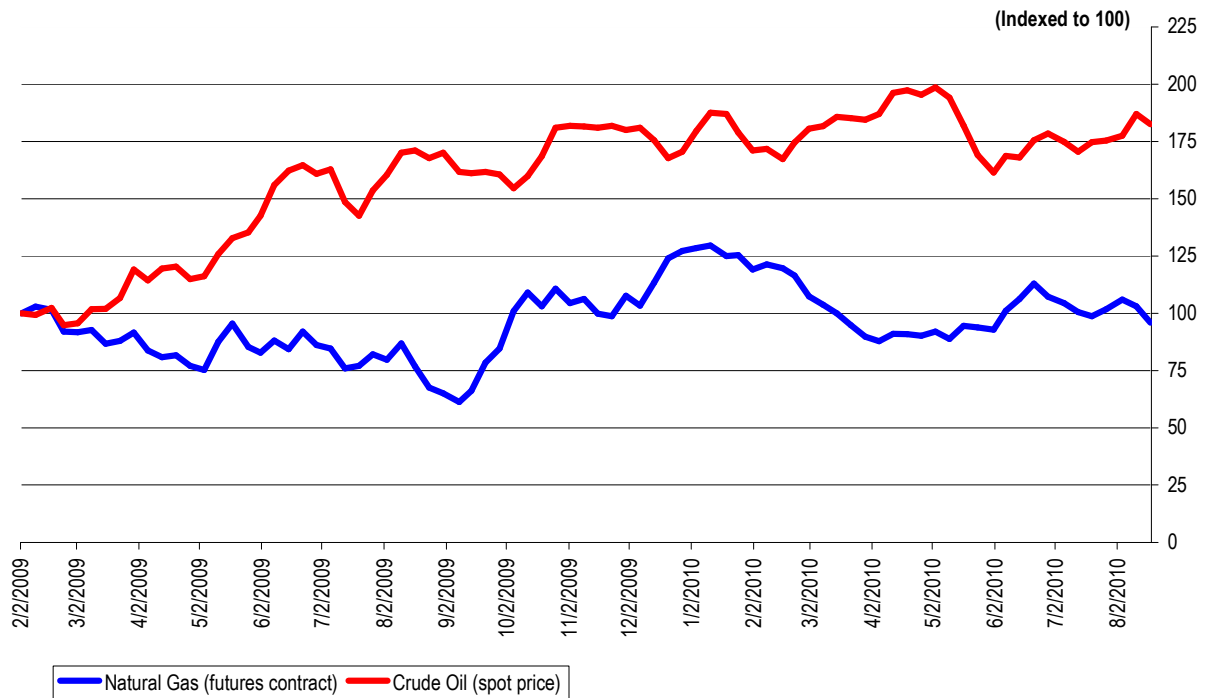
Source: Bloomberg

Exhibit 6: Commodity Prices

Commodity	Price on 8/16/2010	Price on 8/9/2010	Price on 7/16/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	21,395	22,560	19,215	(5.2%)	11.3%
LME Lead (cash, \$ per tonne)	2,040	2,170	1,787	(6.0%)	14.2%

Source: LME

Exhibit 7: Natural Gas and Crude Oil
 (From February 2, 2009)



Source: EIA

Executive Director's Notes



COLLABORATIVE PRIVATE INDUSTRY DIRECTED RESEARCH MUST PICK UP WHERE THE ARRA WILL LEAVE OFF

For the past two years federal government support for energy storage technology has been unprecedented. The government has invested billions of dollars in all facets of the advanced battery supply chain, from basic research in advanced materials to full scale mass manufacture of battery systems. It is sobering to remember that only two years ago, advanced battery technology was starved for funding and the United States had largely abandoned development of this critical technology to other nations.

It is also sobering to remember that substantially all of the money comprising this investment has come from the same place: The unprecedented stimulus package embodied in the American Recovery and Reinvestment Act of 2009 (the "ARRA"). As with any good party, however, the ARRA funds are coming to an end. While there is every reason to believe that the Obama Administration will do what it can to continue support for the U.S. advanced battery industry, the federal government's resources and ability to provide financial support in the future will be extremely limited. The U.S. advanced battery industry and the federal government must start planning for the post-ARRA era.

Because the resources of the federal government are likely to be sharply limited in the years ahead, substantial future funding for advanced battery research and development must come in some form from private industry. Two years ago there was little prospect of that. Advanced large format batteries were an early stage technology with no commercial products and an uncertain market. While many small companies and venture capitalists searched the market for opportunity (and for funding), the big players in the United States largely stayed on the side lines. Early stage venture is generally neither an interest nor a strength of America's leading industrial corporations.

But the most important contribution the ARRA may have made to the advanced battery industry is that it took it from an early stage technology to a technology that is at an early stage of commercialization. Although mass market demand for advanced battery technology has yet to develop, there are today real products in the market and the development path for energy storage technology is far less speculative than it was two years ago. In short, it is just about time for the big guys to start coming in. When they do in earnest, the U.S. advanced battery industry will change dramatically.

One of the strengths of large U.S. corporations is their historic willingness to work together collaboratively on basic precompetitive technical challenges that are common to the industries in which they compete. The semiconductor industry is a case in point. Since 1982, the Semiconductor Research Corporation has served as a research consortium, funding precompetitive directed research at more than 250 universities on behalf of its member firms. Member firms receive preferential access to the intellectual property created and access to the faculty and students involved in the funded programs. The industry-directed nature of the research ensures that funding goes exactly where industry believes it will do the most good. Government funds are used to leverage capital provided by the private sector rather than to pursue independent projects that are unsupported by any business entity seriously interested in its commercialization.

If major U.S. corporations make a major push into stored energy technology, the model of collaborative, industry-directed research program supported by limited government grants could well be the way that the momentum in energy storage technology created by ARRA-appropriated funds can be maintained. The government has done its part in helping the industry mature to the point where major corporations may be willing to fund research that they can commercialize within a reasonable period of time. Those major companies that stand to benefit from energy storage—advanced material companies, auto companies and utility holding companies--should now come together and organize to take energy storage technology investment to the next stage and ensure that the opportunities that the ARRA has created are not lost.



James J. Greenberger
Executive Director

North American Industry Announcements and Calendar

- **Next Webinar Program: Advanced Lead Acid Battery Technology:** The NAATBatt Webinar series continues on Thursday, September 2, 2010, with a program entitled "*Developments in Advanced Lead Acid Battery Technology: Everything You Thought You Knew But Don't*". The program will examine some new developments in lead acid batteries that may breathe new life into a hundred year old technology that many have already written off in favor of advanced lithium-ion. Our speakers, Steve Clarke of East Penn Manufacturing/Applied Intellectual Capital and John Gage of EnerSys Americas, will explain why reports of the death of lead acid technology may be greatly exaggerated and how lead acid may yet compete with lithium-ion batteries in advanced automotive and grid-level stationary storage applications. The registration link (complimentary) for employees of NAATBatt member firms is <http://events.meetingbridge.com/Register/?06123183141&code2>. Non-NAATBatt members are welcome to attend for \$30 by clicking on the following link: <http://events.meetingbridge.com/Register/?06123183141>.
- **NiChE Workshop on Materials for Large-Scale Energy Storage:** The Council for Chemical Research will host a NiChE Workshop on Materials for Large-Scale Energy Storage on September 16-17 at the National Institute for Standards and Technology (NIST) in Gaithersburg, MD. The workshop will delve into the end-use applications and market drivers for large-scale storage, the R&D efforts that are pushing the boundaries, as well as highlighting some near-deployment technologies. Additional information about the program may be found at: <http://www.ccrhq.org/articles/niche-workshop-materials-large-scale-energy-storage>
- **Battery Show 2010:** The Battery Show, a conference and exposition focused on multiple battery chemistries and applications will be held in San Jose, California on October 5-7, 2010. Information about the show can be found at: <http://www.thebatteryshow.com/index.php>
- **218th Meeting of the Electrochemical Society:** The next biannual ECS meeting will take place on October 10-15, in Las Vegas, Nevada. The meeting will feature a wide range of experts throughout the fields of solid-state and electrochemical science and technology, getting together to communicate with both colleagues and a vital market. More information can be found at <http://www.electrochem.org/meetings/biannual/218/218.htm>
- **Advanced Energy Storage 2010:** FullPower, Inc. will be leading a series of exhibits on October 12-14, in San Diego, California to showcase the technological capabilities of leading suppliers of advanced batteries, energy storage systems, and ultracapacitors. Seminars will discuss the insights and impacts on these various technologies. Additional information may be found at <http://www.fullpowerinc.com/AES2010/AESHome.html>
- **Battery Power 2010 Conference:** Battery Power 2010 will be held in Dallas, Texas on October 19-20, 2010. NAATBatt is a supporting organization of the conference. Information about the conference and registration for it may be found at: http://www.batterypoweronline.com/bppt-conf10/bp10_supportingorg.php

- **U.S. National Electric Vehicles Safety Standards Summit:** On October 21-22, in Detroit, Michigan, the National Fire Protection Association (NFPA) will be holding a safety summit along with co-sponsor SAE International in order to ensure standards on electric cars. The summit will focus on how to implement such standards on a rapidly growing industry, in which technology is swiftly improving. To find out more about the summit visit http://www.nfpa.org/newsReleaseDetails.asp?categoryId=488&itemId=46997&cookie_test=1
- **Rare Earth Metals Summit III:** Infocast's Rare Earth Metals Summit III will be held in Washington, D.C. on October 25-27, 2010. The conference will examine the supply and value chains for rare and strategic metals, including lithium. NAATBatt is a supporting organization of the conference and NAATBatt members will be entitled to a 10% discount on registration. Additional details will follow.
- **Annual DOE Program Update Conference – Energy Storage R&D Programs:** Sandia National Laboratory's U.S. DOE Energy Storage Systems Research Program (ESS) will be held on November 2-4, in Washington D.C. The program will review the latest DOE sponsored research in advanced battery technology, power conditioning and others topics relating to advanced energy storage. Registration for the conference can be found here: <http://www.sandia.gov/ess/About/newsevents.html#conf>
- **Battery Safety 2010:** Knowledge Foundation will hold a conference focusing on advancements in systems design, integration and testing for lithium-ion battery safety and reliability in Boston, MA on November 3, 2010. Additional information about the conference can be found at: <http://www.knowledgefoundation.com>
- **Battery Lithium Mobile Power 2010:** Knowledge Foundation will hold a conference focusing on new lithium-ion battery chemistries, novel electrode and electrolyte materials, and system integration for a vast array of mobile and portable applications in Boston, MA on November 4-5, 2010 in conjunction with the Battery Safety 2010 Conference referenced above. Additional information about the conference can be found at: <http://www.knowledgefoundation.com>
- **Future of Electric Vehicles Conference:** The Future of Electric Vehicles Conference will be held in San Jose, California on December 7-8, 2010. The conference will have representatives for all electric vehicle types, components, and uses. The conference will permit attendees to learn more about electric vehicles in each and every form. Information and registration for the conference can be found on the website at: <http://www.idtechex.com/electric-vehicles-usa-10/>
- **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 sponsored 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>.
- **NAATBatt Membership Information.** NAATBatt is taking applications for 2010 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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