

Summary:

For the July 9th issue of NAATBatt's Advanced Battery Weekly, we highlight the ongoing sector activities. In addition, we have included an interview with Henry Ngan, CFO of Hong Kong Highpower Technology. On July 21st, we will be hosting a webinar "Hybrid Battery-Ultra Capacitor Systems for Automotive Applications - Why Can't We Just Get Along?"

The Advanced Battery Indices all declined with the NAATBatt and Asia each declining 3.2% and the U.S. dropping 9.9%. The S&P 500 and Russell 2000 declined 4.3% and 8.0%, respectively.

Key Highlights:

- The **Chevrolet Volt** will be launched in 7 markets in the U.S. by early 2011. The electric vehicle (EV) is expected to have a 340 mile range with electricity powering the car at all times.
- **Itochu Corp** has acquired a 20% minority stake in **Simbol Mining Corp** in an effort to secure a lithium supply. Simbol stated expectations to increase annual lithium production to about 16,000 tons (about 20% of global output) as early as 2013. Itochu has about a 5% stake in **Ener1**.
- **JFE Engineering** announced the development of a quick charger for EVs that can recharge a battery to about 50% of capacity in 3 minutes and 70% capacity in 5 minutes. The company plans to release the battery charger by the end of March 2011.
- **Electrovaya** has been awarded C\$5 million by **Sustainable Development Technology Canada (SDTC)** for lithium-ion (li-ion) battery development for plug-in hybrid electric vehicle (PHEV) applications. The company is developing a high energy density li-ion battery and systems technologies for a PHEV test fleet of the **Chrysler Ram 1500** pickup trucks.
- **China TMK Battery Systems (TMK)** announced a 5-year, exclusive distribution agreement with **Alexis Power Supply**. TMK has commenced commercial production of rechargeable Nickel Metal Hydride (NiMH) battery packs to be used as back-up power supply sources for multiple industrial applications.
- **Industrial Minerals** and its 51% owned subsidiary **Northern Graphite Corporation** announced the commencement of a 2,500 meter drill program on the **Bissett Creek** graphite project. Graphite prices have more than doubled in the past couple years due to demand from emerging economies such as China and India for traditional uses in the steel and automotive industries.
- **Contour Energy Systems** (formerly **CFX Battery**) unveiled an expansion of its manufacturing plant that will produce a variety of battery systems this year. The company is planning to commercialize its advancements in fluorine-based chemistries and nanomaterials science.
- **Bayerische Motoren Werke AG (BMW)** will use carbon fiber (CF) to construct a passenger-safety cell for the EV. The CF and Al frame is expected to offset as much as 350 kilograms (or 772 pounds) of additional weight from battery and electronic components.
- **Enmax Corp** launched a 3-year pilot project that will integrate EVs in Calgary, Alberta. The plan is to replace 10 Enmax and 10 **City of Calgary** fleet vehicles with EVs with leases or purchases from various manufacturers such as **Mitsubishi (iMiev)**.
- **Toyota Motor Corp** and **Tesla Motors** are developing a prototype EV. Tesla's use of standard batteries is very appealing to the auto manufacturer.

A Few More Details:

The Chevrolet Volt (as shown in **Exhibit 1**) will be launched in 7 markets in the U.S. by early 2011. The electric vehicle (EV) will rollout in California, Michigan, New York, Texas and Washington, D.C. later this year followed by Connecticut and New Jersey next year. The EV is expected to have a 340 mile range with electricity powering the car at all times. A 16 kilowatt-hour (kWh) lithium-ion (li-ion) battery will provide power for 40 miles. If additional driving mileage is required, a gas-powered electric generator is used to extend the range to an additional 300 miles.

Source: *Electric Vehicle News*

Exhibit 1: The Chevy Volt



Source: *General Motors*

Itochu Corp (Japan-based) has acquired a 20% minority stake in Simbol Mining Corp in an effort to secure a lithium supply. Simbol stated expectations to increase annual lithium production to about 16,000 tons (about 20% of global output) as early as 2013. Itochu has indicated it will be the sole distributor of Simbol Mining's lithium material in Japan, China and South Korea. Itochu has about a 5% stake in Ener1.

Source: *Daily Yomiuri*

JFE Engineering announced the development of a quick charger for EVs that can recharge a battery to about 50% of capacity in 3 minutes and 70% capacity in 5 minutes. The company plans to release the battery charger for installment at gas stations and convenience stores by the end of March 2011. This represents an improvement as quick chargers to be deployed would need about 30 minutes to recharge a battery to about 80% of its capacity.

Source: *Japan Today*

Electrovaya has been awarded C\$5 million by Sustainable Development Technology Canada (SDTC) for lithium-ion (li-ion) battery development for plug-in hybrid electric vehicle (PHEV) applications. The company is developing a high energy density SuperPolymer(R) battery and systems technologies for a PHEV test fleet of the Chrysler Ram 1500 pickup truck (as shown in **Exhibit 2**). Chrysler is building 140 trucks in a 3-year demonstration project under a \$48 million grant from the U.S. government's EV program. The EV will contain a 12 kilowatt-hour (kWh) battery pack.

Source: *Electrovaya*

Exhibit 2: The Chrysler Ram Pickup Truck



Source: Chrysler

China TMK Battery Systems (TMK) announced a 5-year, exclusive distribution agreement with Alexis Power Supply. TMK has commenced commercial production of proprietary, rechargeable Nickel Metal Hydride (NiMH) battery packs to be used as back-up power supply sources for multiple industrial applications. Alexis Power will market and distribute the batteries in the US and other targeted international markets. Shipment of the initial order under the agreement is expected to commence by 4Q10.

Source: China TMK Battery Systems

Industrial Minerals and its 51% owned subsidiary Northern Graphite Corporation announced the commencement of a 2,500 meter drill program on the Bissett Creek graphite project. The program is part of a pre-feasibility study expected to be completed in 2H10. Graphite prices have more than doubled in the past couple years due to demand from emerging economies such as China and India for traditional uses in the steel and automotive industries. In addition, new applications such as lithium ion batteries, fuel cells and solar power could drive incremental demand. There is over 20 times more graphite in a li-ion battery than there is lithium. China produces 80% of the world's graphite.

Source: Industrial Minerals

Contour Energy Systems (formerly CFX Battery) unveiled an expansion of a state-of-the-art manufacturing plant featuring the first of several production lines that will produce a variety of commercial battery systems this year. The company is preparing to scale production to meet global demand for its advanced portable power solutions targeting automotive, military, medical device and consumer applications. Contour's is planning to commercialize its breakthrough advancements in fluorine-based battery chemistries and nanomaterials science.

Source: Contour Energy Systems

Bayerische Motoren Werke AG (BMW) will use carbon fiber (CF) to construct a passenger-safety cell for the EV. The cell will have enough space for 4 adults and will be constructed by gluing CF components together. The cell is then glued and screwed onto an aluminum (Al) frame that will house the battery and electric motors. The CF and Al frame is expected to offset as much as 350 kilograms (or 772 pounds) of additional weight from battery and electronic components. The CF is composed of 50,000 filaments that will be made into fabrics and then hardened into components.

Source: Bloomberg

Enmax Corp launched a 3-year pilot project that will integrate EVs in Calgary, Alberta. The plan is to replace 10 Enmax and 10 City of Calgary fleet vehicles with EVs -- with another 80 to be made available to Enmax employees at subsidized prices. The city-owned utility will be leasing or purchasing cars from various manufacturers such as Mitsubishi (iMiev).

Source: Calgary Herald



Toyota Motor Corp and Tesla Motors are developing a prototype EV. Toyota is evaluating Tesla's use of small, low-cost batteries, which differs from the auto maker's larger-scale batteries. The use of small, laptop-style batteries isn't considered an ideal solution for EVs because the thousands of cells required to power a car means a higher chance of cell failure. However, Tesla's use of standard batteries is very appealing.

Source: WSJ

Interview with Henry Ngan, CFO of Hong Kong Highpower Technology

How do you envision the Hong Kong Highpower Technology (HPJ) model evolving over the next 3 years?

Our mission at HPJ is to provide first-class clean energy solutions for our customers and improve standards of living for man-kind. As a “Green” enterprise, we continue to strive for profitable growth while remain focus on our mission in providing clean energy solutions for our customers. In terms of the applications for both Ni-MH and Li-ion technology will continue to evolve, consistent with our approach; we seek to provide world-class products while keeping our price competitive with the market.

How would you characterize demand for HPJ’s products? Where is it strongest geographically?

Despite the world’s financial crisis in 2009, we had record profitability last year and given the challenging market conditions, we thought we had a spectacular year. This year, 2010 is shaping up to be a better year than 2009 for us, while we continue to remain cautiously optimistic for the remaining of 2010. Our Ni-MH products continue to perform well, in terms of our Li-ion products, we’ve made tremendous improvements since last year. Geographically, Hong Kong & China was stronger for us last year made up 47% of the overall revenue compared to 41% in 2008. In 1Q10, we are seeing improvements in all regions of the world that we do business with.

What is the strategy to drive a higher proportion of U.S. revenues?

Obviously, the US market is a key market for us. Even though, we are an Asia-based manufacturer, but we always view ourselves as a global company given we had over 40% of the revenue derived outside Hong Kong and China in 2009. Our strategy is simple, we’ll continue to focus on the markets that we do well (Hong Kong and China, Europe and US). While maintaining our excellent relationships with our customers, also provide them with high-quality products at competitive prices

Please discuss the potential market opportunities beyond consumer electronics.

We’re always seeking opportunities to further expand in the industrial applications markets. We feel that these markets have tremendous opportunities and perhaps margin improvements in these areas.

Discuss the competitive landscape.

Similar to many industries, there is no lack of competition in our space. We continue to believe that the innovative companies that can provide a high-quality products and competitive pricing will continue to take shares from those who are not. I strongly believe we are well-positioned to take market share from some of our competitors

What is the go-to-market strategy for electric vehicles?

We believe the EV market is going to tremendous in the future. As a result, we’ve developed committee and assign staff as well as looking to hire in building out this business. While it is not easy to build out this business, but we feel that if we can provide a strong foundation, eventually, this business will flourish.

Discuss the obstacles for electric vehicle adoption.

The main barriers to widespread adoption of electric vehicles are high cost, limited range and lack of infrastructure. Most electric cars can be driven for no more than about 150km (approximately 93 miles) before their batteries have to be re-charged or swapped for a full battery. Some research shows that

most car owners in the U.S., Europe and Japan drive less than 100km (approximately 62 miles) a day making electric vehicles a practical proposition except on long journeys.

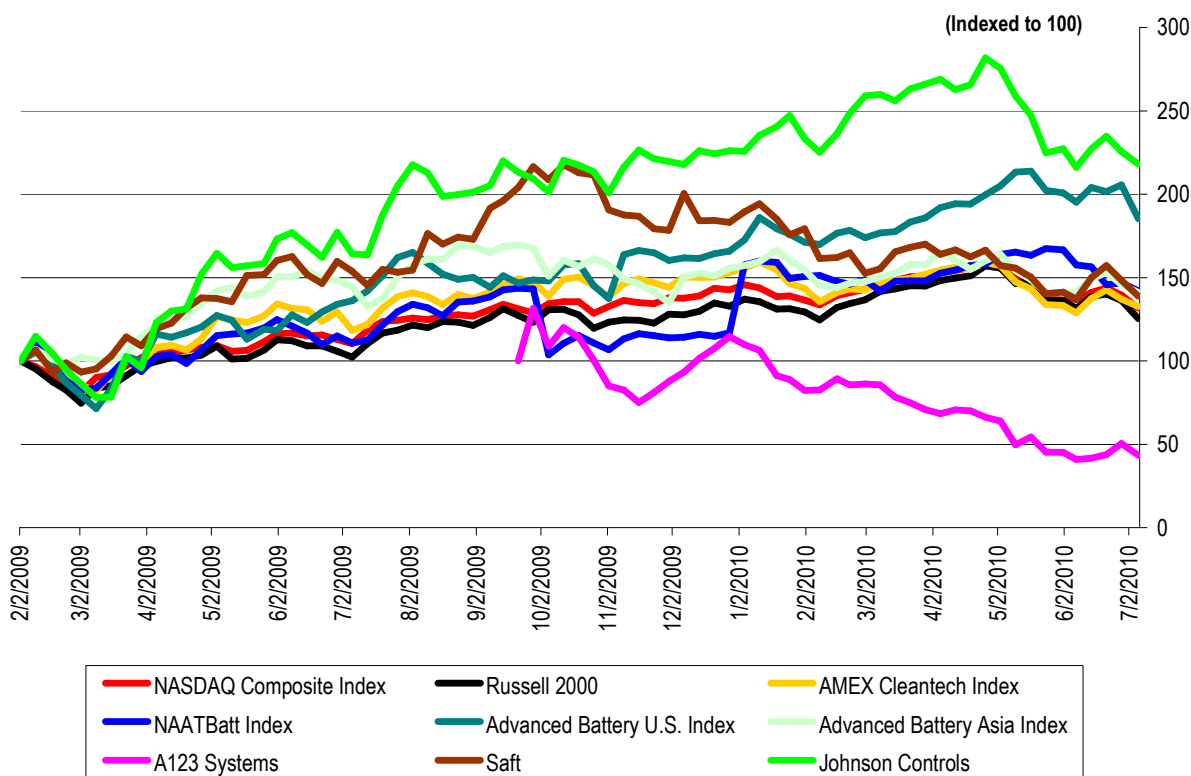
How large do you envision the electric vehicle market will be in 2015?

There is no doubt in my mind that the EV adoption will be slow and gradual in the beginning. I envision, the EV, HEV will be complimentary to the fossil-fuel driven vehicles for quite some time. But once it reaches to a certain scale level, when some of the key barriers such as high cost, limited range and lack of infrastructure are toppled, we'll then see hockey stick effect kicks in.

How do you envision the U.S. and European battery manufacturers being able to overcome the cost disadvantage against the Asia based suppliers?

I think this is a huge challenge for the US and European battery manufacturers. The inherent cost structure of these non-Asian based suppliers is clearly a disadvantage, but I believe the US and European battery manufacturers can play to their strengths to the fullest in continue to advance their technology, process and know-how.

**Exhibit 3: Indices Performance
(From February 2, 2009)**

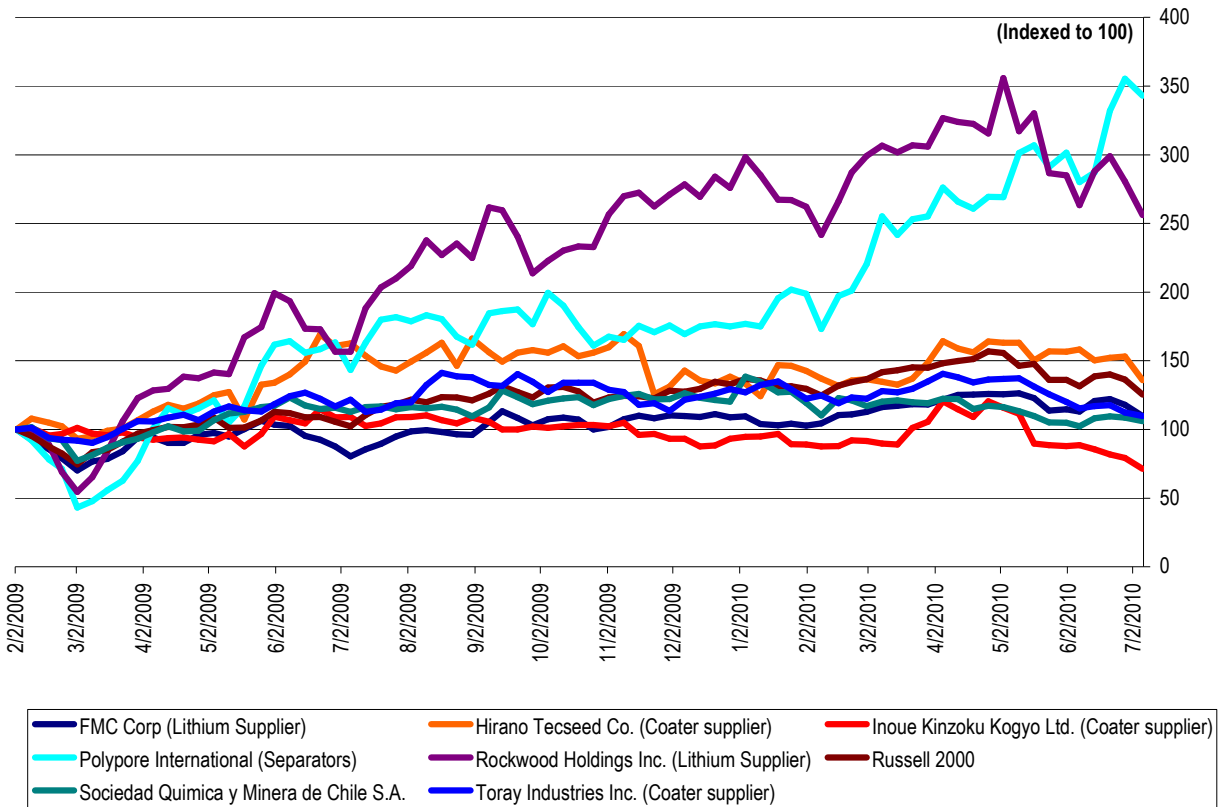


Index	Close on 7/6/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	9,743.6	11,309.0	86.2%	17.0%	(6.6%)	(3.9%)
S&P 500	1,028.1	1,219.8	84.3%	14.4%	(7.9%)	(4.3%)
NASDAQ	2,093.9	2,535.3	82.6%	17.1%	(8.7%)	(5.7%)
Russell 2000	590.0	746.0	79.1%	19.4%	(6.1%)	(8.0%)
AMEX Cleantech Index	922.1	1,112.5	82.9%	7.0%	(13.6%)	(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 4: Supplier Performance
(From February 2, 2009)



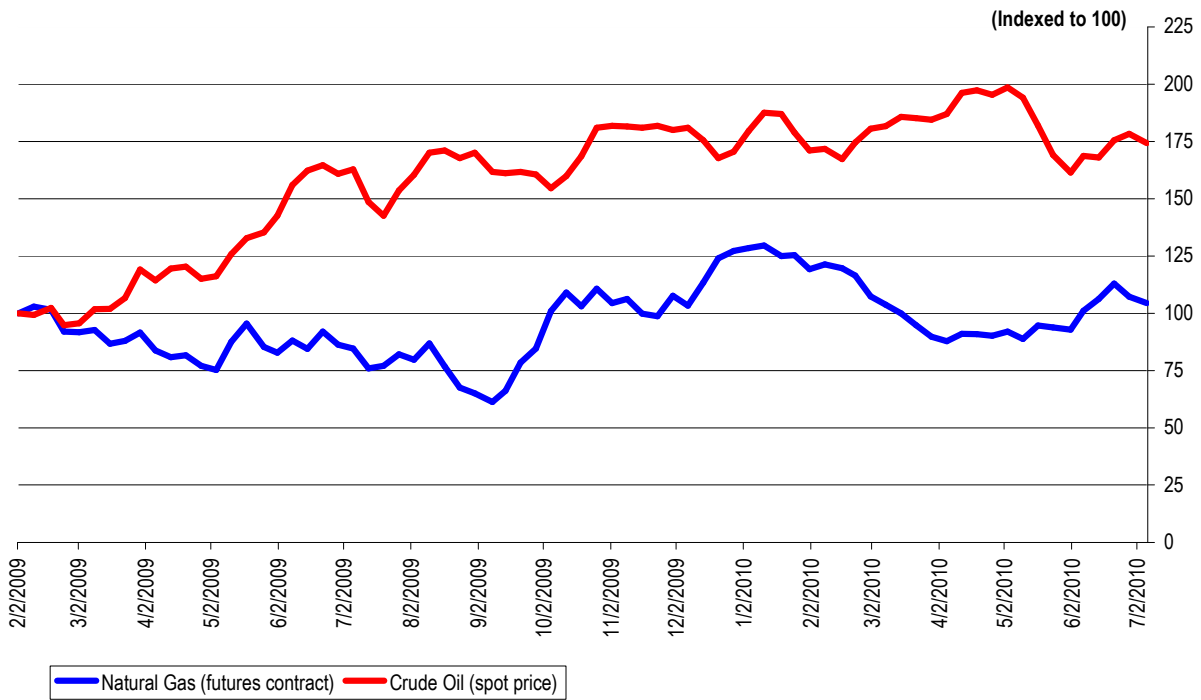
Source: Bloomberg

Exhibit 5: Commodity Prices

Commodity	Price on 7/6/2010	Price on 6/28/2010	Price on 6/7/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	18,850	20,205	18,000	(6.7%)	4.7%
LME Lead (cash, \$ per tonne)	1,754	1,827	1,558	(4.0%)	12.6%

Source: LME

Exhibit 6: Natural Gas and Crude Oil
 (From February 2, 2009)



Source: EIA

Executive Director's Notes



WILL A REGULATORY ANOMOLY THWART THE NEXT “KILLER APP” FOR ADVANCED BATTERIES?

Despite the attention that automotive applications for advanced batteries have received over the past several years, it is entirely possible that the next “killer app” for advanced batteries will be something slightly more mundane: community energy storage (CES). CES describes the installation by utilities of relatively small, 75-100 kWh, stationary batteries in individual communities downstream of substations and near the consumer. Current specifications for CES systems envision the use of lithium-ion batteries of a type that may be similar to what is used in automotive batteries, though other battery chemistries, such as advanced lead acid, might also be suitable. A quick back-of-the-envelope calculation indicates that widespread deployment of CES batteries by utilities in the United States would create a multi-billion dollar market—potentially larger than the market for automotive batteries.

CES would appear to have benefits for everyone. For utilities, CES would promise greater stability and reliability for local distribution systems. In particular, CES would facilitate the safe recharging of large numbers of EV's and PHEV's by consumers at any time of day, since power generated at times of low demand could be stored locally and used by consumers on demand. For consumers, CES would offer freedom from worry about time of day charging and not having a vehicle fully charged and ready to go when needed. (For all the talk about smart grid, consumers may strongly prefer to keep the consumer side of the meter dumb). For automobile companies, CES offers an opportunity to increase substantially the volume of automotive grade Li-Ion batteries manufactured each year. Greater volumes mean lower costs. Perhaps even more significantly, CES systems may be able to use advanced batteries that have been removed from vehicles after their useful driving life. If such a secondary market were to develop, the cost of advanced automotive batteries could be reduced dramatically.

One of the most important potential benefits of CES systems is their ability to act, when aggregated, as bulk storage, in much the same way as bulk storage technologies such as sodium sulfur batteries, pumped hydro storage and CAES. As the FERC noted in *Western Grid Development LLC*, 130 FERC ¶ 61,056 (2010), storage can be a substitute for transmission assets. Power storage can be managed to reduce transmission congestion thereby reducing the need for additional investment in new transmission lines and equipment. The significance of the *Western Grid Development* order is that it raised the possibility that storage assets could be subject to FERC jurisdiction and utility investments in such assets recovered through favorable cost-of-service rates from all that receive a benefit.

The problem with *Western Grid Development*, from the standpoint of CES, is that the order applies only to bulk storage technology—specifically to large 10 to 50 MW sodium sulfur batteries. CES systems, by contrast, are of much smaller size and are located about as far down into the distribution system as you can get without hitting a consumer. By law, the FERC has no jurisdiction over facilities used in local distribution. If FERC takes the position that rate recover rules do not apply to CES assets because they are located in the distribution system and benefit distribution, utilities investing in CES facilities may be unable to recover their costs from persons outside their own rate bases that nevertheless benefit from the bulk storage capabilities that the utilities' CES facilities provide.

This regulatory anomaly poses a series challenge to deployment of CES. A utility that wants to acquire bulk storage capability may be more inclined to invest in bulk storage assets rather than in CES because cost recovery for bulk storage assets under FERC jurisdiction may be easier and more favorable. This would be a bad result for utilities and consumers. Utilities and consumers would likely benefit more from storage facilities that provide both bulk storage and distribution benefits rather than just bulk storage benefits alone. It would be a worse result for automobile companies and battery companies, which hope to sell into and benefit from a vibrant CES market. And it would be worst of all for the country, which desperately needs to do anything it can to bring down the cost of advanced automotive batteries so that the stranglehold of petroleum can be broken.

The FERC should permit utilities that invest in CES to recover a portion of their investments in those systems on the same favorable, cost-of-service basis that would be available to utilities investing in bulk storage facilities. It would be a shame if a regulatory anomaly thwarted a new stored energy “killer app” that would benefit advanced battery manufacturers, auto companies, utilities and consumers alike.



James J. Greenberger
Executive Director

July 9, 2010

North American Industry
Announcements and Calendar

- **Next Webinar Program: Hybrid Electric Systems for Automotive Applications:** The NAATBatt Webinar series continues on Wednesday, July 21, 2010, with a program entitled “Hybrid Battery-Ultra Capacitor Systems for Automotive Applications—Why Can’t We Just Get Along?”. The program will examine whether combining high energy lithium-ion batteries with high power ultra capacitors would provide a better power system for electric vehicles than a power system based solely by lithium-ion cells. The speakers at the program will be Dr. Ted Bohn of Argonne National Laboratory and Dr. John M. Miller of Maxwell Technologies, Inc. The program will begin at 2:00 p.m., EDT, and continue for approximately 60 minutes. Employees of NAATBatt member firms may register for the program on a complimentary basis by clicking the following link: <http://events.meetingbridge.com/Register/?06123179151&code2> Non-members are welcome to join the program for a \$30.00 charge. If your firm is not yet a member of NAATBatt, please click on the following link to register (or, better yet, join NAATBatt now!): <http://events.meetingbridge.com/Register/?06123179151>
- **Storage Week 2010:** Storage Week 2010, sponsored by Infocast, will be held on July 12-15, 2010 at the Rancho Bernardo Inn in San Diego, CA. The conference will focus on grid level storage with separate tracks on bulk storage and grid services. NAATBatt is a supporting organization of the conference. Information about the conference can be found at: <http://www.infocastinc.com/index.php/conference/storage10>.
- **Challenges and Opportunities: Building a U.S. Battery Industry for Electric Drive Vehicles: Progress Challenges and Opportunities:** The National Academy of Sciences’ Board on Science, Technology, and Economic Policy (STEP), in cooperation with the Michigan Economic Development Corporation and the Department of Energy, will hold a conference in Livonia, Michigan on July 26-27. The conference will bring together key stakeholders from industry, federal and state governments, and universities to review DOE and other initiatives to support the battery industry and highlight key issues to be addressed.
- **The 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>
- **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:** The U.S. National Electric Vehicles Safety Standards Summit, a joint program of the National Fire Protection Association and SAE International, will be held on October 19-20, 2010, at the Cobo Convention Center in Detroit, Michigan. Information about the event can be found at: http://www.nfpa.org/newsReleaseDetails.asp?categoryid=488&itemid=46997&cookie_test=1



- **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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