

Summary:

For the July 23rd 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 and U.S. Battery Indices increased 5.5% and 3.8%, respectively. The Asia Index declined 1.9%. S&P 500 and Russell 2000 declined modestly at 0.7% and 1.4%, respectively.

Key Highlights:

- A **Senate committee** approved two proposals to boost plug-in hybrid vehicles and expand a \$25-billion loan program for fuel-efficient vehicles to include commercial trucks and possibly more money. One bill for \$3.6 billion bill would be directed primarily toward R&D with other on expanding the **Department of Energy** loan program to include truck manufacturers and additional suppliers.
- **THINK** and **ITOCHU** announced an expanded partnership for marketing and distribution of the THINK City electric vehicle (EV) and EV drive system in Asia. ITOCHU will be marketing THINK's latest EV drive system, the **G4 EV Drive Controller**. **Ener1** is supplying the lithium-ion (li-ion) batteries for the THINK EVs that are being delivered in Europe.
- **Honda Motor** will begin selling EVs in 2012. The zero-emission vehicle rule instituted by the **California Air Resources Board (CARB)** regulations requires the largest auto makers (by volume) to sell about 60,000 EVs from model years 2012 through 2014.
- The **Volkswagen "E-Mobility"** strategy for hybrids and all-electric vehicles includes the rollout of the hybrid **Tourag** this year and the **Jetta** in 2012. The company expects 3% of global sales to hybrid or all-EV by 2018.
- The **Natural Resources Defense Council** and the **CARB** estimated a traditional gas-powered car produces 465 grams of carbon dioxide per mile. Electric cars feeding off of California's power grid produce 142 grams per mile, while EVs plugged into the grid elsewhere in the country produce 214 grams of carbon dioxide per mile.
- The **City of Palm Springs, California** has received \$60,000 to be applied to a pilot EV program. The funds are from a grant from the **Coachella Valley Air Quality Enhancement Grant Program**.
- **EV-Box** began production of the first **polycarbonate charging station**. The stations are already in use in The Netherlands and Belgium. The advantages of injection molding are price level and fast delivery times.

A Few More Details:

A Senate committee approved two proposals to boost plug-in hybrid vehicles and expand a \$25-billion loan program for fuel-efficient vehicles to include commercial trucks and possibly more money. The \$3.6-billion, plug-in hybrid bill from Sen. Byron Dorgan (D-N.D.) was passed with support from Republicans and Democrats. It would spend \$1.5 billion on plug-in research and create a \$10-million "Advanced Batteries for Tomorrow Prize" for anyone who develops a vehicle battery that can provide 500 miles of range. The other bill by Sen. Debbie Stabenow (D-Mich) would expand the Department of Energy loan program to include medium and heavy-duty truck makers, along with a wider range of suppliers.

Source: Free Press

THINK and ITOCHU announced an expanded partnership for marketing and distribution of the THINK City electric vehicle (EV) and EV drive system in Asia. ITOCHU will be marketing THINK's latest EV drive system, the G4 EV Drive Controller (as shown in **Exhibit 1**). The G4 drive controller is the power electronics system that integrates the EV battery powering the Think City and the motor that drives the plug-in vehicle. **Ener1** is supplying the lithium-ion (li-ion) batteries for the THINK EVs that are being delivered in Europe.

Exhibit 1: The G4 Drive Controller



Source: THINK

Honda Motor will start selling a battery-powered car in 2012. In addition, the company is also planning to sell mid-size to large plug-in hybrids in Japan and the U.S. that year. The zero-emission vehicle rule in California is forcing Honda to make the move to EVs. Under new California Air Resources Board (CARB) regulations, the largest automakers by volume must sell about 60,000 plug-in hybrids and electric cars combined from model years 2012 through 2014.

Source: Bloomberg

The Volkswagen "E-Mobility" strategy for hybrids and all-electric vehicles includes the rollout of the hybrid Tourag this year and the Jetta in 2012. The all-electric E-Up minicar (as shown in **Exhibit 2**) and an E-Golf will be launched the following year. The company expects 3% of global sales to hybrid or all-EV by 2018.

Exhibit 2: The All-Electric E-Up



Source: Volkswagen

The Natural Resources Defense Council, using data from the U.S. Department of Energy and the CARB estimates a typical gas-powered car produces 465 grams of carbon dioxide per mile. EVs feeding off of California's power grid produce 142 grams per mile. Electric cars plugged into the grid elsewhere in the country - drawing power from the nation's average mix of natural gas, coal and nuclear plants - produce 214 grams of carbon dioxide per mile. A study for the California Energy Commission yielded comparable results. In 2 years, cars burning gasoline will produce 473 grams of carbon dioxide per mile, the study found, while electric cars in California will produce 123 grams.

Source: San Francisco Chronicle

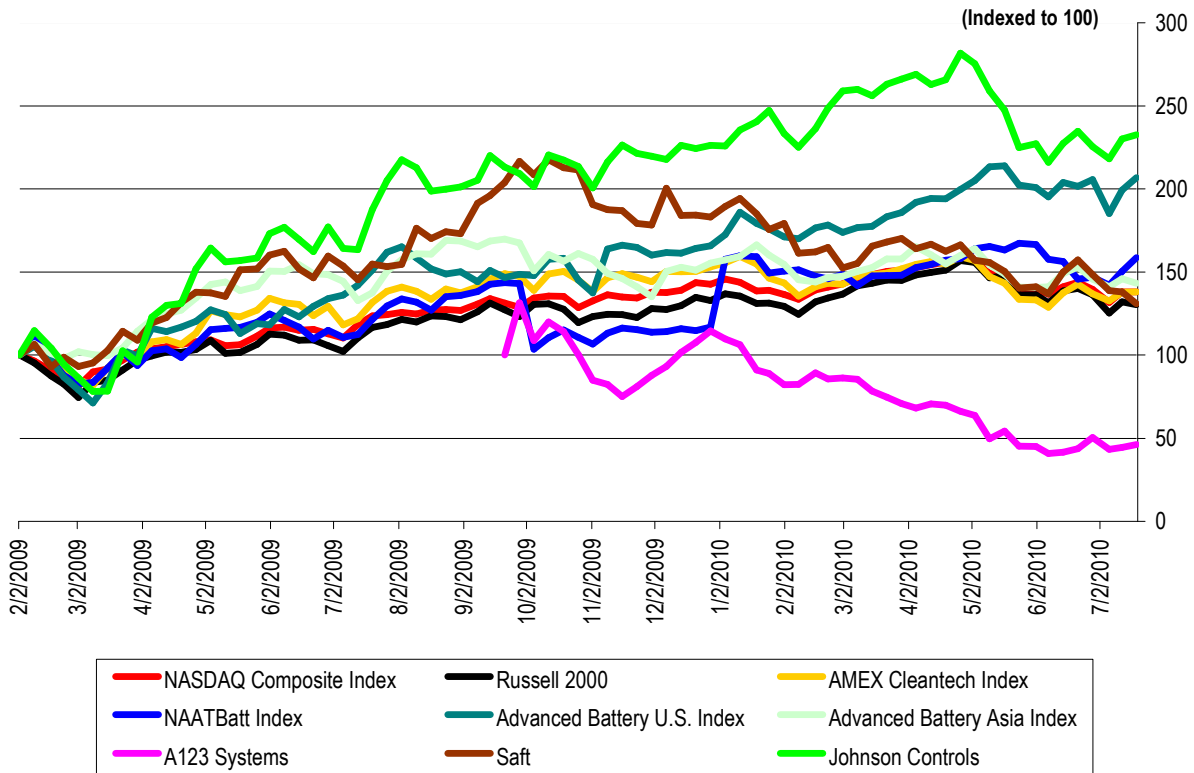
EV-Box began production of the first polycarbonate charging station. The stations are already in use in The Netherlands and Belgium. The pole version (as shown in **Exhibit 3**) is based on a standard road sign pole. The advantages of injection molding are price level and fast delivery times. There is no keyboard or display on the product. The customer identifies himself or herself with a Contactless card, tag or mobile phone. The status will be communicated by the LED's in the product and/or through the mobile phone and in the future direct on the dashboard of the car.

Exhibit 3: The Polycarbonate EV-Box



Source: EV World

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

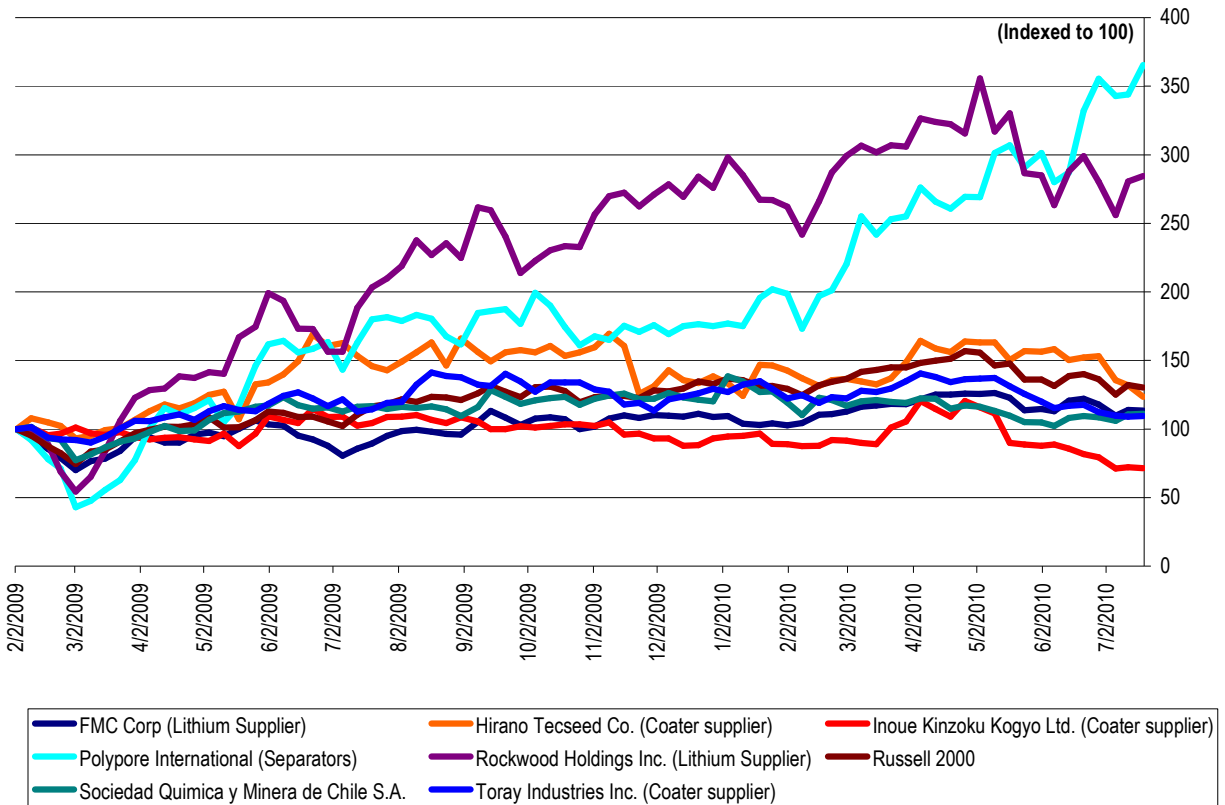


Index	Close on 7/19/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	10,154.4	11,309.0	89.8%	16.1%	(2.6%)	(0.6%)
S&P 500	1,071.3	1,219.8	87.8%	13.7%	(4.1%)	(0.7%)
NASDAQ	2,198.2	2,535.3	86.7%	15.9%	(4.2%)	(0.0%)
Russell 2000	613.1	746.0	82.2%	17.4%	(2.4%)	(1.4%)
AMEX Cleantech Index	958.0	1,112.5	86.1%	5.4%	(10.2%)	0.1%

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 5: Supplier Performance
(From February 2, 2009)



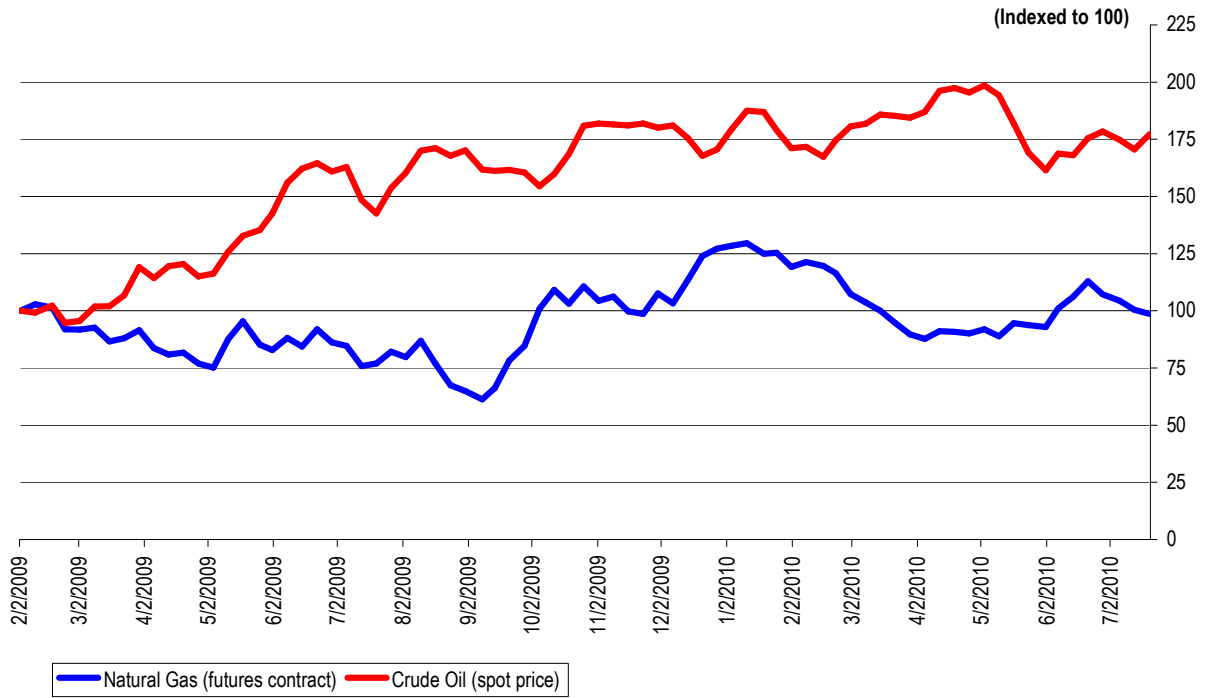
Source: Bloomberg

Exhibit 6: Commodity Prices

Commodity	Price on 7/19/2010	Price on 7/12/2010	Price on 6/21/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	18,730	19,205	19,930	(2.5%)	(6.0%)
LME Lead (cash, \$ per tonne)	1,751	1,805	1,786	(3.0%)	(1.9%)

Source: LME

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



Source: EIA

Executive Director's Notes



IF NOT A PRICE ON CARBON, THEN WHAT?

On Thursday, Senator Majority Leader Harry Reid announced that he was abandoning efforts to pass a broad energy bill this summer that would have included a cap-and-trade scheme for greenhouse gas emissions. By Senator Reid's calculation he did not have the votes to move that legislation.

The demise of cap-and-trade is another watershed event that must be a call to action. Although many of us had deep misgivings about cap-and-trade as a mechanism (in its worst incarnation, its imposition of higher fees on carbon emitted by coal burning power plants than on carbon emitted by gasoline burning cars would have been a very bad development for electric drive), the basic principle behind cap-and-trade—putting a price on carbon—has long been seen as the key strategy for weaning U.S. consumers off petroleum and other carbon-based fuels. That strategy now appears to be dead. If not a price on carbon, then what?

If the government cannot increase the price of petroleum to reflect its true cost, then the only strategy left to promote electric drive is to redouble efforts to decrease the cost of electric vehicle batteries to consumers. There are only three ways to do that: Build a better mousetrap; build the mousetrap more efficiently; and find better ways for consumers to pay for the mousetrap.

Last week I wrote about making the manufacture of a \$10,000 electric People's Car a national priority. If that goal is going to be achieved anytime soon, it can only be achieved by letting consumers pay for electric cars in unconventional ways.

In the longer term, however, building electric cars and their related infrastructure more efficiently will be key to reducing cost. Ordinarily, we could rely on the free market to create that efficiency. If we put a price on carbon and simply let different electric vehicles and infrastructure providers compete on a level playing field, this is exactly what would happen. But that does not appear to be the path we will be going down. Fortunately or unfortunately, government will now have to become much more directly involved in the deployment of electrified vehicles in the United States.

One of the key challenges to greater government involvement is the lack of clear authority over vehicle electrification within the federal government. The DOT, DOE, DOD, DOC, FERC, NIST and a host of other federal agencies all have jurisdiction over different pieces of the electrification puzzle. Moreover, because we are talking about electricity, which has historically been a local regulatory concern, there are

literally hundreds of state and local entities with jurisdiction over key aspects of electrification policy. That's no way to run a railroad, much less a critical component of national energy policy.

Earlier this week, the Alliance of Automobile Manufacturers, the Association of International Automobile Manufacturers, the Electric Drive Transportation Association and the Edison Electric Institute, called for a new National Electric Fuel Task Force to help accelerate the adoption of plug-in electric vehicles and the necessary infrastructure. This interagency body would attempt to coordinate efforts among federal agencies working on electrification issues and be headquartered in the Department of Energy.

The creation of a National Electric Fuel Task Force is a good idea, but does not go far enough. Interagency discussion and cooperation are important, but to make real progress there must also be clear responsibility and accountability. At the beginning of the last decade, the attacks of 9/11 underscored the limitations of interagency cooperation and led to the creation of the Department of Homeland Security in 2003. While the creation of a new cabinet-level department to oversee electrification may not be necessary, the consolidation of federal, state and local authority over all aspects of electric vehicle deployment into one administrative body is essential.

For the past several years we have assumed that we market forces spurred by high priced carbon would force the electrification of transportation in the United States. Senator Reid's announcement makes clear that assumption is dead. The federal government must now step up and address the challenge of electrification directly in a forceful, logical and coordinated way.



James J. Greenberger
Executive Director

July 23, 2010

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, from East Penn Manufacturing/Applied Intellectual Capital and EnerSys, 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. More information about the Webinar as well as registration instructions will be contained in the next newsletter.
- **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.
- **Plug-In 2010:** The Plug-In 2010 Conference & Exposition will be held at the San Jose McEnery Convention Center July 26-29, 2010, in San Jose, California. The conference will discuss the future of vehicle electrification. Information about the conference can be found at <http://www.plugin2010.com/>
- **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
- **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.



- **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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