

Summary:

For the February 20th issue of NAATBatt's Advanced Battery Weekly, in addition to sector highlights, we have included an interview with Johan Konnberg, Business Director, Volvo Cars' Hybrid Center.

For the week ending 2/15/10, the NAATBatt Index declined 2.5% while the U.S. Battery Index increased 4.0%. The Asia Battery Index declined modestly. The S&P 500 and the Russell 2000 increased 3.6% and 5.9%, respectively.

Key Highlights:

- **Valence Technology** announced the signing of a multi-year supply agreement with BJ Technologie, a subsidiary of **Bénéteau Group**, the world's largest sailing yacht manufacturer. Initial battery shipments under this agreement are expected to commence in CY2H10. Order estimates by Bénéteau Group forecast up to \$9 million in revenue to Valence Technology over the next 12 months.
- **Car Charging Group** announced plans to deploy Level 3 fast charging stations capable of fully charging an electric vehicle in 30 minutes or less. The charging stations, designed by **Coulomb Technologies**, in partnership with Aker-Wade Power Technologies, will be similar to gas pump type-charging stations in existence today, but will be powered by dedicated 480-volt, 125-amp circuits, which will provide for much more rapid charging.
- **GE Energy** has entered into a partnership with electric vehicle plug developer **Juice Technologies LLC** to integrate smart-metering technology into charging devices. The partnership with Juice is its first move into electric car charging technology.
- **Buehler Motor** announced a supply agreement (details not provided) with **CODA Automotive** to provide customized auxiliary water pumps for CODA's all-electric vehicle (EV) scheduled for introduction in California in 2H10. This follows a previously announced partnership with GM to provide pump solutions for the Chevy Volt.
- A wind-powered electric vehicle charging station was recently installed in Chicago. The ChargePoint Networked Charging Station (from **Coulomb Technologies**) is touted as the "first truly green electric car charging station in the continental United States".
- A team of **Boston College** scientists have developed a new anode material that could be used to build lighter and longer-lasting lithium-ion (li-ion) batteries. The web-like "Nanonets" reportedly offer more surface area and greater conductivity (producing a charge/recharge rate 5x to 10x greater than typical li-ion anode material).
- **Polygenic Power Corp.** (a subsidiary of SymPowerco) has launched a Hybrid Electric Vehicle (HEV) prototype project. The HEV project will be operate concurrently with SymPowerco's recently announced Flowing Electrolyte Direct Methanol Fuel Cell ("FEDMFC") prototype project. The HEVs developed in the program will serve as future test platforms for SymPowerco's FEDMFC and for retrofit hybrid power systems of varying designs.

A Few More Details:

Valence Technology announced the signing of a multi-year supply agreement with BJ Technologie, a subsidiary of Bénéteau Group, the world's largest sailing yacht manufacturer. Under the multi-year agreement, Valence Technology will serve as the exclusive battery supplier for all new Bénéteau Group hybrid-electric vessels that incorporate the innovative ZF Marine hybrid drive systems. Initial battery shipments under this agreement are expected to commence in CY2H10. Order estimates by Bénéteau Group forecast up to \$9 million in revenue to Valence Technology over the next 12 months.

Source: Valence Technology

Car Charging Group announced plans to deploy Level 3 fast charging stations capable of fully charging an electric vehicle in 30 minutes or less. The charging stations, designed by Coulomb Technologies, in partnership with Aker-Wade Power Technologies, will be similar to gas pump type-charging stations in existence today, but will be powered by dedicated 480-volt, 125-amp circuits, which will provide for much more rapid charging. Charging stations that provide 240 volts (a.k.a. Level 2 chargers) can take less than half the charging time of 120-volt outlets (a.k.a. Level 1 chargers). Typically, an 8- to-10-kilowatt battery needs three or four hours at Level 2 to be completely charged.

Source: Car Charging Group

GE Energy has entered into a partnership with electric vehicle plug developer Juice Technologies LLC to integrate smart-metering technology into charging devices. The partnership with Juice is its first move into electric car charging technology. With advanced metering technology incorporated into charging devices developed by Juice, GE hopes vehicle owners will be able to manage the charging, the same way smart meters are being deployed to help people monitor electricity use. Luke Clemente (a general manager with GE Energy) stated utilities may eventually develop a rate system whereby electric vehicle owners would have an incentive to charge up their cars during off-peak hours, and the smart charging stations would help them control that.

Source: Dow Jones

Buehler Motor announced a supply agreement (details not provided) with CODA Automotive to provide customized auxiliary water pumps for CODA's all-electric vehicle (EV) scheduled for introduction in California in 2H10. This follows a previously announced partnership with GM to provide pump solutions for the Chevy Volt. Buehler Motor will provide custom 50W auxiliary water pumps for coolant circulation in several vehicle drive train subsystems and related design support.

Source: Buehler Motor

A wind-powered electric vehicle charging station was recently installed in Chicago. The ChargePoint Networked Charging Station (from Coulomb Technologies) is touted as the "first truly green electric car charging station in the continental United States". The Highland Park wind-powered EV station is the first of its kind in the continental United States. However, it is not the first in the nation. Last year, two Coulomb wind-powered stations were installed in front of the Maui Electric Company (MECO) on the Hawaiian island of Maui.

Source: Energy Boom

A team of Boston College scientists have developed a new anode material that could be used to build lighter and longer-lasting lithium-ion (li-ion) batteries. The web-like "Nanonets" reportedly offer more surface area and greater conductivity (producing a charge/recharge rate 5x to 10x greater than typical li-ion anode material). The advanced material also seems to be more durable with a negligible drop-off in capacity during charge and recharge cycles.

Source: Boston College

Polygenic Power Corp. (a subsidiary of SymPowerco) has launched a Hybrid Electric Vehicle (HEV) prototype project. The HEV project will be operate concurrently with SymPowerco's recently announced Flowing Electrolyte Direct Methanol Fuel Cell ("FEDMFC") prototype project. The HEVs developed in the program will serve as future test platforms for SymPowerco's FEDMFC and for retrofit hybrid power systems of varying designs. The company anticipates that an HEV battery could be 70% lighter compared to a PHEV. With batteries being constantly recharged by SymPowerco's FEDMFC or other mobile power sources, a golf cart could weigh as much as 200 pounds less than a plug-in golf cart and operate indefinitely by refueling with a liquid fuel such as methanol.

Source: SymPowerco



Interview with Johan Konnberg, Business Director, Volvo Cars' Hybrid Center:

Please discuss the Volvo electric vehicle strategy.

Our plan is to launch a diesel plug-in hybrid electric vehicle (PHEV) in the European Union (EU) markets in the consumer driver (C/D) segment in 2012. Our battery electric vehicle is being road tested. We are focused on developing a modular technology that will enable us to combine it with different internal combustion engines (ICEs) and/or platforms.

What is the go-to-market strategy?

I cannot provide specifics. However, the C30 battery electric vehicle (**Exhibit 1**) that is being road tested has a range of over 90 miles with a maximum speed of 80 miles-per-hour. The C30 uses a standard European 230-volt power supply to recharge in 8 hours. We plan to have the diesel electric V70 on the road by 2012.

Exhibit 1: Volvo C30



Source: Volvo

Please highlight some of the potential barriers to mass market commercialization? How are these issues being addressed?

The major challenges are high investment costs and low volumes on components -- meaning high vehicle prices, initially. Government subsidies combined with tax relief are needed to drive commercialization. In addition, customer acceptance is crucial. This means the customer must feel certain about charging capability, comfortable about driving an electric car, feel safe in the vehicle, etc.

There are multiple strategies to help drive adoption. While it is still early in the game, do you see greater benefits between showroom, TV, word-of-mouth, commercial advertisements, internet, publications, bill boards, etc?

There are several difficult areas, and you need to be very open and credible in your communication. Electric range, compartment heating and A/C, electricity production, balancing different energy users, change in your behaviors', etcetera. Sometimes you see early information focusing one feature, but at the end of the day you need to be very clear and honest.

Which geographical markets seem to have fiscal policy that is more conducive to electric vehicle development?

We have so far focused on Europe. In France they have a bonus-malus CO2 system that is very positive when offering low emissions (below 60 g/km). In Belgium, Netherlands and Denmark they have very high vehicle tax, linked to CO2 emissions, meaning these vehicles will be 8-10 k€ less costly. In Sweden company cars with hybrid technology will have much lower taxation value.

Please characterize the competitive landscape. Where do you believe Volvo could have a competitive advantage?

In the C/D segment and family size vehicles. Our cars provide comfort, performance and roominess that are important for long range family trips, holiday travel and business trips. We also have very low fuel consumption figures (and carbon dioxide levels) for commuting distances. We provide 'two cars-in-one' with zero fuel consumption for commuting up to 50 kilometer (km) range (CO₂ > 50 grams per kilometer) and without sacrificing on standard features – total range/roominess/comfort/performance (V8 performance).

How do you see the various global markets evolving in the near-term and long-term for autos and heavy-duty vehicles?

Tough to say at this point. It will be based on governmental agendas, market interests and OEM's showrooms at auto shows.

How big do you envision the electric vehicle market will become by 2015?

May be 5% of the total market???...It is still early with platforms soon to start rolling out.

Given the rapid technological development, do you believe tier-1 auto manufacturers (excluding Volvo) could accelerate electric vehicle rollout schedules?

Yes, I believe manufacturers could accelerate the rollout mainly driven by political decisions, incentives, and help with technology investments, etcetera. If our governments really mean to decrease GHG emissions, the technology is there, and can be rolled out to the markets within 3-5 years, in large scale.

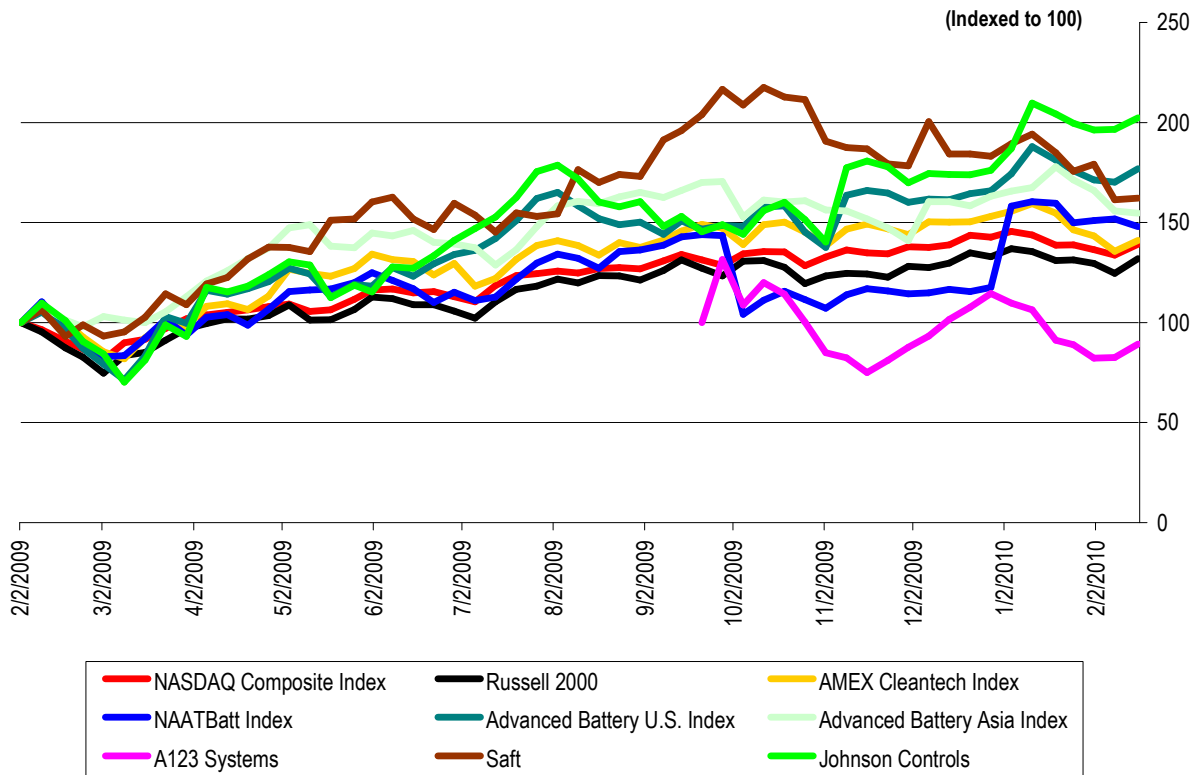
Where do you believe potential bottlenecks in the supply chain could eventually manifest?

Battery production capacity is one potential area, depending on market acceptance for vehicles, could become an issue. Government loans and grants have been awarded in the United States to add capacity to meet the expected demand.

Discuss the Volvo battery sourcing strategy.

We work closely with a number of suppliers. We try to use standard cells, but with unique packaging of a complete system. This includes the management system and cooling, safety related issues, etc.

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

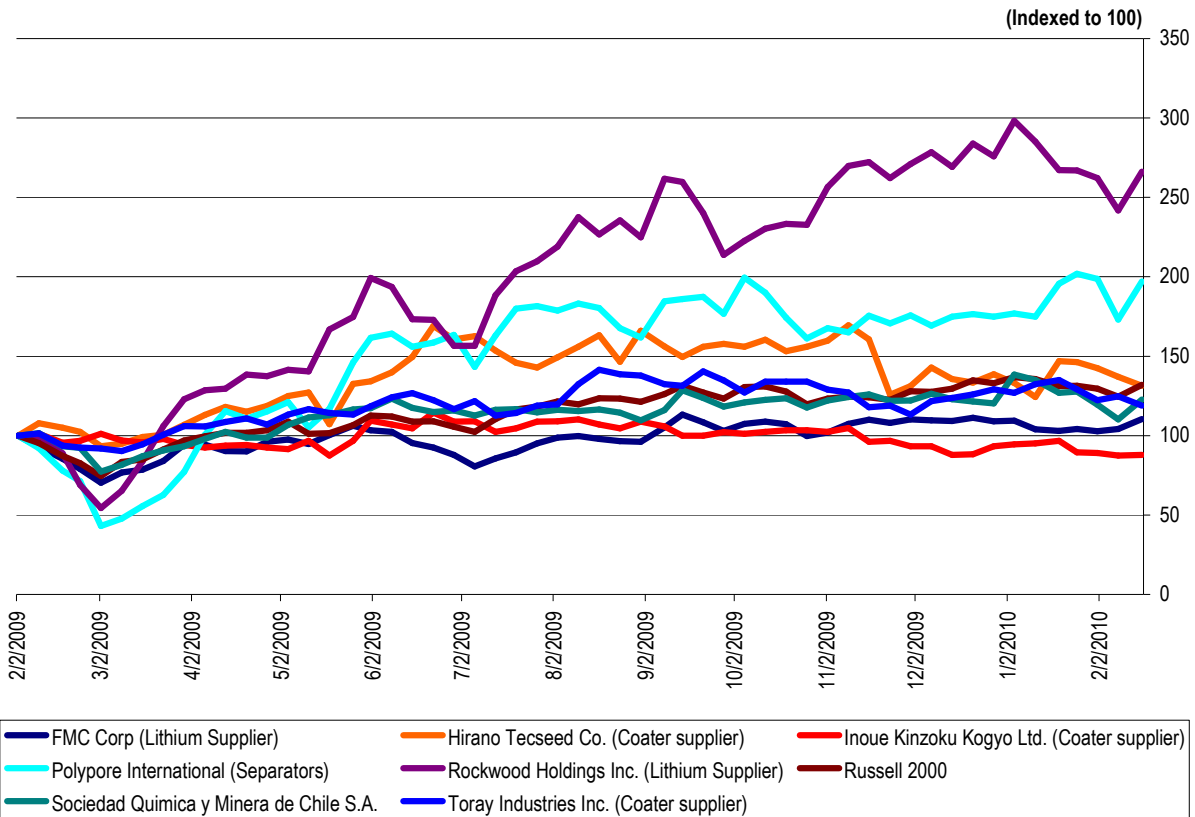


Index	Close on 2/16/2010	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	10,268.8	10,767.2	95.4%	36.0%	(1.6%)	3.6%
S&P 500	1,094.9	1,150.5	95.2%	38.7%	(1.9%)	3.6%
NASDAQ	2,214.2	2,326.3	95.2%	50.6%	(3.5%)	4.1%
Russell 2000	620.8	649.2	95.6%	44.8%	(1.2%)	5.9%
AMEX Cleantech Index	979.5	1,112.5	88.0%	34.8%	(8.2%)	4.0%

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 February 2, 2009)



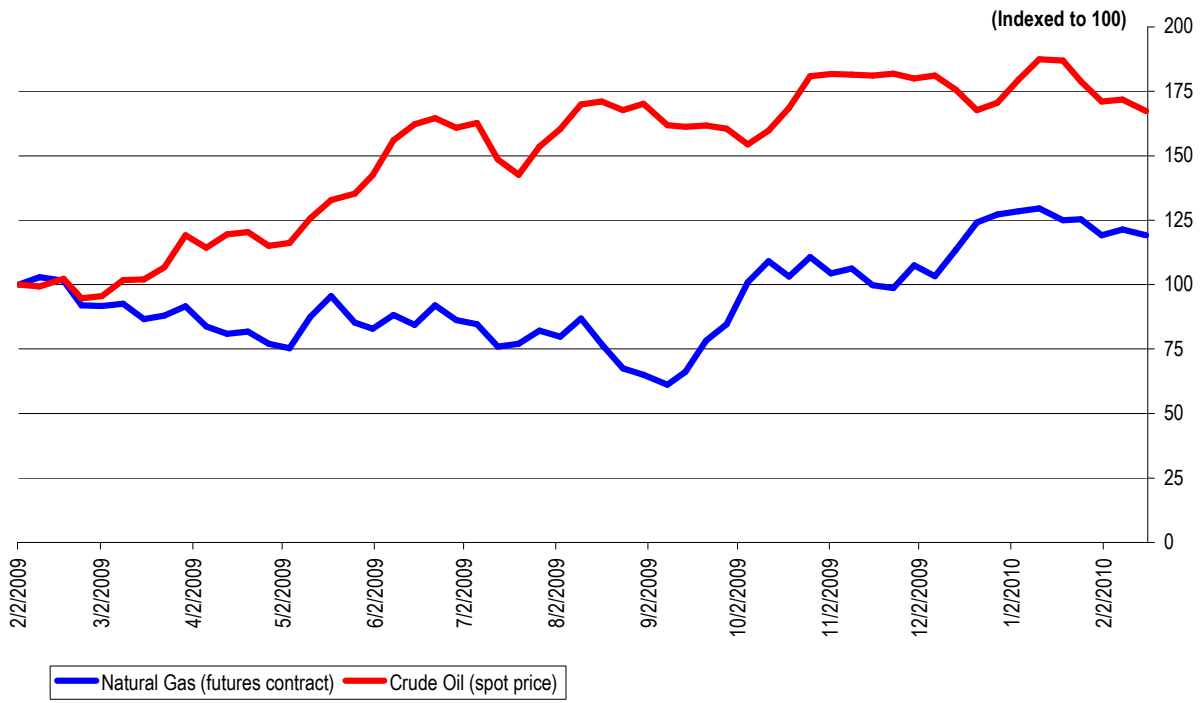
Source: Bloomberg

Exhibit 4: Commodity Prices

Commodity	Price on 2/16/2010	Price on 2/8/2010	Price on 1/18/2010	1 Week Change	1 Month Change
LME Nickel (Cash, \$ per tonne)	19,575	17,030	18,630	14.9%	5.1%
LME Lead (cash, \$ per tonne)	2,195	1,930	2,451	13.7%	(10.4%)

Source: LME

Exhibit 5: Natural Gas and Crude Oil
 (From February 2, 2009)



Source: EIA



THE DANGER OF ILLUSORY MARKETS

In Crossing the Chasm, his seminal book on high-tech marketing, business writer Geoffrey Moore outlines the adoption cycle of new, transformational technologies. A new technology is adopted first by innovators, then early adopters, then the early majority, the late majority, and finally by the laggards. Moore's important observation is that a technology's progression through those adopter groups is neither smooth nor certain. There are gaps between each group that pose challenges. And the gap between the early adopter group and the early majority is not a gap but a chasm in which most new, transformational technologies go to die.

Moore points out that marketplace death often comes as a surprise. Early adopter markets can seem robust with affluent consumers willing to pay a premium to use a new technology that makes a statement about the consumers' identity. But early adopter markets are illusory and not economically sustainable. Unless a new, transformational technology gains acceptance among early majority consumers, the new technology will fail in the marketplace.

Unlike early adopters, early majority consumers are highly practical, non-ideological and cost sensitive. They simply want a product that does something they are doing already, but does it better.

Moore's observations about the technology adoption cycle in the high-tech world should be a wake-up call for electric drive proponents. No one working on electric drive in the automobile industry—which has not seen a new, transformational technology in about 100 years—can read Moore's book without feeling an ominous chill. If Moore's model is right, we have a relatively short period of time to produce grid-enabled vehicles that will appeal to early majority consumers. If we fail, grid-enabled vehicles may follow the hydrogen highway into near term market oblivion.

Key to early majority consumer adoption is reducing the cost of grid-enabled vehicles, and key to reducing the cost of those vehicles is reducing the cost of their batteries. Substantial battery cost reduction requires a number of different strategies. One of them is improving the manufacturing process.

Please join us on March 1 for the first in a series of Webinars on how to reduce the cost of advanced batteries. The March 1 Webinar is entitled "Reducing Waste in the Manufacture of Li-Ion Cells and Electrodes". John Dispennette of Arcotronics Technologies and Dr. Mohit Uberoi of MEGTEC Systems will talk about best practices for reducing waste in the manufacture of Li-Ion battery cells and electrodes.



NAATBatt

Advanced Battery Weekly

To register for this free Webinar, please call Suzanne at (949) 553-9748 or send an e-mail to: Suzanne@mccloudcommunications.com. You must register by February 24 to participate. I hope you will join us on March 1 and that you will join NAATBatt in its effort to protect the future of the electric drive industry.



James J. Greenberger
Executive Director



Contact Information:

National Alliance for Advanced Technology Batteries

122 South Michigan Avenue, Suite 1700
Chicago, Illinois 60603
(312) 588-0477

www.naatbatt.org

Officers

Randy Moore
Chairman

rmoore@naatbatt.org

Jim Greenberger
Executive Director
jgreenberger@naatbatt.org

Michael Lew
Head of Business Development
mlew@naatbatt.org

Ralph Brodd
Chief Technology Officer
rbrodd@naatbatt.org

Sandy Kane
Chief Financial Officer
skane@naatbatt.org