



Think Advanced Materials And Nanotechnology:

Think Advanced Battery Weekly (Volume 1, Issue 16)

THINK SUMMARY:

We believe that the acceleration of electric vehicle adoption is on the horizon, given the ongoing industry efforts. In addition to sector highlights, included in this issue is an interview with Dan Squiller, the CEO of PowerGenix.

For the week ending 10/2/09, our Advanced Battery U.S. Index was down 4.8%, while the Advanced Battery China Index was down 0.2%. The S&P 500 and the Russell 2000 ended the week down 1.8% and down 3.1%, respectively.

KEY POINTS:

- France announced a 14-point plan to accelerate the development and commercialization of electric vehicles and plug-in hybrids. Key points include investments of €1.5 billion (approximately \$2.2 billion) to create a charging infrastructure and €125 million (approximately \$182 million) to help fund a lithium-ion battery plant.
- Panasonic announced it has developed a 1.5 kWh battery module from 140 18650-type lithium-ion battery cells. The cells use a nickel-based (LiNiO₂) chemistry for the cathode material.
- A report conducted by the Australian Federal Government predicted that Australia could become a world leader in the production of electric vehicles by 2020.
- Researchers in South Korea are experimenting with magnetic induction produced from underground cables to power electric vehicles.
- SK Energy is in the final stage of a lithium-ion supplement deal with Mitsubishi Motors. The deal is expected to be announced shortly, in which SK Energy would supply Mitsubishi Fuso Truck & Bus. An unidentified industry official projected that the initial volume will be for about 10,000 units out of FUSO's 140,000 trucks in total.
- Nissan's Leaf electric car is scheduled to be launched in Canada in 2011, beginning with British Columbia. The car is scheduled to be officially launched in 2010 in some markets, followed by Canada in 2011 and globally by 2012.
- Sales of hybrid vehicles decreased approximately 4% Y/Y, to 19,977 cars in September, and decreased approximately 48% Q/Q. The decline is largely attributable to the Cash for Clunkers program, which incentivized would-be buyers to speed-up their purchasing decisions.

Reason for Report:

Industry Update

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Sector Highlights:

- France announced a 14-point plan to accelerate the development and commercialization of electric vehicles and plug-in hybrids. The goal is for the production of two million electrified vehicles by 2020. Key points of the plan include an investment of €1.5 billion (approximately \$2.2 billion) to create an infrastructure of one million charging points by 2015 and a contribution of €125 million (approximately \$182 million) toward the building of a €625 million (approximately \$910 million) lithium-ion battery plant that will be owned by Renault. The plant's expected capacity is approximately 100,000 batteries per year. (Source: France's Ministry of Ecology, Energy, Sustainable Development and the Sea and Green Car Congress)
- Panasonic announced it has developed a 1.5 kWh battery module from 140 18650-type lithium-ion battery cells (laptop batteries). The cells use a nickel-based (LiNiO₂) for the cathode material. The battery module has a volume of approximately 7 L, weighs 8 kg, has a voltage of 25.2 V, and a capacity of 58 Ah. A prototype will be on display at CEATEC JAPAN 2009. (Source: Panasonic)

Exhibit 1: Panasonic Battery Module And Sub-Module



Source: Panasonic

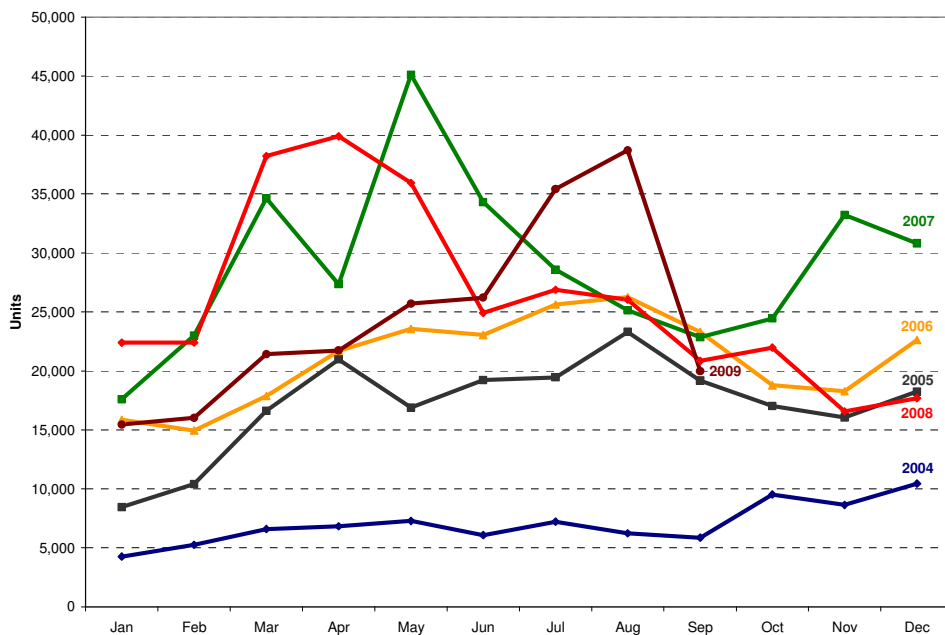


- A recent report by the Australian Federal Government predicted that Australia could become a world leader in the design and production of electric vehicles over the next decade. Additionally, the report predicted the adoption of electric cars would accelerate beginning in 2012. (Source: Australian Associated Press)
- Researchers in South Korea are working on an experimental alternative to powering vehicles. The researchers are designing a shuttle service at a Seoul amusement park where vehicles will be powered by magnetic induction from cables buried underground. Testing is expected to begin in November and open for public use in the spring of 2010. In May, the Korean government allocated \$21 million for the initial research on the project and is reviewing an \$83 million request that will help fund the test stage. (Source: Business Week)
- SK Energy is in the final stage of a lithium-ion supplement deal with Mitsubishi Motors. The deal is expected to be announced shortly, in which SK Energy would supply Mitsubishi Fuso Truck & Bus. An unidentified industry official projected that the initial volume will be for about 10,000 units out of FUSO's 140,000 trucks in total. SK Energy also mentioned it was in talks with several companies to supply its secondary batteries, which are used in hybrids and electric cars. SK Energy would be the third company after LG Chem and Samsung SDI to start producing lithium-ion batteries used in cars if the deal succeeds. (Source: The Korea Times)
- Nissan's Leaf electric car is scheduled to be launched in Canada in 2011, beginning with British Columbia. The car is scheduled to be officially launched in 2010 in some markets, followed by Canada in 2011 and globally by 2012. The all-electric vehicle is expected to reach over 85 miles per hour (or 140 kilometres per hour). Low-speed EVs that have speeds of about 25 MPH (or 40 KPH) were legalized in Vancouver last year and other British Columbia municipalities. (Source: CBC News)



- Sales of hybrid vehicles decreased approximately 4% Y/Y, to 19,977 cars in September, and decreased approximately 48% Q/Q (**Exhibit 2**). Hybrids comprised 2.7% of new vehicle sales' market share for September. The significant decline in auto sales is attributable to the Cash for Clunkers program, which incentivized consumers to speed-up their purchasing decisions. (Source: AutoData and Green Car Congress)

Exhibit 2: U.S. Monthly Hybrid Sales



Source: AutoData and Green Car Congress



Interview With Dan Squiller, CEO Of PowerGenix:

1. Please describe PowerGenix.

PowerGenix designs, manufactures, and markets Nickel-Zinc (NiZn) rechargeable batteries—a high-power, advanced-performance, and nontoxic battery chemistry. Pursuing a wide range of applications, PowerGenix is targeting existing nickel-cadmium and nickel metal-hydride batteries for replacement in the multi-billion-dollar battery market.

2. How do you see the demand evolving in the various end-markets in the long term for PowerGenix (i.e., consumer, automotive, etc.)?

Currently, PowerGenix is selling into a number of markets in both North America and Asia, including consumer AAs, power tools and lawn and garden, ebikes/scooters, and professional lighting.

Continued customer base growth and expansion into additional markets across these segments will support our development within the transportation market—including hybrid and electric vehicles. The high discharge capabilities and low cost per watt-hour of NiZn makes it the ideal candidate for electric vehicle products in cost-sensitive markets such as China.

We also forecast increasing regulatory pressures, such as the Reduction of Hazardous Substances (RoHS) in the EU, playing a large role in the replacement of toxic battery chemistries such as current industry workhorse nickel-cadmium. A market shift toward nontoxic and more sustainable battery solutions will also contribute to expanded opportunities for NiZn—reflected across industries in power tools, consumer electronics, and OEM applications.

3. How do you envision the company's roadmap evolving over the next three years?

The consumer AA product, in our mind, has the potential to eclipse NiMH and NiCd products in the market today, as well as begin to encroach on previously untouchable market share from consumer alkaline primary batteries. The consumer segment is such a killer application for NiZn, our product and performance differentiation is clear, and we're seeing sales respond accordingly. We also plan to add a consumer AAA product in 2010.

Along with growing revenue base from other market segments like power tools and ebikes, the next couple of years will build the foundation for company growth and expansion into larger-scale applications such as transportation and even grid storage.

4. Please highlight the challenges ahead.

While we have commercial products today, it's important to remember NiZn is still a relatively young rechargeable chemistry. There's plenty more we can do to optimize performance and cost, especially in larger pack applications. Also, as our volumes increase, the manufacturing and quality assurance challenges become more complex.

5. What is your view on lithium-ion technology?

One thing to remember about the energy storage industry is that no one chemistry or battery is a "silver bullet." The variations in applications, from grid storage to cell phones, require drastically varied performance capabilities and cost points. Lithium-ion has very strong advantages for lower rate applications where physical size and high energy density are priorities. However, its high cost per watt-hour prices it out of many markets, and inherent safety issues have already proven a concern for many industry segments, such as transportation.

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

PowerGenix's NiZn matches favorably across the broad spectrum of performance metrics, with strong advantage in applications favoring cost per watt-hour value, environmental and safety stipulations, and those requiring high power-density or high energy discharge.

(On the next page is a chart representing performance of the primary rechargeable battery technologies across five major performance categories.)



	NiZn	NiMH	NiCd	Li-ion
Power Delivery	1 st	2 nd	2 nd	3 rd
Run Time/Volume	2 nd	3 rd	4 th	1 st
Cost	2 nd	3 rd	1 st	4 th
Safety	1 st	2 nd	2 nd	3 rd
Toxicity/Recyclability	1 st	3 rd	4 th	2 nd

(Source: PowerGenix)

7. What is the company's go-to-market strategy?

PowerGenix's go-to-market strategy has been to build a strong revenue base from sales of consumer and power tool products, expanding into light electric vehicles such as electric scooters. Longer-term plans include development of products for vehicle and grid storage segments.

8. Many in the U.S. have indicated a preference for PHEV versus. all-electric, what are your thoughts?

The immature state of energy storage technology, specifically in the area of energy density puts the reality of mass appeal, acceptance, and adoption of a fully electric vehicle years away. Until such time, the HEV will continue to dominate the market with PHEVs becoming popular in the next few years.

In our view, the electrification of the automobile will come in many flavors, from partial hybrids through to the fully electric vehicle. The auto industry is still reaching new levels of efficiency with the internal combustion engine, and coupled with their investment and understanding of gas-powered vehicles, we see the market for hybrids continuing to blossom for many years to come—especially in cost-conscious markets such as China and India that are experiencing a boom in auto sales and vehicle penetration.

9. How big do you envision the electric vehicle (including autos, ebikes, etc.) market will be by 2015?

We estimate the battery market serving the electric vehicle segment to reach about \$10 billion by 2015.

10. How do you envision U.S. and European battery manufacturers effectively dealing with the low-cost PRC manufacturers?

This will be a huge challenge for U.S. manufacturers. The battery industry is not a high-margin business, and the inherently-complex and precise manufacturing processes for batteries require tremendous infrastructure investment. For the last 15-20 years, Japan and Korea have provided large R&D subsidies to their battery industries to develop core battery technology as well as advanced manufacturing technology. For this reason, Japan currently dominates the HEV battery landscape.

Even with ARRA manufacturing grants, it will be hard for U.S. battery companies to catch up and make the economics work following such large and sustained investments by their Asian rivals.

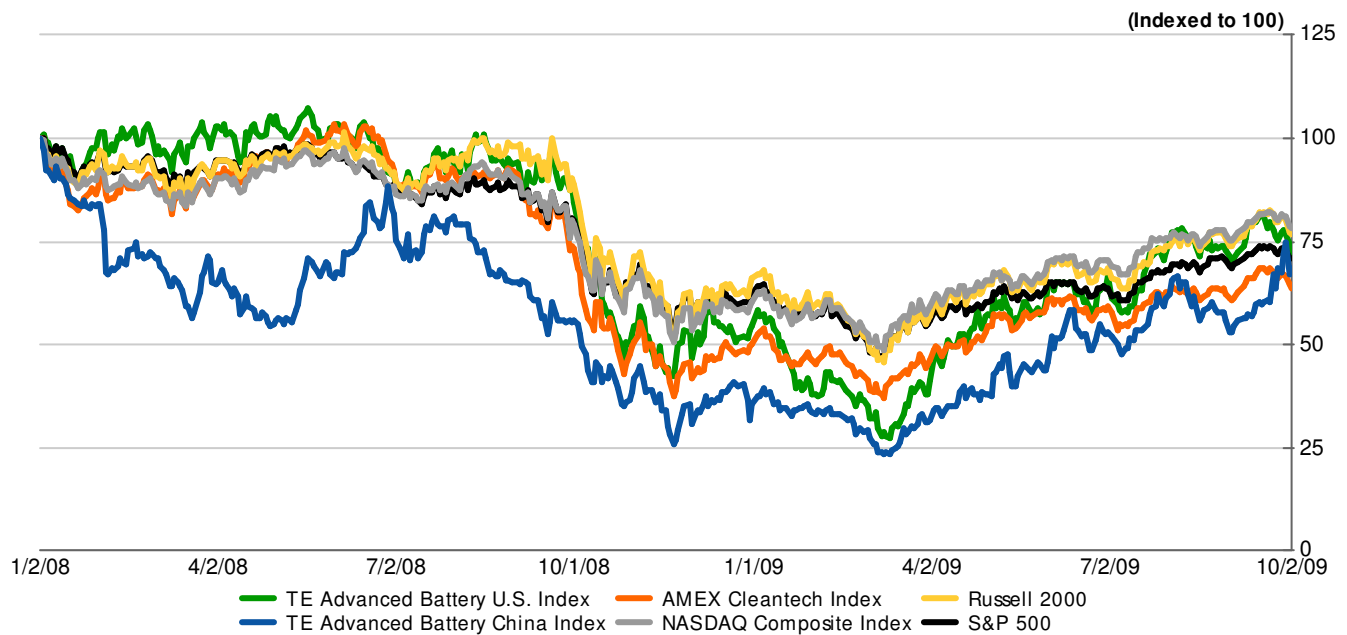
For this reason, PowerGenix has developed its technology for manufacturing on existing, and often excess, NiCd and NiMH manufacturing production lines. Through partnership with our contract manufacturer, Hunan Corun, PowerGenix is able to scale manufacturing volume in order to meet demand with very little capital investment. Ultimately, we're in the business of innovating new battery technology, not running factories.

11. Any final thoughts?

While a great deal of money has been invested into battery technology, NiZn is the first new chemistry to actually see market acceptance in over 20 years. Its attributes of high power density, safety, and low cost make it ideal for a broad range of applications from AA powered toys to HEVs. Ultimately, we believe NiZn will take the place of Ni-Cd and Ni-MH and compliment Li-ion in those applications where Li-ion does not have the right combination of performance, cost, and safety.



Exhibit 3: Indices Performance
(From January 2, 2008)



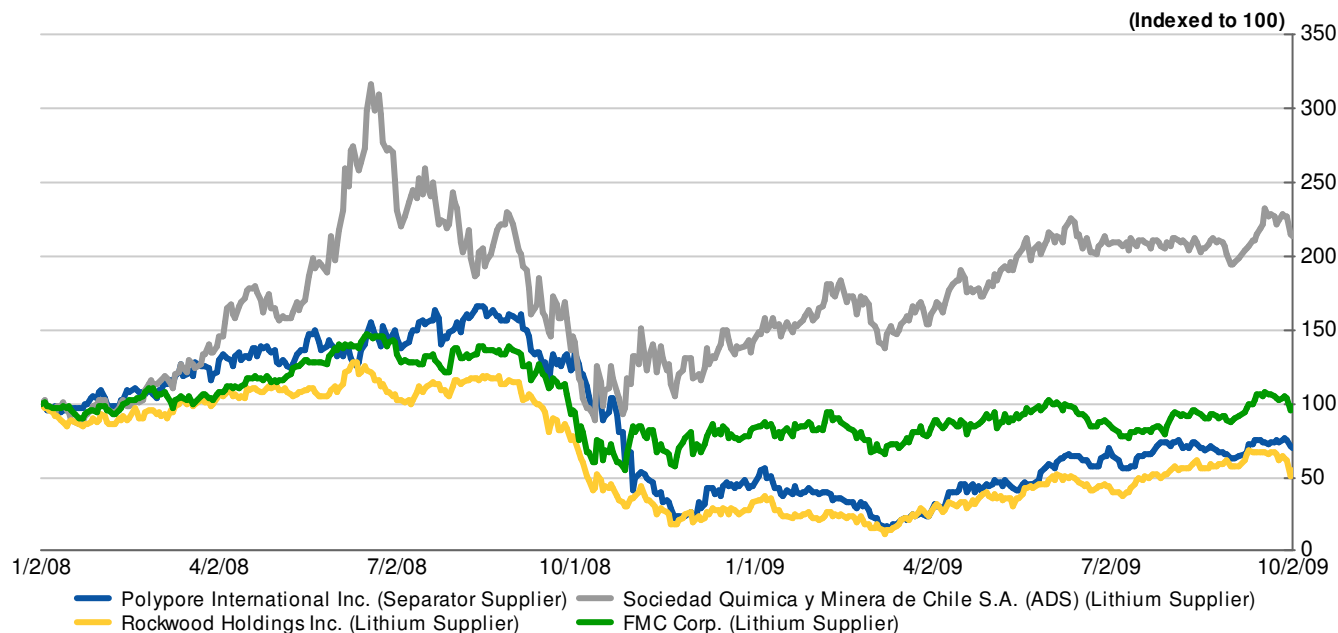
Index	Close on 10/2/2009	52-Wk High	% of 52-Wk High	Performance		
				LTM	YTD	Week
Dow	9,487.7	10,844.7	87.5%	(9.5%)	5.0%	(1.8%)
S&P 500	1,025.2	1,160.6	88.3%	(8.0%)	10.0%	(1.8%)
NASDAQ	2,048.1	2,167.7	94.5%	3.6%	25.5%	(2.0%)
Russell 2000	580.2	671.2	86.4%	(9.0%)	14.7%	(3.1%)
AMEX Cleantech Index	974.4	1,115.5	87.4%	(7.0%)	21.6%	(3.5%)
ThinkEquity Advanced Battery Indices						
U.S. Index	242.4	276.0	87.8%	(10.0%)	23.1%	(4.8%)
China Index	2.8	3.0	91.4%	24.6%	81.9%	(0.2%)

Source: FactSet Market Data as of October 2, 2009.

Note: The TE Advanced Battery U.S. Index is a market-value-weighted harmonic average and includes: ALTI, HEV, ENS, XIDE, JCI, MXWL, QTWW, ULBI, and VLNC. The TE Advanced Battery China Index is a market-value-weighted harmonic average and includes: ABAT, CBAK, CRTP, and HPJ.



Exhibit 4: Battery Supplier Performance
(From January 2, 2008)



Source: FactSet Market Data as of October 02, 2009

Exhibit 5: Commodity Prices

Commodity	Price on 9/25/2009	Price on 9/18/2009	Price on 8/26/2009	1 Week Change	1 Month Change
NYMEX Crude Oil (Continuous Contract)	\$66.02	\$72.04	\$71.43	(8.4%)	(7.6%)
NYMEX RBOB (Continuous Contract)	1.6360	1.8324	1.8468	(10.7%)	(11.4%)
LME Nickel (Spot)	17,025.0	17,305.0	19,500.0	(1.6%)	(12.7%)
LME Lead (Spot)	2,175.0	2,171.0	2,077.0	0.2%	4.7%

Source: FactSet, FT.com, and LME.com



COMPANIES MENTIONED IN THIS REPORT:

Company	Exchange	Symbol	Price	Rating
Altair Nanotechnologies Inc.	NASDAQ	ALTI	\$1.07	Sell
Ener1, Inc.	NASDAQ	HEV	\$7.01	Buy
Johnson Controls Inc.	NYSE	JCI	\$26.18	Buy

Important Research Disclosures

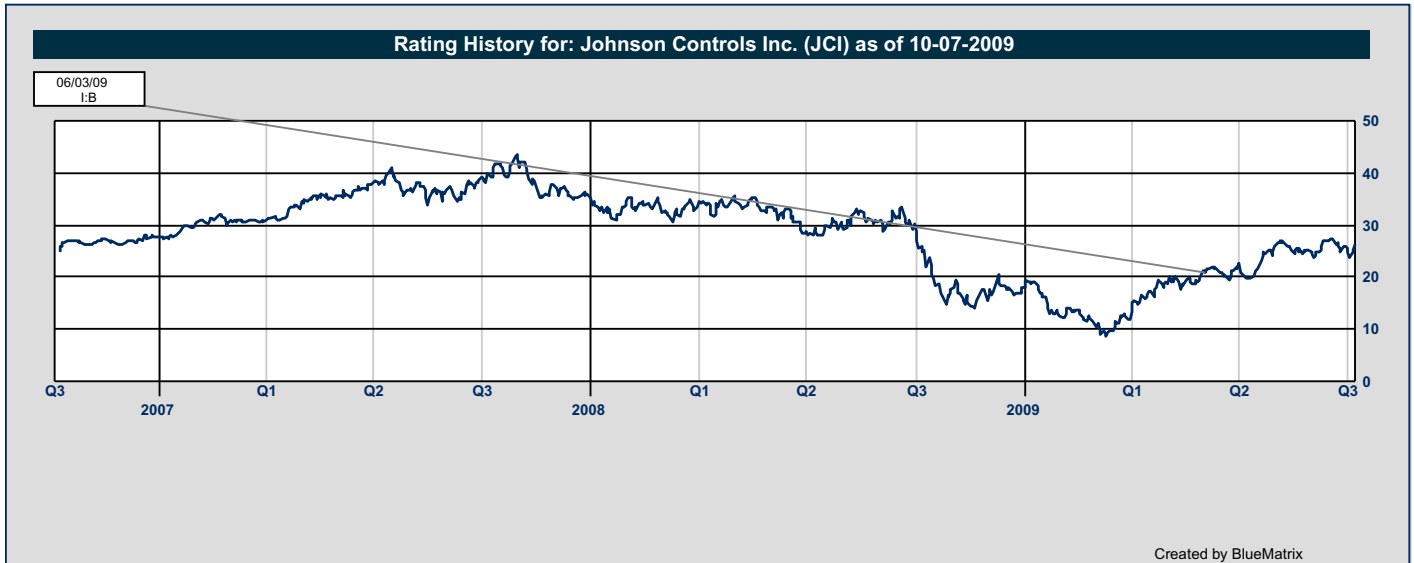
Analyst Certification

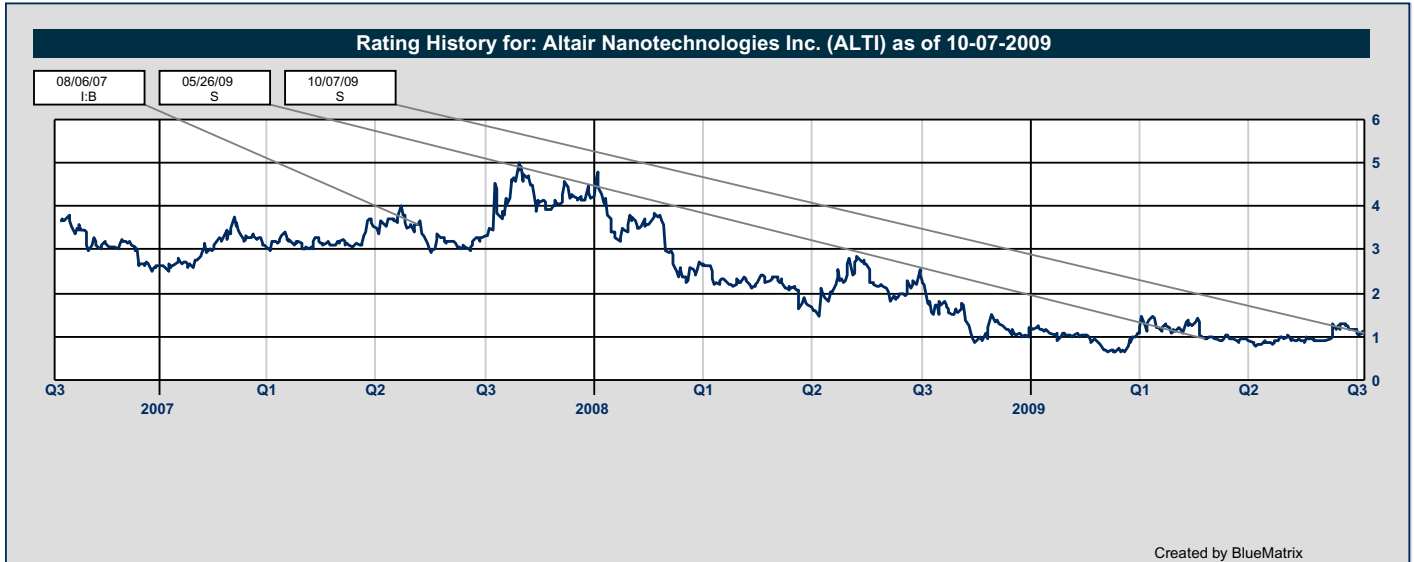
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Sell: ThinkEquity expects the stock to generate negative risk-adjusted returns of more than 10% during the next 12 months. ThinkEquity recommends decreasing exposure to the stock.

Distribution of Ratings, Firmwide				
ThinkEquity LLC				
Rating	Count	Percent	IB Serv./Past 12 Mos.	
			Count	Percent
BUY [B]	118	66.70	14	11.86
HOLD [H]	51	28.80	2	3.92
SELL [S]	8	4.60	0	0.00

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