



## 20 Cleantech Industry Movers and Shakers

Trendwatch

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**Feature** – There is no single day anymore on which you do not hear about green technologies, new efforts to reduce carbon footprints, enable more environmentally friendly energy and get rid of toxic materials. We went through our records and compiled a list of greentech companies worth watching. From biofuels to solar, from automotive to waste management and from nanotech to energy management.

### Biofuels and Agriculture

1. E3 Biofuels: Located in Mead, Nebraska, E3 Biofuels currently builds the world's first closed-loop ethanol plant. The plant is fueled mostly utilizing biogas from animal waste rather than natural gas or coal. The company claims that the plant's operation does not contribute to global warming and actually reduces both air and water pollution.
2. Mascoma: The Boston-based company is currently working to develop cellulosic ethanol technologies, using a variety of cellulosic feedstocks. With our current need for alternative fuel sources ethanol is generally being considered and utilized as an option due to its ability to provide a cleaner, locally produced energy solution that is also renewable. At this time, the United States' production of ethanol relies heavily on corn and other edible feed sources. Mascoma looks for alternative sources such as wood, fuel energy crops, paper pulp and other agricultural waste products. The firm recently received \$61 million in a third round of funding.
3. Range Fuels: Similar to Mascoma, Range Fuels converts biomass into fuel-grade ethanol. Source material includes plants, grasses, corn stalks, wood chips, among others. The company recently received \$100 million of funding and is building what it calls the world's first "commercial scale" cellulosic ethanol plant.
4. Chemrec: Chemrec, located in Stockholm, Sweden with plants in Pitea, Sweden and Weyerhaeuser, New Bern, North Carolina, helps pulp and paper mills in the process of increasing their cash flow by assisting them in becoming bio-refineries. The company says it has 20 years experience in black liquor gasification technology. Black liquor is a biomass feedstock that has unique properties. According to Chemrec, it is already available at many existing industrial sites in high quantities. Utilizing black liquor, gasification is viewed as a way for companies to reduce their carbon footprint.

### Automotive & Transportation

5. Myers Motors: Myers Motors was the only company in the United States producing and

delivering all-electric highway speed vehicles until Tesla rolled out its \$100,000 Roadster in March of this year. Utilizing a lithium battery system that lasts 45 miles before needing to be recharged, the Myers Motors \$25,000 vehicle has batteries that last as much as six times as long as lead-acid batteries pack. The vehicle only seats one; however it is capable of saving you money on both fuel and maintenance.

6. Tesla Motors: Tesla Motors is a Silicon Valley startup automobile manufacturer that focuses their efforts on battery-electric vehicles. The company launched its Lotus Elise-based Roadster earlier this year and is currently working on the Model S sedan, which should be on the market sometime in 2010 for about \$60,000. The company also said it is working on a \$25,000 car that could be available by 2015.

7. Zenn Motor Company: Canada-based Zenn Motor Company is the developer of the Zenn vehicle, which is a zero emission, no-noise, full featured electric automobile. The vehicle is built upon a traditional automotive chassis and is completely electric battery powered. The battery will allow drivers to travel around 35 miles per charge and the company offers an optional upgrade that allows for 50 miles of travel per charge. The 2-person car is said to achieve an equivalent of 254 MPG and starts at about \$16,000.

8. AC Propulsion: AC Propulsion is a San Dimas, California company that was founded in 1992 by Alan Cocconi. Cocconi had a vision for an efficient but powerful vehicle. He wanted a petroleum free, zero emission vehicle that was both simple and fun to drive. Currently AC Propulsion designs and engineers motors, inverters, chargers, battery systems, and complete vehicles. A Scion xB-based "eBox" vehicle with a range of 150 miles is priced at around \$73,000. The company also built two prototypes of an electric sports car, but says it currently has no plans of mass-production. While \$73,000 sounds expensive, the eBox has two more seats than the \$100,000 Tesla Roadster, better performance than the gas-engine-powered Scion xB and three times the range of the upcoming \$40,000 Chevy Volt.

9. Fisker Automotive: Fisker is on track releasing its fancy Karma hybrid sedan in 2010. While it is not entirely based on electric technology, the car will have a range of about 50 miles on one battery charge and switch to a gasoline-powered engine when no battery power is left or fast acceleration is required. The \$80,000 car will be available with solar panels and a solar-powered charging station for your garage: In an ideal case, you can recharge your car overnight in your garage without any cost of electricity.

### **Energy Management**

10. H2Gen Innovations: H2Gen Innovations is located in Alexandria Virginia. The company manufactures and markets "cost efficient" on-site hydrogen generators and gas purification plants. H2Gen Innovations claims to improve the hydrogen transportation industry - making it both cost effective and more environmentally friendly. The firm says that it will be able to produce hydrogen cheap enough so it can be sold for a gasoline-equivalent of \$2.50 per gallon by 2010. H2Gen recently sold two of its generators for use in Egypt. The cost was not released.

### **Energy Storage**

11. Cobasys: Cobasys is a company that provides companies with energy storage systems for the stationary and transportation market. Cobasys holds the patent for Nickel Metal Hydride (NiMH) storage systems. Because NiMH is the prime technology choice for the hybrid electric vehicles of today, Cobasys provides companies with storage systems that are capable of high energy, reliability and low maintenance among other qualities. The industry may be switching to lithium-ion-based battery systems, and Cobasys' future way may see some challenges, but for now it is a key player in the battery market.

## Nanotech & Materials

**12. Hycrete:** Concrete is a necessary material in construction. With growing demands and trends leaning toward sustainable development, Hycrete currently provides builders with sustainable building and construction solutions. The company offers sub-grade, grade, and super-grade water corrosion protection. Their technologies deliver water protection that eliminates the need for external membranes, coatings, and sheeting treatment. Hycrete concrete is said to be sustainable and environmentally sound.

13. Innovalight: Innovalight develops low-cost solar power modules based on silicon nanotechnology. The company said it uses a proprietary silicon-ink process to print its thin-film solar power modules, which should be cheap enough for virtually any consumer and industry application. The company received \$28 million in funding in 2007 and plans to be offering its products in 2009.

## Clean Energy

14. Coaltek: Coaltek works to produce "clean coal". Utilizing electromagnetic energy, Coaltek says it is able to reduce the moisture, ash, sulfur and mercury in coal to allow it to burn more cleanly and efficiently. Coal processed by Coaltek 's technology allows power generators to optimize energy, thus maximizing their yields, the company claims.

15. Ausra: Ausra develops and operates utility-scale solar technologies. Ausra claims its technology is proven, simply manufactured and installed and also scalable to high volume. Ausra's power plants utilize steam turbines powered by the sun for their electricity needs. Their solar concentrators boil water with focused sunlight, thus generating high pressure steam which then drives conventional turbine generators.

16. Helio Volt: Helio Volt has developed FASST, a customized photovoltaic product. Using thin-film photovoltaics that integrate Copper Indium Gallium Selenide, the company said is capable of generating solar electricity for much lower cost and possible today. The efficiency of these thin-film cells is 12% and is much lower than what can be achieved with traditional solar cell technologies, which are at about 18-22%. However, thin-film cells can be produced at a fraction of the cost of regular solar cells.

17. Silicon Valley Solar: Located in Sunnyvale, California Silicon Valley Solar builds flat-plate, internal concentrator solar modules, which can cut the need for solar cells in solar power plants in half. The company is currently developing a 2 MW pilot production line online for their low concentration photovoltaic modules (LCPV) and promise to be soon delivering its test modules to important customers.

18. Stion: Stion, founded in 2006, is a solar photovoltaics company that is working to develop more expensive, but higher-efficiency thin film solar modules, reducing the overall cost of massive solar cell installations. Stion recently received \$15 million in Series B funding.

## Water

19. Aqua Sciences: Aqua Sciences, headquartered in Florida, is developing water technologies such as proprietary atmospheric water capture and filtration systems. Aqua Sciences claims it can make refrigerant dehumidification based systems obsolete by extracting water from the atmosphere from anywhere that human beings live.

## **Waste Management**

20. iReuse: iReuse connects you to potential buyers and non-profits that may be interested in purchasing your furniture and other unwanted materials. The company says it currently has about 2200 buyers interested in home and office furniture, computers and electronics, equipment and supplies. It is a small effort at this time, but the greenest way to get rid of old materials is not to dump them into the environment.