EEVC NEWSLETTER

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Now affiliated with EAA

ONE GALLON CHALLENGE WOWS BOSTON

Moonbeam, built in 2006 and winner of the One Gallon Challenge, at home in Camden, MA (photo: Jory Squibb)

One August 20 a group of alternate vehicle enthusiasts gathered in Greenfield, MA for a chance to try their rides on a trip to Boston, with the objective being to use as little fuel as possible. The affair was organized by Jory Squibb, who was also one of the entrants (with two vehicles).

The idea was to see who could make the 100 mile trip to Boston on just one gallon (or gallon equivalent) of fuel.

The event, co-sponsored by Greening-Greenfield.org, began in Greenfield, MA on August 19 and ended up in Boston on August 21-22.

Dripping with sweat, Jory Squibb drove his gas-powered three-wheel Moonbeam across the finish line demonstrating 93 MPGe for a cost of only 2.7 cents per mile for fuel. Built as a grocery-getter, it had never been driven far from its hometown of Camden, ME, but finished the race without incident, running its heater to cool its engine, but fry its driver, in the 90 degree heat.

Dirigo — a sleek diesel 3 wheeler — clocked in at 88 MPGe with a running cost of 2.9 cents per mile--showed the importance of good aerodynamics. This car had no backup, but was driven 550 miles on its own tires.

Ricker Truck, also 900 cc diesel-powered, clocked in at 70 MPGe and showed the advantages of using laminated foam construction for safety and light weight. This car was

The Dirigo heads over the bridge between Cambridge and Boston.

finished only hours before the race, yet apart from overheating problems, made Boston in fine form.

A wood-gas powered truck from 21st Century Motor Works breezed in at 27.7 MPGe

The wood-powered truck

and an amazing 1.7 cents per mile travel cost, showing the viability of using a local, carbon-sequestering fuel source: ordinary cord wood.

David demonstrated that we can fine-tune an old technology to gasify wood and use it in new ways so that we can use a local, carbon-sequestering fuel source: ordinary wood, leaves or grasses. It's worth noting that a good many vehicles in Europe were converted to run on wood during WWII. They were smoky and inefficient, but they provided transport when no petrol was available.

MIT's electric vehicle team from Cambridge, MA drove their electric Porsche with amazing 164 MPGe plug-to-wheels efficiency. But we know this is only half of the story since the loss of efficiency is when fuel is burned. For a gas car, that is in the vehicle. But for an electric car, that is at the power plant. Looked at from a wells-to-wheels perspective, with today's mix of fossil-fuel-powered electric plants, that would translate to 75 MPGe (wells-to-wheels), which is still very respectable! In the future, as our electricity increasingly comes from wind and solar, this technology may surpass all others.

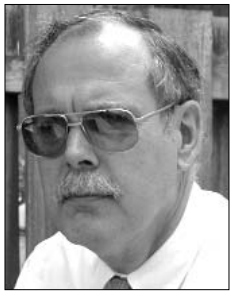
Many spectators, familiar with electric vehicles using lead-acid batteries that can drive only 50 miles on a charge, were awed as these students drove their Porsche, which had 18 automotive-sized lithium-ion batteries donated by Valence Technology, the 100 miles from Cambridge to the starting line in Greenfield on a single charge. They then charged up at the Ford dealership, and merrily drove the race route back to Boston. Without a doubt, the miracle battery we all dreamed of for decades has arrived.

Roo Trimble and Susan Hanna in the Roopod

The Roopod, poster-child of the event, was not completed in time for the race, but was on display both in Greenfield and in Boston. This ultra sleek and light, 14 hp diesel-powered wonder built by Roo Trimble from Shutesbury, MA, will be a car to be reckoned with next year.

"It is great to see that Yankee Ingenuity is alive and well," said Nancy Hazard, former director of the Tour de Sol and now co-chair of the Greening Greenfield Energy Committee, host of the event in Greenfield. "With reports from scientists around the world that climate change is happening faster than they thought, the need for ultra-efficient vehicles that do not emit carbon dioxide, the major cause of climate change, is more urgent than ever."

MORE HOT TIMES
By California Pete



Fire season has come early again this year, highlighted by the spectacular Station fire (named that because it began near a Ranger station). As I write this the fire has burned more than 157,000 acres and 78 homes in 13 days, and is just 56 percent contained. And the latest reports are that it was arson. The authorities have opened a homicide investigation because two firefighters were killed.

The photo shows the top of the smoke column as seen from the Culver City area, quite a few miles from the fire. Most of the time we were there the cloud was concealed by a layer of smoke, but on August 31 it stood out clearly against the sky.

Evening out alternate energy

One of the drawbacks of wind and solar power is they're not always available. The sun goes down at night and, as the Bible says, "the wind bloweth where it listeth." What's needed is a good way to store the energy when it's available and release it as needed. Well, PG&E is taking steps to do just that. According to the *San Francisco Chronicle*, The company recently applied for a $25 million federal grant to pay for designing a facility in rural Kern County that would store wind and solar energy by compressing air and pumping it into deep formations of porous rock. The air would later be fed into a turbine to generate electricity on demand.

Since the wind in that area blows hardest at night, it dovetails nicely with solar. The total project is expected to cost upwards of $300 million and to be able to provide up to 300 MW for up to 10 hours.

Another California power company is exploring storage technologies as well; a Reuters story by Poornima Gupta dated August 26 reports that Southern California Edison "is seeking a U.S. grant to store wind power in the largest-ever grid storage battery, to be built by A123 Systems. The utility ... wants $65 million in grants from the U.S. Department of Energy for the pilot storage project and for another project involving integration of home energy management systems into the electric grid."

More manufacturing in the Bay Area?

Things have not been looking good for manufacturing the Bay Area recently. We reported in July that General Motors was pulling out of the NUMMI joint venture with Toyota. Now Toyota has announced that it will close the plant in March, with the loss of 4700 jobs at the plant in Fremont plus perhaps 18,800 additional jobs at 1100 supplier companies. Some estimate that total job losses could reach 50,000.

Yet a few positive things are happening. An AP story by Kevin Freking reports that solar panel maker Solyndra Inc. will receive a $535 million federal loan guarantee to build a new plant in Fremont, creating 3000 construction jobs and 1000 long-term jobs. Not as many as lost at NUMMI by any means, but it's a start.

In addition, Tesla Motors announced on August 18 that it will open a manufacturing plant in a renovated facility in Palo Alto. The facility will build electric powertrains for Tesla's vehicles and other automakers, and will also house the company's corporate headquarters.

The facility will employ some 350 people with space for up to 650. Financing will come from $465 million in low-interest loans from the Department of Energy. The company also announced that it is in negotiations for a plant to produce the Model S elsewhere in California. Tesla has delivered about 700 Roadsters and become profitable in July.

NEWS FROM DELAWARE

Alan Arrison, Dan Monroe and Ken Bar-

bour recently went to an event at the University of Delaware where they met Chris Payne, the director of Who Killed the Electric Car. Ken Barbour, who has the lease of a mini Cooper BMW electric, actually got to take Chris Payne for a ride in his car. Dan reports as follows:

"Last Sunday's Sustainable Energy from Solar Hydrogen conference was fun. Oddly enough for a conference on hydrogen transportation, there were no hydrogen-powered vehicles. Three EVs were on hand, however, and the pics can be seen here:

www.flickr.com/photos/rosathorns/sets/72157621997048238/detail/

"The speech given by Chris Paine was excellent. He gave twenty-six reasons why EVs are back and here to stay, very thoughtful and at times funny.

"Afterwards Ken Barbour offered Chris a test drive in the Mini E which Chris accepted. He liked it so much he took two turns around the campus. Talking with Ken later Chris reassured him that so many people were keeping an eye on the Mini E program that he thought that BMW would end up selling them to the owners instead of crushing them at the end of the lease."

POSTAL SERVICE LOOKING AT EVS

Michael J. Ravnitzky, Chief Counsel to the Chairman, Postal Regulatory Commission, has informed us of a recent report entitled *Electrification of Delivery Vehicles*. The 23-page document discusses the available technologies and concludes that "Our evaluation determined that broad use of EVs in the Postal Service delivery fleet would be operationally feasible. Current EV technology would work well with the average mail delivery driving distance of approximately 18 miles per day. Previous delivery operations tests under favorable environmental conditions within California have shown that the EV performance levels were adequate for mail delivery ranges of up to 40 miles a day and battery technology has advanced considerably since then resulting in significantly increased driving distance ranges. Only about 3 percent of the delivery fleet has driving distances that exceed that daily distance."

The full report is available at www.uspsoig.gov/FOIA_files/DA-WP-09-001.pdf

Long-time EEVC members will recall that about 20 or so years ago the head of the Postal Service's EV fleet was a member of our organization; it looks like the pendulum is swinging back our way.

NEWS UPDATE

Honda plans to sell EV in U.S.

The Nikkei financial newspaper recently reported that Honda is building an all-electric prototype to be unveiled at the Tokyo Motor Show in October, and would begin sales of EVs in the United States in the first half of the decade.

Peugeot, Mitsubishi plan EV

A recent AP story reports that PSA Peugeot Citroen and Mitsubishi Motors "have agreed to launch an electric car in Europe by the end of 2010." The car, to based on the Mitsubishi i-MieV, is to be built in Japan. Plans call for a range of 130 km (81 mi).

Good report on grid-scale energy storage

Greentech Innovations recently released a market study entitled *Grid Scale Energy Storage: Technologies and Forecasts Through 2015*. The report points out that "The development of distributed grid scale energy storage technology offers great potential to improve the architecture and operation of the electrical grid. A number of interrelated factors are driving the adoption of distributed grid scale energy storage including:

- Development of renewable and/or distributed energy sources. For instance, wind power requires approximately 3 MW to 5 MW of additional frequency regulation electric ancillary service for every 100 MW wind power installed and would also benefit from load shifting energy storage.
- Utilities' desire for more efficient use of generation, transmission and distribution assets
- Public's desire for carbon reduction and more efficient use of fuel resources
- Increasing power quality/reliability requirements from end users

The report looks at the available technologies — compressed air, pumped hydro, various types of batteries, ultracapacitors and superconducting magnetic — and ranks them

by discharge time at rated power versus system rated power. It identified a number of applications that create value on the grid, including power-oriented ("fast") and energy-oriented (load shifting or LS) options for utilities/grid operators, end-users and renewable power. Each applications creates a benefit stream of cash and non-cash benefits, and the report points out that any installation built must accomlish more than one application in order to achieve a significant payback.

The report also offers predictions on the growth of grid-scale energy storage through 2015.

The report is available for purchase at www.gtmresearch.com/report/grid-scale-energy-storage-technologies-and-forecasts-through-2015.

Ford cars to talk to power grid

An August 18 Ford announced that it has developed an intelligent vehicle-to-grid communications and control system for its plug-in hybrid electric vehicles that "talks" directly with the nation's electric grid. The technology — which builds on Ford's advancements such as SYNC, SmartGauge with EcoGuide and Ford Work Solutions — allows the vehicle operator to program when to recharge the vehicle, for how long and at what utility rate.

All 21 of Ford's fleet of plug-in hybrid Escapes eventually will be equipped with the vehicle-to-grid communications technology. The first of the specially equipped plug-in hybrids has been delivered to American Electric Power of Columbus, Ohio. Ford's other utility partners' vehicles will also be equipped with the communications technology.

When plugged in, the battery systems of the vehicles can communicate directly with the grid via smart meters provided by utility companies through wireless networking.

A politically incorrect car

For those feeling nostalgic about the cold war, or who just like unusual vehicles, eBay has had several listings recently for Trabants. Powered by a smoky 2-cylinder, 2-cycle engine and boasting a plastic-reinforced fiberboard body, the Trabi was East Germany's answer to the VW. They're slow, smelly and probably not very safe, but nobody on your block has one.

Would an electric one be OK?

Maybe there's more hope for the Trabi than eBay sales. A recent Reuters story by Caroline Copley reports that Herpa Miniaturemodelle, a model car maker that bought rights to the name two years ago and has had good success selling a 1:10 scale model, has teamed up with specialist carmaker IndiKar and plans to bring out a full-sized electric concept version of the Trabi called the Trabant nT and to show it at this month's International Motor Show in Frankfurt.

Germany trying to catch up in EVs

Despite the silliness of an electric Trabant, Germany does seem to be getting serious about EVs. An August 20 AP story by Geir Moulson and Matt Moore reports that the German government recently approved a plan to put a million EVs on the road by 2020. To accomplish its goal, the story continues, "the government plans to spend some euro500 million ($705 million) on the plan over the next three years — including euro115 million ($164 million) to establish eight test regions examining how the cars could best be introduced.

"It plans to put euro170 million ($242 million) into battery research, making domestic production a priority and ensuring that German experts are trained in the technology."

On the other hand, it appears that not everybody in Germany is behind this idea. *Autoblog Green* recently reported that Johan de Nysschen, president of Audi of America, told an automotive journalist that "the Volt is 'a car for idiots.' Adding that they're too expensive and, 'No one is going to pay a $15,000 premium for a car that competes with a (Toyota) Corolla. So there are not enough idiots who will buy it.' He predicted that the Volt will fall flat, which will cause the federal government to step in and subsidize the Volt in order to save face and boost sales.

"Pure electric vehicles, he feels, are "for the intellectual elite who want to show what enlightened souls they are." So there.

Solar cells to be printed like newspaper

University of Texas at Austin researcher Brian Korgel is hoping to cut manufacturing costs for solar cells to one-tenth of their current level by replacing the standard manufac-

turing process for solar cells — gas-phase deposition in a vacuum chamber, which requires high temperatures and is relatively expensive — with a process using inks containing nanoparticles of copper indium gallium selenide.

The inks could be printed on a roll-to-roll printing process on a plastic substrate or stainless steel, and it might be possible to paint them onto a rooftop or building.

Conversion efficiency is currently at about 1%, however, and must be increased to 10% for the process to be viable.

FutureGen lives

A September 2 AP story by David Mercer reports that the FutureGen project to produce electricity from coal without emitting any carbon dioxide, a project that seemed to have lost industry support, may be revived. The nine companies still involved (most of them coal companies) have, the story says, "reached an agreement with the Department of Energy to continue developing the project, one that calls for a push to cut costs and double the number of partner firms to help share those expenses."

Not to rain on their parade, by it seems to us that the only good that can come out of this is a few jobs supported by heavy government subsidies.

Problems ahead getting raw materials?

China, according to an AP story by Joe McDonald, "plans to curb exports of rare earths, exotic metals used in computers and clean-energy products and of which China is the only major supplier, according to Chinese news reports." This dovetails nicely with the fact that the world's biggest deposits of lithium are in Bolivia, whose government is unfriendly to the U.S.

COMING EVENTS

Energy Conversion Congress and Expo
September 20-24, 2009. San Jose, CA. Go to www.ecce2009.org/

The Future of Personal Mobility: Advanced Technology on the Horizon, one of the CAR Breakfast Briefing Series
Sept 29, Ypsilanti, MI. For information go to http://guest.cvent.com/i.aspx?1Q,P1,7B1C0D84-27E1-4872-95F3-0AE81BA87686

AltWheels Fleet Day 2009
October 5, Framingham, MA. For information contact Alison Sander, 617-868-1582 or go to www.altwheels.org

eCarTech 2009 1st International Fair for Electric Mobility
October 13-15, Munich. For info go to www.ecartec.eu/index.html

The Business of Plugging In
October 19-21, Detroit. For info go to www.pev2009.com or or contact Center for Automotive Research, 734-662-1287, CAR_EVENTS@cargroup.org

Battery Power 2009
October 20-21, Denver, CO. For information go to www.batterypoweronline.com/bpptconf09/bp09_index.php

MEETING SCHEDULE

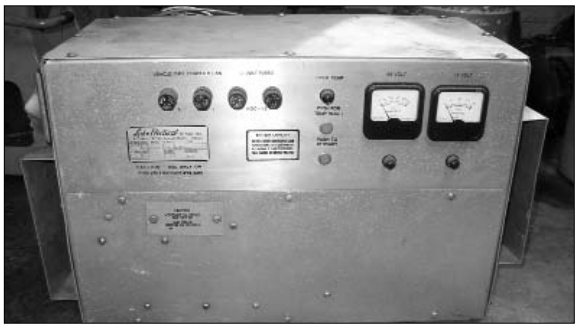
Meetings are held in Room 49, Plymouth-Whitemarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m. As in previous years, there will be no July or August meetings.

October 14

November 11

December 9

*** FOR SALE ***



Lester Electrical 12/96 volt Battery Charger, 208/230 volt input, 96 volt 30 amp output, used by Jet Industries in converted trucks. $50.00

Contact Edward F. Kreibick, 215-396-8341, ekreibick@verizon.net