

EEVC NEWSLETTER

Published by the Eastern Electric Vehicle Club

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EEVC AT THE PA ENERGY FESTIVAL Philip Jones

Vehicles from the EEVC were featured at the Pennsylvania Renewable Energy & Sustainable Living Festival in Kempton, PA September 21-23, 2007. For the first time this year, the Energy Festival presented a Transportation Tent to feature alternate transportation solutions. Building on the theme of the 21st Century Automotive Challenge that like the early 1900s, we are again in an era where multiple vehicle motive power solutions are becoming viable and vying for a share of the powered vehicle market, albeit a very small percentage at this point. The festival included not only an eclectic set of 26 vehicles on display and in limited operation, but also presentations and forums about different technologies.

EEVC and the festival sponsor, the Mid Atlantic Renewable Energy Association (MAREA), have partnered in support of both the 21st Century Automotive Challenge and the Energy Festival. MAREA provided support to assist the 21st CAC and now the EEVC supported the festival's presentation of electric, hybrid and biodiesel vehicle technologies.

From the EEVC, Al Arrison brought his converted Volkswagen pickup and Paul Kydd brought his plug-in hybrid Chevrolet S10 pickup. BCIT brought its Olympian.

(Converted 1986 Ford Escort). Jenny Isaacs from EEVC and Bucks County Renewables brought her 1991 converted electric (but never run on gas) Dodge Colt. She had hoped to bring the Volkswagen Vanagon converted this summer at a workshop for vocational teachers in Southeastern Pennsylvania, but it suffered a defective motor after about 100 hours of operation. Don Young brought his historic 1968 Mars electric car and his mid-1960s GE electric lawn tractor. Jenny Isaacs, Al Arrison, Oliver Perry and Paul Kydd spoke about their conversions in a panel presentation Sunday afternoon at the festival.

In addition to the converted electrics, Ken Wells, Executive Director of the Boyertown Museum of Historical Vehicles, brought the museum's 1919 Detroit Electric coupe and electric scooter. To help establish the electric vehicle context, Ken presented a lecture, "Electric Vehicles - The Old is New Again" on Saturday afternoon.

On the hybrid front, Meghan Ochs brought a unique plug-in hybrid diesel-electric school bus that is currently in use in the Nazareth school district in Nazareth, PA. It was the first hybrid-electric school bus manufactured in the United States and is now one of only eight in service around the coun-

try, the only one in Pennsylvania. It uses a slightly smaller diesel engine with an in-line motor powered by Lithium Ion batteries. The hybrid functions in both serial and parallel modes and increases the mileage by 50%. A planned retrofit should increase the mileage even more. She gave a talk about the school bus technology after Ken's electric vehicle lecture.

Joel Anstrom, Director of Penn State's Hybrid Hydrogen Research Program, brought the school's GM EV1 that they have converted to a hybrid fuel cell-electric vehicle. He presented a talk to over 65 people on "Hydrogen and Electricity as Alternate Fuels for Vehicles." His talk was followed by Don Bucci from Air Products who presented "Hydrogen Goes Green" to share Air Products' activity and vision for supporting wide-scale hydrogen fuel use. Don included some fascinating demonstrations of various gases in action to power fuel cells and levitate a ball using magnetic repulsion strengthened by super-cooling. To add another dimension to the fuel cell front, Toyota brought their Highlander fuel cell field test vehicle, one of a very few in the country, for visitors to see.

Later in the day, a Toyota Hybrid Technical Trainer talked in depth about how the Toyota hybrid synergy drive works. Sunday morning he also provided a more detailed workshop with lots of demonstration equipment. Later on Sunday, the Hobbit talked about optimizing Prius mileage and about his extensively and independently researched technical details of how Prius vehicles work. An audience of at least 25 Prius owners, which included a couple of hybrid tourers from Massachusetts, Jesse Rudavsky, who visited the EEVC last meeting and has driven over 322,000 miles on all original batteries, transmission, engine and motor, and Denise, who drives the new Prius, were amazed at the plethora of information they received from Toyota and Hobbit.

On the bio-fuels front, there were lectures, panels and workshops for all levels of interest and experience, beginning with an introductory presentation at 9:30 on Saturday by Matt Steiman from Dickinson College. Meghan Murphy, President of the Ithaca Biodiesel Coop, talked about running her waste vegetable oil VW Golf and her experience orga-

nizing and operating a biofuel coop. Glen Cauffman from Penn State talked about his program with New Holland to run the fleet of tractors in the ag school on biodiesel. John Bailey and Mike Hechinger gave demonstrations of the different phases of producing biodiesel at the home and cooperative level. John brought his Mercedes biodiesel car as a demonstration. In two one-day workshops, a farm tractor and a car were converted to run on waste vegetable oil by Fossil Free Fuels out of Pittsburgh.

On Saturday afternoon there was an interesting panel presentation on the future of transportation. Ken Wells, Joel Anstrom and the former *Morning Call* (Allentown) and current *Virginian Pilot* automotive editor, Larry Printz, each lent his perspective to this topic. Ken spoke about how many of these "new" vehicle concepts, such as the hybrid gas-electric have been around a long time, dating back to 1899 and further developed by automotive innovators such as Ferdinand Porsche who built and raced his. He spoke about opportunities in traffic management, such as one sees with synchronizing traffic lights, as an opportunity for significant fuel economy. Joel Anstrom spoke about enabling technologies, such as electrical control and computers, and the greater understanding of chemistry and electronics which might finally help to overcome our most significant technology lag, practical long-range batteries. The winning technologies, he pointed out will, however, be driven by public values and taste. Larry Printz focused on the economics and tradeoffs that drive buyer decisions, citing the recent success story of the Prius, where a small premium was accepted in return for its environmental value. He highlighted the advances in subsystems in recent years, such as electric steering, that will enable coming technologies. He highlighted the accepted understanding of the typical driver driving only 40 miles per day and how the near-future GM Volt plug-in hybrid will satisfy just that criterion with the backup ability to run on gas if that mileage is exceeded. He also spoke about the fuel cell longer term future where automobiles may become part of our electric grid, supporting peak load requirements while parked during the day with excess fuel while getting drawing on the

grid at night.

The festival included many other topics besides transportation. There were over 100 lectures and workshops over the two-day festival. Topics included solar electric, wind and micro-hydro renewable energy sources; solar hot water generation, sustainable agriculture; land-use policies; and green building. There was music each evening and throughout each day, of particular note was an amazing presentation by Japanese traditional Taiko drummers. The festival featured a wide range of progressive food vendors and renewable energy and sustainable living exhibitors. A brand new 2007 Toyota Prius was auctioned at the close of the festival.

**POPULAR MECHANICS:
“PLUG IN CARS — COULD THEY
SOLVE THE FUEL CRUNCH?”**

Oliver Perry

Last summer I stopped by EEVC club member Wayne Knight's optometrist shop in Medford, New Jersey to get a pair of glasses for my granddaughter. Wayne was excited about an article he recently read in the May 07 *Popular Mechanics* on plug-hybrids and electric cars.

The cover story, written by Ben Hewitt, begins with the following statement. “The future of American motoring can be found in any hardware store. It is not in the automotive section but over in the tools aisle.” The solution to pollution and use of foreign fossil fuel lies within the more powerful cordless drill. It is the lithium-ion battery pack. Its boosters say the energy dense power pack is getting ready to expand from power tools to automobiles. A company by the name of A123 Systems, which the article claims is the sole provider of Black & Decker tools, is gearing up to power GM's new Chevrolet concept car, the Volt. Ric Fulop, VP of A123 Systems, believes that the lithium-ion battery system we will revolutionize the roads faster than people think.

Popular Mechanics goes on to briefly cover the numerous hybrid cars that various companies are working on, as well as hyping the GM Volt. The writer quotes GM VP Bob Lutz as acknowledging that the battery is a major problem to be overcome but now he

thinks it can really be done. (A recently televised CBS Sunday Morning electric car feature indicated that GM is indeed closely monitoring the battery development aspect of the Volt program and putting pressure on the researchers to produce the battery they feel will finally “fit the bill.”)

One of the aspects which the experts (even our own EV enthusiasts) stress is that durability is a major concern. Durability and safety take TIME to develop. Someone recently pointed out that the Prius didn't suddenly go from a drawing to the highway. Right now A123 claims that they have a top quality lithium-ion CELL available that will last 10 years and provide 7000 charge cycles. But a single cell cannot power a car. What works in a lap-top computer or drill will do little in an automobile. A123 has to develop an efficient, effective, and safe way to connect 200 of these cells together to make a battery pack suitable for a car. (I am not sure how big the car is.) Ric Fulop, VP of A123 Systems, claims that adding these individual cells together into one suitable package requires challenges in terms of overall weight, size, and cycle life. He said at the writing of the article he was unclear as to how long their projected battery would last. It can take years before all of the complicated bugs are worked out sufficient to satisfy a very demanding public. Americans are getting used to turning the key and driving a lot of miles before we have to return to the repair shop. The *Wall Street Journal* claims that customers are now complaining that Hertz rentals are no longer up to standards they used to be. They expect all rentals to be like a new car. They will holler like mad if their batteries fail them on a dark rainy night.

Over-all you will find the May 07 *Popular Mechanics* article worth reading if you want a review of the latest hype in hybrid and electric cars from the automotive companies.

Toyota Pushes Hybrids

We (the 21st Century Automotive Challenge) were not a big enough draw for the Toyota “Highway to the Future Tour.” I was contacted last spring by Toyota regarding the possibility of their road show attending our event. For a week I held my breath. Our web page was inadequate; the Tour de Sol

was too much in the past, and the Burlington County Earth Fair's predicted attendance perhaps too limited. And, I was an inexperienced fisherman.

I lost Toyota. We didn't get to have the huge tractor trailer moving exhibit come to Burlington County. But, there may have been another good reason that we were passed up by the company managers as a suitable stopping site. Toyota's sales of the Prius are good on both US coasts. It is lower in the mid-section.

The October 3rd issue of the *Wall Street Journal* had an article featuring the interactive Toyota display. "With a 53-foot aqua-blue trailer filled with exhibits on energy consumption and fossil fuels, Toyota is making 150 stops at many venues where pickups, SUVs, and cars sporting Detroit brands have reigned. It is making stops in places like Des Moines, Iowa, Livingston, Mont. And Chattanooga, Tenn. "We have won over a certain group of people but we needed to talk to more and get the information out there," said Celeste Migliore, Toyota's national manager of advanced technology vehicles. "With this tour we are reaching people we have never reached before."

Toyota has made it a habit to stop at NASCAR events around the country including the Indianapolis Speedway. There the fans are asked to step into the trailer and interact with all sorts of environmental exhibits that show how alternative energy can help make the earth a greener place. The *WSJ* article said that the more stations within the trailer that a visitor stopped at the more points they acquired toward getting a prize of a regenerative flashlight. Mrs. Bill Coudriet, who works for a utility company, discovered that her personal carbon footprint was 45,000 pounds of carbon per year, well over the average two-person household. She may have pondered the significance of that number while a loud speaker blared that we American spend \$800 million dollars a day on imported gas!

Toyota is on its way to surpassing its goal of selling 150,000 Priuses this year. Is there any wonder why?

Fuel Economy Trends

Wall Street Journal, Oct 2, 07. Joseph

White writes, "We really are a bigger is better nation." Compared to 1987 the average weight of the vehicles we drive has risen by 923 pounds. The average time it takes a vehicle to go from zero to 60 mph has dropped 9.6 seconds! Since 1997, only one major automotive company has increased its overall average fuel economy: Toyota Motor Corp, and they not by much.

White writes, "If 2007 cars were as light on the average as the cars in 1987 their fuel efficiency ratings would be 35% better. "We are in love with speed, size, and power." "Our cars give us away."

He concludes his article (which had facts taken from Light Duty Automotive Technology and Fuel Economy Trends 1995-2007,) "If you want people to change their behavior, you have to make it worth their while, or knock them on the head, or both. Preaching alone will not do it."

EV PROJECT CAR/COMPONENTS AVAILABLE

David Russel writes as follows:

Hi,

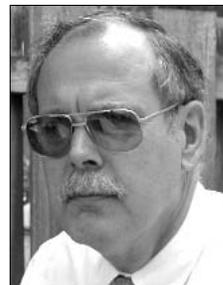
I have come to realize that I am never going to be willing to pony up the money required to put my EV back on the road with new batteries. It is an 84 Audi designed as a 144VDC system that I used for a couple of years but has been sitting in my garage for the last six. Is there anyone who might be interested in the car or components: motor, charger, controller etc?

Regards,

David Russell

vrussell@comcast.net

BAY AREA TOPS IN PAY, COST By California Pete



It's well known that gasoline prices here in the Bay Area are among the highest in the nation; a gas station in downtown San Francisco created a massive traffic backup when it set its price for unleaded regular at \$2.92 a gallon, and housing

prices are astronomical. Maybe the reason is that the Bay Area by “many measures is the richest region in the United States,” according to the *San Francisco Chronicle* for September 27. The *Chronicle* quoted a Department of Labor report that typical pay in the region is 19% above the national average. The only problem is that the cost of living is 40% higher than the rest of the nation.

San Francisco is nothing if not celebratory. The latest oddity was the 24th annual Folsom Street Fair, a celebration of leather culture and sexual fetishism, held the last Sunday of September every year. As reported in the all-seeing *Chronicle*, “[t]his year was no different, as couples led each other up and down the street with dog collars and leashes, men in thong underwear played Twister, women in stilettos and fishnet stockings spilled out of their corsets, and shoppers browsed stalls selling products such as baseball caps reading ‘Master’ or ‘Slave’ and a book entitled ‘Dungeon Emergencies and Supplies.’

On a more sober note, Californians still hope to improve the state’s energy situation. A September 18 report in the *Chronicle* says that the Public Utilities Commission wants the states electric utilities “to collaborate one creating one grand plan for improving energy efficiency throughout the state, rather than pursuing their own separate programs the way they do today.” One of the proposals calls for new housing developments to be “net zero energy” by 2020, with new commercial buildings to follow a decade later. There’s just one catch: the PUC has no authority over the construction industry; only the California Energy Commission can do that. Oh, well....

NEWS UPDATE

Tesla moves back production date

Tesla Motors has announced that production of the company’s high-speed roadster will be delayed from the original date of 2007, and instead begin in 2008, with a goal of 50 cars in the first quarter and an additional 600 cars by the end of the year. The source of the holdup apparently was the completion of durability and validation testing of final prototypes.

The company also announced an improvement in range; earlier announcements had

cast doubt on the car’s ability to reach its EPA range goal of 250 miles, but recent tests on the combined EPA cycle on a single charge showed 245 miles (235 on the EPA highway cycle and 255 on the city cycle).

Electric motorcycle at Paris bike show

A September 28 posting by Mike Werner on the motorbiker.org blog site, “Bikes in the Fast Lane — Daily Motorcycle News,” discusses the new Matar MS-1 electric motorcycle, displayed at the Paris Mondial 2007 de Deux Roues motorcycle show, which ran from Sept 29 to October 7. The company claims a speed of 45 kph (28 mph) with both electric and pedals in use (also claiming that the law allows no faster speed). Range is listed as 100 km (62 miles) on electric power alone.

Mitsubishi may produce EV in 2008

Autoblog Green reported on September 28 that the *Daily Telegraph* in Australia has reported that Mitsubishi may bring its i-EV to production as soon as 2008. According to the Blog, “The Daily Telegraph says a 160 km (100 mile) range and a top speed of 130 km/h (about 80 mph). Standard home charging will happen overnight, but a 3-phase 200 volt 50kW QuickCharger will give you an 80 percent charge in half an hour.” Not bad.

Iceland seeks energy independence

On September 20 *CNN* reported that the nation of Iceland is going ahead full tilt to wean itself from fossil fuel. Blessed with abundant renewable energy (geothermal and hydroelectric) and cursed by gasoline prices approaching \$8 a gallon, Iceland has been looking into hydrogen power. After a three-year test program involving hydrogen-powered buses ended last year, Toyota, Daimler-Chrysler and General Motors have been testing hydrogen-fueled vehicles there. Plans call for all cars in the country to run on hydrogen (produced electrolytically) some years in the future, the next challenge will be the nation’s important fishing fleet. While hydrogen storage is challenging, hopes are high.

Ethanol a drug on the market

The *International Herald Tribune* reported on September 30 that the ethanol market is

now glutted, and the price is dropping — down 30% since May. With tax incentives and lost of federal subsidies pushing them, many companies built distilleries and started processing corn, driving up the price of corn but creating more ethanol than the market could absorb. Part of the problem is that the stuff can't be transported by pipeline because it causes corrosion, so it has to move by truck and rail. How long the glut will continue is anybody's guess.

EV gets good marks in Montco

USA Today reported on September 11 that an EV used by the Montgomery County park rangers in Norristown has done pretty well during a three-month test at Norristown farm park. While the seats in the vehicle, a Miles ZX405 lent by the Great Britains Automotive Group of Willow Grove, were a bit narrow, and the battery lost power quite quickly at the end of a charge, maintenance was minimal.

Report on EV market now available

Reportlinker.com announces that a new market research report related to the worldwide automotive industry is now available to its catalogue.

The report analyzes the worldwide markets for Electric Vehicles in thousands of units. The major product segments analyzed are Battery Powered Electric Vehicles (BPEVs), Hybrid Electric Vehicles (HEVs), and Fuel Cell Electric Vehicles (FCEVs).

The report provides separate comprehensive analytics for the US, Canada, Japan, Europe, Asia-Pacific, and Rest of World. Annual forecasts are provided for each region for the period of 2000 through 2010.

The price is 3560 euros, and it's available at www.reportlinker.com/p059605/Electric-Vehicles.html

Purolator adds an EV

An AP story dated September 24 reports that "Courier company Purolator has unveiled the prototype for a battery-operated electric delivery vehicle called Quicksider, which will deliver packages during a trial run in Toronto."

COMING EVENTS

Panasonic World Solar Challenge

October 21-28, Australia. Call 61 8 8463 4500 or go to www.wsc.org.au

CSI Cleantech Summit 2007

Oct 30-31, Washington D.C. For information go to www.ct-si.org

Michelin Challenge Bibendum 2007

Nov 14-17, Shanghai. Contact mail.challenge-bibendum@fr.michelin.com, www.challenge-bibendum.com

EVS 23: Sustainability: The Future of Transportation

Dec 2nd - 5th, Anaheim, CA. For information go to www.electricdrive.org/evs23.

Electric Dragin 2008

January 26-27, San Diego. For information contact the Electric Vehicle Association of San Diego at www.evaosd.com or go to www.netaddress.com/tpl/Door/Login?Domain=usa.net&Reason=InvalidSessionID.

2008 Hybrid Vehicle Technologies Symposium

February 13-14, 2008, San Diego, CA. Go to www.sae.org/events/training/symposia/hybrid/ or call 202-463-7319.

2008 Clean Heavy Duty Vehicle Conference

February 20-22, 2008, San Diego, CA. Go to www.calstart.org/programs/chdvc/ or call 626-744-5600.

2008 SAE World Congress

April 14-17, Detroit, MI. Go to www.sae.org/congress/ or call 626-744-5600.

Convergence 2008

October 20-22, 2008, Detroit, MI. Go to www.sae.org/events/convergence/ or call 626-744-5600.

MEETING SCHEDULE

Meetings are held in Room 49, Plymouth-Whitmarsh High School, 201 East Germantown Pike in Plymouth Meeting, PA, and begin at 7:00 p.m.

November 14

December 12

January 9

February 13