EEVC NEWSLETTER

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EV EVENT AT LUTRON ELECTRONICS
Alan Arrison

The EEVC recently received a message, via our website, from Erica Patton at Lutron Electronics. Erica was looking for some EVers to attend a sustainability event at Lutron's headquarters in Coopersburg, PA. She was looking for both production and conversion EVs to be on display for interested Lutron employees (many of whom are electronics engineers). There would also be a ribbon cutting ceremony for two charging stations (employee only) and, after lunch, a panel Q&A session with EV owner/drivers.

Jurgen Balitzky (center) talks about his Tesla at the Lutron event.

The event was held on a Friday, so I took the day off from work to attend. It was a 75 mile trip (one way), so I decided to charge for an hour or so on the way up so as not to arrive empty. It just so happens that there is an Exxon gas station/ mini-mart (with rest room) just off the Lansdale exit of Route 476. I used one of the four (!) Eaton charging stations and was able to charge at 32 amps 208 volts (~6.6kW). I took Route 309 the rest of the way to Coopersburg.

Upon arrival I met up with Brandon Hollinger with his Saab, and Jurgen Balitzky and Don Young with their Teslas. There were several other production and conversion EVs as well. We talked about our EVs with the Lutron employees for about an hour during the "car show" portion of the event. Then there was the official dedication and ribbon

Brandon Hollinger (dark shirt) shows his electric SAAB.

cutting for the two Siemens charging stations. (Unfortunately for employees only). After a tasty lunch, we assembled in a conference room for a short Q&A session regarding our EV experiences.

One of the two Siemens chargers, which unfortunately are for Lutron employees only.

I must say that it was a very well run and enjoyable event. The weather forecast for the day was not great, but it turned out to be fine. Erica did a great job and we even got a gift bag containing a Lutron lighting control module that can be operated via a smartphone. (Lutron is a leader in the lighting control industry).

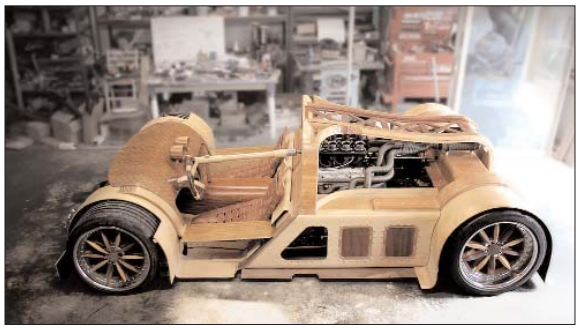
As I headed for home I was glad that I did not arrive to the event empty because neither Brandon's or my EV would charge on the new Siemens charging stations. I still have not figured out exactly why my EV will charge fine on some stations and not on others. The J1772 signaling is not that complex but obviously some stations are seeing something they don't like.

EVs on display in the Lutron parking lot.

I returned to the Exxon station in Lansdale and took a stroll into town to grab a bite to eat while my EV charged. The only bad thing about charging at a gas station is having to smell all the gasoline and exhaust fumes from the vehicles filling up. Whatever happened to those vapor recovery snorkels that were mandatory on gas pumps a while back?

A WOODEN SUPERCAR?

Back in 2008 a car designer named Joe Harmon (www.joeharmondesign.com) came up with the idea to build a car out of wood. When you think about it, in many applications wood is superior to metal. It's stronger, pound for pound, that steel or aluminum. It's also inexpensive, self-renewing and carbon-negative, whereas producing a ton of steel by conventional means produces about two tons of carbon dioxide (iron is made by reducing iron oxide with carbon, after all).



Harmon designed a car called the Splinter made almost entirely of wood composites. Begun as a graduate school project at North Carolina State University, the car is, according to the *Wall Street Journal,* "made from a combination of maple, plywood and MDF, weighs just 1,134 kg [2500 lb] — some 240 kg less than the super lightweight Porsche." The goal was to make as many parts of the car as possible out of wood: the front suspension's A-arms are made of laminated wood, and the wheels have forged aluminum rims with laminated wood center sections. The chassis is a laminated wood veneer monocoque design, while the body is made from woven strips of cherry veneer with a balsa core, bonded using resin transfer molding.

The car has a mid-engine rear-drive layout, and in its present configuration is powered by a 7-liter small block V8 with aluminum block and heads that is expected to put out 700 hp.

In 2008 the *Wall Street Journal* reported that the car, in its original configuration, was expected to go 240 mph. Since it is still a work in progress, we'll have to see what develops.

NEWS UPDATES

Germany to add EV subsidies

An April 27 AP story by Frank Jordans reports that a German plan to get a million EVs on the road by 2020 is far behind schedule. In response, the government has instituted a subsidy of 4000 toward the purchase of an all-electric vehicle, (up to 3000 for plug-in hybrids) in hopes of getting the total number of EVs to half the original goal.

Super Thin Solar Cells

A May 2 article on *PDDnet.com* by Megan Crouse reports that researchers at the University of New South Wales have developed a way to make what are billed as the world's highest efficiency solar cells, and that this "could eventually lead to zero-energy buildings equipped with ultra-thin panels."

"The cells are made from CZTS, a mixture of copper, zinc, tin, and sulphur; the cells remove the toxicity and scarcity problems of cadmium and selenium mixtures usually used in thin-film panels, because all four materials are both common and non-toxic."

"'They can be deposited directly onto materials as thin layers that are 50 times thinner than a human hair, so there's no need to manufacture silicon wafer cells and interconnect them separately,' said Professor Martin Green, an expert in solar and a mentor to project lead Xiaojing Hao. 'They also respond better than silicon to blue wavelengths of light and can be stacked as a thin-film on top of silicon cells to ultimately improve the overall performance.'

"CZTS cells show 7.6 percent efficiency in a 1 centimeter square area, according to research confirmed this month by the United States National Renewable Energy Laboratory. The goal, Hao said, is to reach 20 percent efficiency and beyond."

Daimler aims for home battery market

On April 22 Daimler AG announced that it had begun delivering of Mercedes-Benz stationary energy storage units for use with photovoltaic systems in private homes in Germany, in direct competition with Tesla's Powerwall. Up to eight battery modules with an energy content of 2.5 kWh each can be combined to produce an energy storage unit with a capacity of up to 20 kWh. The lithium-ion batteries are being manufactured by the Daimler subsidiary Deutsche ACCUMOTIVE and distributed through selected sales partners and partner companies.

Floating solar farms to resist waves

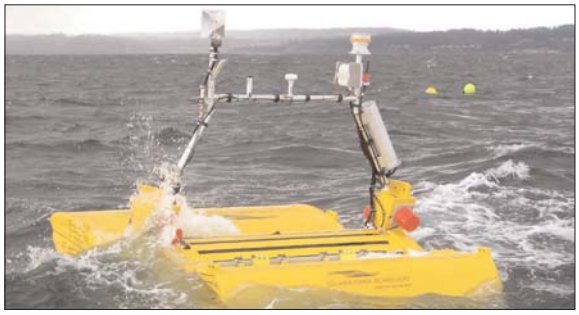
Solar farms are common enough on land, but areas large enough for big solar installations can be difficult to obtain. One might think about putting them instead on the surface of the sea — the sea covers most of the planet, after all. What could go wrong?

In a word, waves. How can you float acres of solar panels on the sea and expect them to survive in a storm? Researchers at the Vienna University of Technology have designed a system called Heliofloat that uses new lightweight construction and, they claim, can be used to build platforms spanning one hundred metres long which remain steady and firmly in place – even in rough sea weather.

The platforms would sit on a set of what amounts to bladders with their bottom ends open; as the wave rose and fell the air columns in the tops of the bladders would absorb the motion, while horizontal water movement would pass right through.

How well it would stand up to something like the above is as yet unstated. We wish them luck.

Getting power from the waves



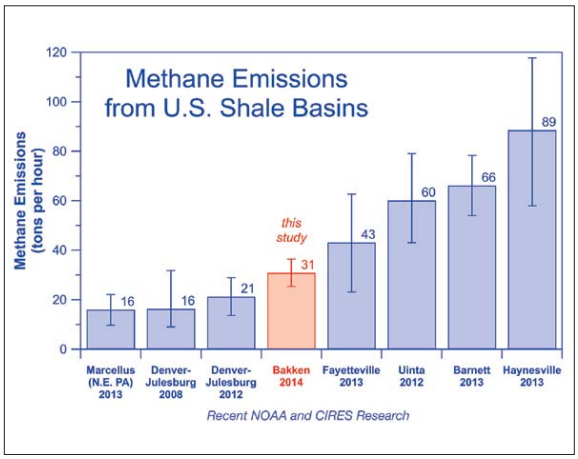
Finding a way to get power from ocean waves has been a dream for centuries. The latest to try is Columbia Power Technologies (Corvallis, OR), whose StingRAY system uses a system of buoys anchored to the bottom by long cables. A pair of floats is mounted by articulated floats on the sides of the buoy; as waves roll through the floats rise and fall (the central buoy cannot rise with the waves because it is anchored to the bottom). The resulting movement of the mounting arms spins an internal generator. As with the floating solar farm, we'll wait and see.

Cleaning up in the EV market?

Vacuum cleaner maker Dyson has applied for a patent on an electric vehicle, according to an article by Andy Szal in *Manufacturing.net*. The vehicle would use the solid-state battery technology the firm acquired when it purchased battery startup Sakti3 last year. With British government funding, a car might hit the road in a decade; the solid-state battery could give it considerably more range than a Tesla, according to the article.

A new source of greenhouse gases

While carbon dioxide gets the most publicity as a greenhouse gas, it's not the most potent. A much more effective one is methane, the main ingredient in natural gas. While burning methane releases much less greenhouse gas than does burning an energy-equivalent amount of coal, releasing the stuff unburned is bad. According to the EPA one pound of methane is as effective at trapping heat as 21 pounds of CO_2. So we shouldn't release unburned methane.



But we do. The fracking operations in the Bakken oil and gas region of North Dakota releases 275,000 tons of methane every year, and shows no sign of slowing or stopping. And, as shown above, it's not the worst offender.

Speaking of gas leaks, the final cost of the gas leak at Porter ranch is in. A May 4 article by the AP's Brian Melley reports that "The estimated cost of a massive gas well blowout that spewed methane uncontrollably for nearly four months and uprooted 8000 Los Angeles families has more than doubled to $665 million."

"The gas leak at the Aliso Canyon storage facility was the largest-known release of climate-changing methane in U.S. history, according to scientists. It spewed an estimated 107,000 tons of methane.

"It sickened residents in Porter Ranch and surrounding San Fernando Valley suburbs who complained of headaches, nausea, nosebleeds and other symptoms as the gas wafted over neighborhoods."

VW, Shell behaving badly

We're all familiar with VW's diesel emissions scandal, but apparently the company's bad behavior does not stop there. An April 28 *Guardian* article by Arthur Nelson reports that VW and Royal Dutch Shell "have been accused of trying to block Europe's push for electric cars and more efficient cars, by saying biofuels should be at heart of efforts to green the industry instead."

"In reality, such a package would involve the end of meaningful new regulatory action on car emissions for more than a decade, EU sources say. But Shell insisted it is not trying to block an EU push for electric cars."

Breaking the coal habit

A May 6 article by the AP's Rick Callahan reported that "Indiana's consumption of coal for electricity generation plunged nearly 40 percent from 2007 through 2015 as its utilities retired older coal-fired plants and increasingly embraced natural gas and renewable energy sources, a new federal report shows."

"Indiana was among three states that saw big declines in coal consumption for electricity over that 8-year period, according to the U.S. Energy Information Administration. Its report, release last week, found that coal used for power generation fell 37 percent in Indiana between 2007 and 2015, while Ohio's dropped 49 percent and Pennsylvania's fell 44 percent."

The decline can be attributed to both the increased use of natural gas and the spread of alternate energy sources like wind farms.

Of course the folks in places like Wyoming and West Virginia complain about the War on Coal, and according to *Time* magazine, it's not their imagination. There really is a concerted effort on the part of the administration to phase out coal, because of global warming. It's pretty clear that global warming is for real, but that's of little comfort when you can't heat your house because the mine where you worked closed down.

COME TO SF, GET ROBBED
By California Pete

Tourism is the largest industry in San Francisco, accounting for more than $7 billion per year in 2006 and more than $9 billion in 2013. For that reason you'd think that more effort would be put into protecting tourists from crime. But not so. According to the *New York Times*, "[r]ecent data from the F.B.I. show that San Francisco has the highest per-capita property crime rate of the nation's top 50 cities. About half the cases here are thefts from vehicles, smash-and-grabs that scatter glittering broken glass onto the sidewalks."

What's causing it? Some blame lax policing, others the changes in the economy. Some sensitive folks think that if the homeless received enough aid the crime would go away. Some police officials believe it's caused by the alarming increase in gang activity, which they also blame for "gunfights, armed robberies, illegal casinos and nightclubs," according to *SF Weekly*.

But don't worry, folks: What really matters is that the last gun store in San Francisco bowed to ever-more-onerous regulations and closed in November of last year. One suspects that the progressives (that's what the lefties are calling themselves these days) believe that it's more important to prevent the law-abiding from getting hold of firearms than it it to lock up guys who break car windows and snatch whatever they can find. And

after all, those folks might be unregistered immigrants, and the police are already forbidden to inform the feds when one of them gets out of jail, so why bother to prosecute them at all? As for the tourists? They won't be coming back, but as long as the city's reputation doesn't get too bad there's no need to do anything.

Of course the law-abiding can take their pick of gun stores outside San Francisco, but I guess it's the principle of the thing. SF is, it seems, beyond such crudities as guns. Except for the crooks, that is, who can get all the guns they need (and don't buy them over the counter).

COMING EVENTS

IEEE Transportation Electrification Conference and Expo Asia-Pacific 2016
June 1-4, Busan, Korea
WAVE TROPHY 2016
June 11-16, from the North Sea to the Alps. www.wavetrophy.com/en/
Webinar: Are PEVs Really Green?
June 14; go to https://cleancities.energy.gov/webinars#636
IEEE Transportation Electrification Conference and Expo 2016
June 27-29, Dearborn, MI. Go to http://itec-conf.com/
2016 American Solar Challenge
July 22 - Aug 6, traveling through seven states from Brecksville, OH to Hot Springs, SD. http://americansolarchallenge.org/the-competition/ascfsgp-2016/
National Drive Electric Week
Sept 10-18, For information on participating, go to https://driveelectricweek.org/
8th Annual IEEE Energy Conversion Congress and Exposition (ECCE 2016)
Sept 18-22, Milwaukee. Go to www.ieee-ecce.org/
SAE 1016 Convergence; Theme: Personal Mobility – Creating a Smart and Autonomous Journey
Sept 19-22. Detroit. https://www.sae.org/events/convergence/
SAE 2016 North American International Powertrain Conference
Sept 21-23, Chicago. Go to www.sae.org/events/naipc/
SAE 2016 New Energy Vehicle Forum
Sept 21-22, Shanghai. Go to www.sae.org/events/nev
Paris Motor Show
Oct 1-16, Paris. GO to http://www.nextgreencar.com/event/6929/paris-motor-show/
SAE 2016 Range Extenders for Electric Vehicles Symposium
Nov 2-3, Knoxville, TN. Go to www.sae.org/events/rex/
IEEE – ESARS ITEC 2016
Nov 2-4, Touluse, France. Go to stx wtx, www.esars-itec.org/
SAE 2016 Vehicle Electrification and Connected Vehicle Technology Forum
Nov 30-Dec 1, Shanghai. Go to www.sae.org/events/vept/
SAE 2017 Hybrid and Electric Vehicle Technologies Symposium
Feb 7-9, 2017, San Diego-Mission Valley, CA.

NOTICE ON DUES

Annual dues are $20 with electronic delivery of the Newsletter, or $25 for a printed copy. Make checks payable to EEVC and mail to James Natale, 3307 Concord Dr, Cinnaminson NJ, 08077, or pay via PayPal to www.paypal.me/EEVC.

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.

The June, July and August meetings will be at Cugini's Pizzeria on Clemens Bridge Rd in Deptford, NJ. There is no chargng available there, but there are two free J1772 stations a mile away at Ken Barbour's charging oasis.

June 8

July 13

August 10

September 14

October 12

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