



# EEVC NEWSLETTER

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## MY NEW 'USED' BMW i3 REX Theo Padavano

Almost as soon as I had acquired an electric motorcycle, a 2013 Bramo Enertia Plus, I have been contemplating the purchase of an electric automobile. Hardly a month would pass that I did not check out or test drive my latest EV obsession.



*Theo Padavano recently purchased a 2014 BMW i3 Rex with 11,700 miles on the odometer.*

Although I live in a rural area of north-west New Jersey where electric vehicles are an extremely rare sight, my daily driving needs are very modest. I live within 6 miles of my office and shopping and most errands are kept local. With a daughter still in col-



lege, my dream of owning a Tesla was just not realistic, so I turned my attention to vehicles within reach. This past weekend, I went to test drive a 2014 BMW i3 Rex, as it checked most every box that was important (on my list, anyway). The car has less than 12,000 miles and is incredibly clean. It was my first time driving an i3 so I was quite surprised by how quick and agile it is. Of course, immediately following any test drive is when the salesman starts to spin and numbers get crunched. In the end, an offer was made that

was hard to refuse. I realize the price of the 2014 i3 models is considerable less than the 2015's because mine is not DC Fast Charge capable. Although this will certainly impact the resale, the lack of Fast Charge was not a deal-breaker since my needs rarely require it — and I have the Range Extending motor whenever a longer trip is desired. In fact, on my way home from the dealership, the Rex kicked in and I am happy to report that it performed as advertised; keeping the battery charge at 5% with barely a detectable hum in the background. I have yet to fully explore all of the functions the i3 has but so far I am enjoying the ride immensely.

## NEWS UPDATE

### Everybody is going electric

BMW recently showed a concept version of a plug-in hybrid version of the Mini. In characteristic BMW fashion, the concentration is not of efficiency, but on performance: the electric drive kicks in when the accelerator is floored, and provides what the company describes as “catapult-like acceleration.”

In normal operation, the car starts moving on the electric motor, starting the gas engine after the first few kilometers: “When exactly the combustion engine starts varies depending upon on the vehicle’s speed and the intensity with which the driver operate the accelerator pedal,” says the company. AUTO eDRIVE standard mode permits speeds of up to 80 km/h, while in MAX eDRIVE mode speeds of up to 125 km/h are possible.

The car is technically a road-coupled hybrid: the electric motor powers the rear wheels while the combustion engine powers the front wheels — which not only makes the mechanics simpler, but allows for enhanced handling: Since the intelligent energy management is linked to the Dynamic Stability Control (DSC), traction and drive stability are optimized via the drive system. “As soon as there is any risk of drive slip, the second drive unit is activated to provide additional traction when starting off or ensuring a high level of steering precision when cornering,” said Head of MINI series management Peter Wolf.

### Henrik Fisker launches new electric car

### company

An October 4 story from Paul Lienart of Reuters reports that “Henrik Fisker, whose previous automotive venture collapsed in 2013 owing U.S. taxpayers \$139 million, said on Tuesday he plans to launch a new electric car company next year to compete with Tesla.

“Fisker declined to say who is funding his new California-based venture, called Fisker Inc, and a new battery subsidiary, Fisker Nanotech.” It is apparently not the Chinese auto parts maker Wanxiang Group Corp, which purchased the previous company out of bankruptcy and renamed it Karma Automotive. Karma (<https://www.karmaautomotive.com>) is planing to introduce its Revero, which closely resembles the original Fisker car, later this year or early in 2017.

### Reversing combustion?

There has been some news recently about the (apparently accidental) discovery of a method for converting CO<sub>2</sub> into ethanol. The process, according to a press release from Oak Ridge National Laboratory, uses copper nanoparticles embedded in carbon spikes, passing a current through a water solution of CO<sub>2</sub> with a yield of 63 percent. The nano-texturing approach avoids the use of expensive or rare metals such as platinum that limit the economic viability of many catalysts. “It’s extremely difficult to go straight from carbon dioxide to ethanol with a single catalyst,” said Adam Rondinone, lead author of the team’s study published in *ChemistrySelect*.

The system is not magic, of course; energy must be fed in to make it work, but the prospect of taking carbon out of the air is exciting. For more information, go to <https://www.ornl.gov/news/nano-spike-catalysts-convert-carbon-dioxide-directly-ethanol>.

### GE Unveils World’s First Battery Storage & Gas Turbine Hybrid with Southern California Edison

On October 4 GE and Southern California Edison (SCE) announced a plan to install the world’s first battery storage and gas turbine hybrid. The two-project solution first calls for installation of a battery energy storage system from Current, powered by GE, followed by upgrades to a GE LM6000 gas turbine to integrate the two systems. The LM6000 Hybrid

EGT, which is scheduled to be deployed at two SCE sites in the coming months, was developed in response to changing regulations and grid requirements in the wake of California's Aliso Canyon energy crisis earlier this year and will ultimately support increasing renewable energy capacity in California.

The LM6000 Hybrid EGT product integrates a 10 MW battery energy storage system from Current and an existing GE LM6000 aeroderivative gas turbine with control system upgrades. The system will allow the turbine to operate in standby mode without using fuel and enable immediate response to changing energy dispatch needs. By eliminating the need to constantly run the turbines at minimum loads to maintain spinning reserves, the system will save fuel, reduce maintenance costs and cut down on greenhouse gas (GHG) emissions.

### **TVA's Watts Bar Unit 2 achieves commercial operation**

Some projects take longer than others. In 1996 the Tennessee Valley Authority (TVA) began running a power reactor, Watts Bar Unit 1. Unit 2 was supposed to follow shortly, but regulations tightened in the wake of Chernobyl, public attitudes shifted away from nuclear, and the project ground to a halt. But in 2007 it began again, and now the first U.S. reactor to enter commercial operation in 20 years is operating.

### **Mercedes-Benz shows off all-electric Urban eTruck at IAA 2016**



Posted by Didier Rougeyron in *Open MCB Community* on Sept 23: "Daimler's big reveal at the show was the electric Urban eTruck. It will be branded as a Mercedes-Benz and is

designed to serve as a heavy-duty distribution transport with a range of about 125 miles.

"Based on a heavy-duty distribution truck chassis, the eTruck is a fully electric three-axle cabover with a 26-ton capacity.

"Mercedes swapped the diesel engine for a liquid-cooled 400-volt, 212-kilowatt-hour lithium-ion battery and two asynchronous three-phase electric motors. The motors, mounted close to each of the rear wheels, produce a combined 339 horsepower (250 kilowatts) and more importantly, 737 pounds-foot of torque (1,000 newton meters).

"A modular battery package design allows the standard three-battery module to be switched for a smaller size for shorter distances, or a four-battery package for extended range. Regenerative braking draws some energy back to batteries while the truck is on the move. Charging a depleted battery takes between two and three hours.

"Like other recent Mercedes vehicles, the Urban eTruck features advanced technologies. Inside, the driver is faced with a central 12.3-inch display showcasing all vital vehicle information as well as providing navigation services, including three-dimensional maps. A traffic-sign aware cruise control system maintains the truck in the traffic flow during changing conditions to reduce inefficient heavy acceleration and braking.

"Mercedes did not indicate what a price might be or when production of the Urban eTruck would begin."

### **ROADBLOCKS ON THE ELECTRIC HIGHWAY**

**By California Pete**



California accounts for the largest share of electric and hybrid vehicle sales; there were 55,553 hybrids sold here in 2009, 74,932 in 2008, and 91,417 in 2007, according to Wikipedia

In plug-in cars, according to Wikipedia, "California is the largest plug-in car regional market in the country, with over 223,000 plug-in electric vehicles registered through June 2016, representing 47.6% of all plug-in cars sold in the American market



since 2010.”

Yet, counters hybridcars.com, only five out of every 1000 registered vehicles in California is electric.

Part of the problem, according to an October 7 *San Francisco Chronicle* article by Julie Cart of CALmatters, is that EV mandates were put in place without much thought: “The state knew little about the market for electric vehicles before mandating a widespread and expensive transportation reboot designed to dramatically cut tailpipe emissions.”

As a result, the article continues, “[h]ybrid electric and fully electric cars have been stuck at only 3 percent of new cars sold in the state.” The politicians’ answer: more mandates: “Undaunted, the state intends that by 2025, zero-emission cars will make up 15 percent of California’s new car fleet — a fivefold increase.”

A number of incentives are being explored, but in the end it comes down to the high prices for EVs at a time when the economy is sluggish, and gasoline is both cheap and plentiful. Until one of these factors changes, EVs sales will remain muted. When median rent for a one-bedroom apartment in San Francisco is \$1340 per month, most people have other things to worry about.

### **New home energy supplier**

According to the Los Angeles Times, residential solar panel supplier Sunrun has teamed up with LG to provide home energy storage systems in competition with Tesla’s Powerwall system. Sunrun plans to offer LG Chem’s “lithium-ion batteries as part of its BrightBox solar generation plus energy storage systems.” So far they sell them only in Hawaii, but we’ll see.

### **COMING EVENTS**

#### **SAE 2016 Range Extenders for Electric Vehicles Symposium**

Nov 2-3, Knoxville, TN. Go to [www.sae.org/events/rex/](http://www.sae.org/events/rex/)

#### **IEEE – ESARS ITEC 2016**

Nov 2-4, Toulouse, France. Go to [www.esars-itec.org/](http://www.esars-itec.org/)

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#### **Formula E racing**

Nov 12, Marrakesh, Morocco. Other races will be in Buenos Aires, on Feb 18, 2017; Mexico City, on April 1; Monaco, on May 13; and New York, on July 15 and 16.

#### **SAE 2016 Vehicle Electrification and Connected Vehicle Technology Forum**

Nov 30-Dec 1, Shanghai. Go to [www.sae.org/events/vept/](http://www.sae.org/events/vept/)

#### **Motors & Drive Systems Conference 2017**

Jan 21-22, Jacksonville, CA. [www.e-driveonline.com/conferences/](http://www.e-driveonline.com/conferences/)

#### **SAE 2017 Hybrid and Electric Vehicle Technologies Symposium**

Feb 7-9, 2017, San Diego-Mission Valley, CA. [www.sae.org/events/hybridev/](http://www.sae.org/events/hybridev/)

#### **WCX17: SAE World Congress Experience**

April 4-6, Detroit. [www.sae.org/congress/](http://www.sae.org/congress/)

#### **SAE Convergence**

June 4-7, San Jose, CA. [www.sae.org/events/automotive](http://www.sae.org/events/automotive)

#### **National Drive Electric Week 2017**

Sept 9-17. <https://driveelectricweek.org/>

#### **World Solar Challenge**

Oct 8-15, Darwin to Adelaide, Australia. [www.worldsolarchallenge.org/](http://www.worldsolarchallenge.org/)

### **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](http://www.paypal.me/EEVC).

### **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 9

December 14

January 11

February 8