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This Month's Presentations

- Bill Jacobs BMW will be presenting a technical expert who will take us through their new all-electric BMW i3.
- We'll have refreshments, and take the yearly survey along with showing highlights from all of last year's activities

Membership Update

Ted Lowe

We currently have **83** paid-up members which is low historically for the FVEAA. We live in a large metro area with 8 million people and EVs are the latest buzz so we should be able to grow the FVEAA! **Please invite your friends, neighbors, family, colleagues**, etc. to FVEAA meetings and EVents. Volunteer to attend EVents on behalf of the FVEAA (with or without an EV)! Your ideas on how to help grow the FVEAA are welcomed at anytime, thanks! Howard Hansen had a **great idea...** giving an FVEAA membership as a gift!



FVEAA Membership Report
as of 2014-12-15 04:58:09

Count of Members by Type

Membership Type	Count	Paid Up
BusinessCharter	1	1
BusinessPremier	1	1
BusinessStd	4	4
Family	10	10
Individual	68	65
LifetimeInd	2	2
Totals	86	83

Other Statistics

Statistic	Value
% Paid Up	96.5%
Avg. Paid Up Days	229.7 days
% With Email	94.2%

Photos



Rich Hirschberg on two outreach events



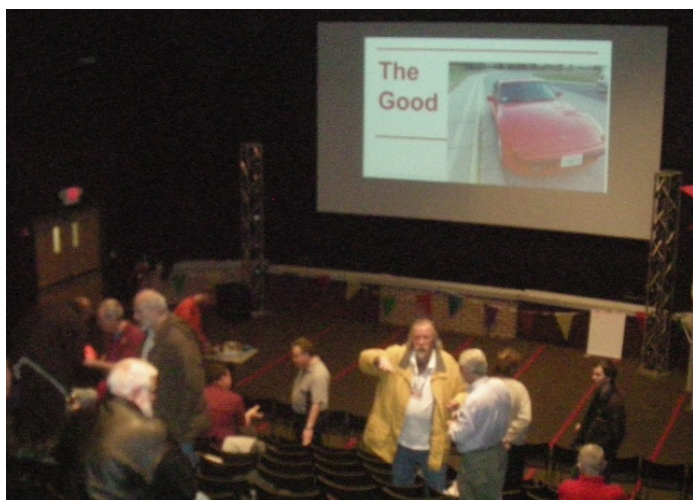
Bob Baker talks about the McHenry College Green Living Expo that many members attended with EVs



Marty Hansen's Volt gets a charge out of the new Clipper Creek EVSE at CCC's East Parking lot



George Hiller's converted Mazda Miata (last month)



FVEEA membes talking during the break



Mike Willuweit and the Lithium-ized Porsche 944

Meeting Notes Nov. 21

The meeting began at 7:05, and attendees introduced themselves along with a description of their electric cars. Marty Hansen had a Volt and is using the CCC charger. Bill Snyder has a Prius and is a friend of John Emde. Rob Schwartz is an Electrathon team coach. John Jeidi is selling his NMG Green 3 wheeler. Jim Schmidt is the token electric boat guy. Henry is from U of I and used to have an Illinois formula electric. Chuck Carrington has a Nissan Leaf and 1975 midget. Bob Humphries researching new technology has a Ford F150 and Lexus hybrid, and has written a few letter to Ford to make the f150 a hybrid. Fred has an e-Ranger and Chris Sharp has an ebike. Terris came to learn more about electric vehicles. Greg is in to diesels and currently wants to learn about electrics. Rich Carroll may be buying a new EV. Steve Ledger has been involved with electric vehicles, and Bob Baker converted a 1995 Honda Civic

COMMITTEE REPORTS

Jeff provided a brief Financial report - we have money!

Ted said renewals are going well though the trend has not been good the last few years

Bruce said the Charging Station rebate paperwork was received from Continental Electric and will be worked on.

NEW BUSINESS

Jim Schmidt provided additional information from last month showing wood with five lamination not four, plus a Scarf joint. He is going to show examples of scarf joints at break. Last month they had presentation issues and used a backup laptop here last month. He wanted the Board to consider a club laptop or something like that. Rich Carroll will bring his laptop every month as a backup. Hanging around engineers but we aren't very good at marketing. We should improve it. Wgn may be interested in covering the NDEW event next year

MEMBERSHIP

Bruce asked attendees to provide ideas on how to build up membership

Roll back membership to 15 dollars.

Comed could put an FVEAA stuffer in their bills

Car Dealers should tell their EV customers about us.

Maybe we can get a discount for members at various dealers.

NDEW – 2 weekends Next year September 12-20, 2015

Two weekends next year for the National Drive Electric Week. Suggestion we could do it two weekends to maximize publicity.

We need an LCD projector for next meeting. December 19 th at bill Jacobs BMW. The meeting will start at 6:30 p.m. not 7:00 p.m.

Rich Hirschberg gave two presentations

“Workplace Charging for Electric Vehicles” by www.PlugInChicagoMetro.org

and Green Fleet Conference and Expo – the world’s largest fuel and fleet efficiency event. See

www.eliomotors.com. A variety of cars were at the conference including GTA mycarr, G2 NEV, electric smart car

Bob baker provided a presentation on McHenry College Green Living Expo that he attended along with others from the FVEAA. Six cars attended to show off their cars. Illinois State University brought their solar Electra thon car. Bob has a shop that does maintenance and conversions.

BREAK

Mike Willuweit presented “Progress and Issues Converting the 944 Porsche from Lead Acid to Lithium Batteries.”

<Editors Note: The original conversion of the 1985 Porsche from internal combustion to lead acid battery power was in a 2007 club project led by project manager Ted Lowe. The car was owned by Eric Schoonveld at the time. The Porsche was bought by Steve Kaufman who then sold it to Mike who is converting it to Lithium battery power>.

Mike related several aspects of the conversion including the use of 100 amp hour cells, a baking soda paste to get rid of corrosion, using Nor lock washers, using anti-corrosion goop for the terminals, sanding the terminals and bus bars. Issues included a Vampire drain which drained his batteries well below specification. There was a power disconnect main switch under the hood. Dc to DC converter was trying to charge the 12 volt battery and this may have killed one of the cells. He is going to rebalance the pack. He is using bottom balancing. He said he should have washed off the thread locking compound and used some form of lubricant on the threads. He provided an excellent summary of his progress and hopes to finish the car in the next few months.

Rich's Ramblings

Rich Carroll

A curious bend in the universe of logic.

A tweet: @Lebeaucarnews: As gas prices plunged in Nov. so did @ChevyVolt sales (down 30.4%), but @NissanUSA LEAF sales jumped 34.1%

I sure don't have a scientific explanation for this, but I suspect it is related to raw numbers of sales, and the vehicle price. Volt sales volume is much smaller than the LEAF, and the population each appeals to is somewhat different. Perhaps the more expensive cars are somewhat down, and the more frugal options are increasing in sales.

Final Report from NTSB about the lithium battery fire in the 787 Dreamliner in January, 2013

We've probably all but forgotten about this incident, but the final report from the National Transportation Safety Board was recently published. Japan Air Lines (JAL) had an almost new Boeing 787-8 parked at Logan Airport in Boston. Maintenance personnel, doing normal procedures in between flights, noticed smoke pouring out of the lid of the auxiliary power unit battery case and fire with two distinct flames coming from an electrical connector on the front of that case. No passengers or crew were on board, and there were no injuries. This report is available on <http://www.nts.gov/doclib/reports/2014/AIR1401.pdf>. The auxiliary battery unit is the same make and model as the main power unit. There had been one earlier report of a fire in a main power unit in an All Nippon Airways 787 flying between Yamaguchi and Tokyo, where that plane made an emergency landing in Takamatsu, Japan. When you read the NTSB report about the Boston incident, they frequently use the phrase, “thermal runaway.” You should know that most municipalities have a Department of Prevention and Remediation for Instances of Thermal Runaway. That's the department with the big red (or yellow) trucks with the ladders and hoses. (You should know that the term “thermal runaway” is synonymous with fire.)

The 787 is also known as the Dreamliner, and was introduced in late 2011. Boeing had contracted with Thales Avionics Electrical Systems to design and install the electrical power conversion subsystem for the 787s, including the main and auxiliary batteries. Thales had used lithium-ion batteries developed, designed, and built by GS Yuasa. FAA had specifications (Special Conditions 25-359-SC) for the batteries, and the

batteries had met the specifications . Boeing had determined that the cells would ‘vent’ about once in ten million flight hours. Both of the 787’s fires involved cell venting, and the fleet of 787s had less than 52,000 flight hours.

The NTSB noted the following safety issues (the emphasis is theirs, not this author’s)

- **Cell internal short circuiting and the potential for thermal runaway of one or more battery cells, fire, explosion, and flammable electrolyte release.**
- **Cell manufacturing defects and oversight of cell manufacturing processes.**
- **Thermal management of large-format lithium-ion batteries.**
- **Insufficient guidance for manufacturers to use in determining and justifying key assumptions in safety assessments**
- (among others)

Essentially, the NTSB found the batteries to be victims of poor quality control during manufacture. The NTSB visited GS Yuasa, and identified several problems:

- Foreign object debris (FOD) generation during cell welding operations and
- A post assembly inspection process that could not reliably detect manufacturing defects, such as FOD and perturbations (wrinkles) in the cell windings, which could lead to internal short circuiting.

NTSA found that Boeing’s oversight of Thales, and Thales oversight of GS Yuasa “did not ensure that the cell manufacturing process was consistent with established industry practices.”

An oversimplified reason for the fires is that the batteries were poorly manufactured, and the process was poorly supervised. Here is the NTSB’s language:

The National Transportation Safety Board determines that the probable cause of this incident was an internal short circuit within a cell of the auxiliary power unit (APU) lithium-ion battery, which led to thermal runaway that cascaded to adjacent cells, resulting in the release of smoke and fire. The incident resulted from Boeing’s failure to incorporate design requirements to mitigate the most severe effects of an internal short circuit within an APU battery cell and the Federal Aviation Administration’s failure to identify this design deficiency during the type design certification process.

I urge you to review the report. It is really lengthy, but full of interesting tech details. For a technical report, it isn’t hard to read, and it really shows the depths of FAA investigations.

As a side note, several generations have grown up with the knowledge that the wiring on British cars has smoke internal to the wires, and that short circuits release this smoke and fire. You can purchase Lucas Replacement Wiring Harness Smoke Kits. http://www3.telus.net/bc_triumph_registry/smoke.htm and <http://www.britishcarforum.com/bcf/archive/index.php/t-21784.html> Curiously the NTSB said, “*which led to thermal runaway that cascaded to adjacent cells, resulting in the release of smoke and fire.*” Maybe there was a Brit on the committee.

Membership Form

Ted Lowe

FVEAA Membership Application Form - Version 2014-01-01

Name: _____
Address: _____
City, State Zipcode: _____

Phone: _____ Phone Type: Home ___ Work ___ Cell ___

Email: _____

Please check one: New Member _____ Renewal _____

How did you hear about the FVEAA ? _____

Membership Types and Annual Dues (please circle one):

Individual	\$20
Business	\$100
Premier Business	\$250
Charter Business	\$500

Newsletter Delivery Type (please circle one): No Newsletter Electronic

Please make checks payable to "FVEAA" and postal mail it with this membership application form to:

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Wheaton, IL 60187-0214

Attn: Membership

FVEAA Business Members



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Bill Jacobs

Bill Jacobs BMW

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