

# **FVEAA Meeting**

## **July 17, 2015**

Newsletter

[https://docs.google.com/document/d/1S8ugZDOVjQVAI0lgIAFSs0K7zBe\\_sudwJfDNdAaC1zQ/edit](https://docs.google.com/document/d/1S8ugZDOVjQVAI0lgIAFSs0K7zBe_sudwJfDNdAaC1zQ/edit)

**Bruce Jones**

**President FVEAA**

<http://www.fveaa.org>

Rich Hirschberg

Vice President

# July 17, 2015 - AGENDA

- **6:30 Doors open -> Sign-in Sheet, Tags.**
- **7:00 Call To Order, Welcome Introductions**
- **7:15 Committee Reports**
  - **VP & Outreach**                      **Rich Hirschberg – Upcoming Events**
  - **Finance**                                      **Jeff Miller**
  - **Elec. Communications & Membership** - **Ted Lowe**
  - **Programs & Blogs**                      **Rich Carroll**
  - **Newsletter Editor**                      **Ted Lowe**
  - **Secretary & Facebook**                      .....
- **7:20 Old Business / New Business**
- **7:40 National Drive Electric Week planning**
- **Break**
- **8:30 Presentation: Mike Willuweit and George Hiller – Limits of a Warp 9 Motor using Lithium Batteries**
- **9:30 CLOSE**

WELCOME &  
INTRODUCTIONS

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## Fox Valley Electric Auto Association

★★★★★ (6 ratings)

104 likes · 1 talking about this

### Automotive

We are the Fox Valley Electric Auto Association (FVEAA). We are the northern Ill. chapter of the Electric Auto Association and we meet each month. Come to a meeting (3rd Fri/mo.), see members' electric vehicles (EVs) and learn more about EVs!

[About](#)



[Photos](#)

104

[Likes](#)

# Last Month

- George Gladic Plug-in Prius
- Chris Sharp Myers Motors NMG



# Commute Connect Electric Unicycles – Tim Goebel

- 3150 Skokie Valley Road #16,  
Highland Park, IL 60035



# John Emde - FVEAA Lifetime Membership

- For 30+ years of Support and Electric Vehicle Expertise



# John Emde

- Build-EV
- Custom Electric Vehicle Conversion Expert
- TGEV – The Green Electric Product
- <http://tgeponline.com/commercial/page-24>
- 840 BRIAN DR SUITE A
- CREST HILL, IL - 60403
- Tel (630) 847-1421



## **JOHN EMDE**

- \* Retired NASA Engineer
- \* Recipient of several Government EV Projects
- \* 20+ years of exp in conversions.
- \* Brains begin fastest Electric Dragster.
- \* Pioneer in EMUS Technology.
- \* Contributor to EV motor design and development.
- \* [Here is his story on ABC News](#)



- Old Business

- New Business

# Promotions Committee

- Newspaper Ads
- Social Media
- Phone calls to previous members
- Invitations to meetings / Events
- As a gift give a friend an FVEAA subscription
- Help put CCC Charger on Web Sites

# **COMMITTEE REPORTS**

- **Things to Do**
- **Places to Go**

# 2015 EVCCON – EV Conversion Convention, Cape Girardeau MO September 29 to October 4

- <http://evtv.me/>
- EVTV Motor Werks
- 601 Morgan Oak Street
- Cape Girardeau, MO 63703 USA
- E-Mail Address: info@evtv.me
- Phone:
- 573-388-4580

# Hey Jim... Sept 30 to Oct 2

## Electric Boat Summit - Amsterdam

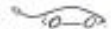


2<sup>nd</sup> World Electric & Hybrid Boat Summit  
for coastal & inland water transportation as well as leisure

30<sup>th</sup> September  
to 2<sup>nd</sup> October, 2015

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Amsterdam & Friesland

PlugBoat, as first World Electric & Hybrid Boat Summit, aims at providing a premier & high quality global platform to foster exchange of views and development of synergies between players in the field of electric & hybrid boats for coastal & inland water transportation as well as leisure. <http://www.plugboat.com/>



**National Drive  
Electric Week  
Sept. 12 - 20, 2015**

Sponsored by Plug In America, Sierra Club,  
the Electric Auto Association and Nissan



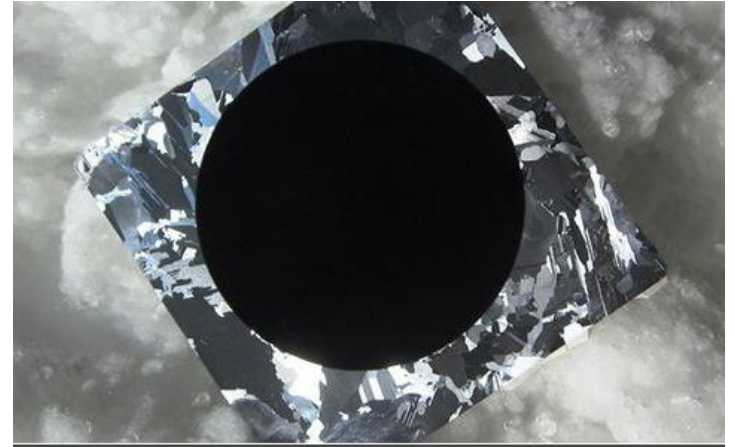
# Discussion – 2 Events?

- **FEATURING EV CONVERSIONS**
- Preliminary Media Show Sun. Sept 13th
- Full Show Sun Sept. 20<sup>th</sup>
- Naperville Test Track 1720 W Jefferson
- Sign up for committees
  - Set up, Tear Down
  - Present EV Conversions
  - Contact Dealers
  - Promotions

- **From the World of Electricity, Batteries and Transportation**

# Solar Cells Built With Black Silicon

- 22.1% efficient. More light-absorbent, captures incident photons from very low angles
- University of Aalto, Finland
- Added dense network of nanoscale needles on top of standard piece of silicon making it less reflective - traps light from low angles
- Doesn't need an antireflection coatings but needs a aluminum glaze to prevent electron "recombination"



<http://www.gizmag.com/black-silicon-solar-cell-efficiency-record/37579/>

# Evaporation Engine Propels Tiny Car With Power of Water Vapor

by DEVIN COLDEWEY

- <http://www.nbcnews.com/tech/innovation/evaporation-engine-propels-tiny-car-power-water-vapor-n376536>
- Researchers at Columbia University have created a way to harvest energy from the imperceptible process of water evaporation, using it to power tiny machines. When certain bacterial spores absorb water, they expand, and then shrink down again as they dry. "This process is very similar to a muscle movement," explained Sahin in a video showcasing the research. The combined force of billions of those spores creates a small but measurable force — and all that's needed to activate them is a bit of moist air.



# PG&E Proposes Major Build-Out of EV Charging Stations

- Pacific Gas and Electric Company (PG&E) in Feb 2015 asked state regulators for permission to build ~25,000 electric vehicle chargers at sites across Northern and Central California.

If approved, this program would be the largest deployment of EV charging stations in the country.

<http://www.altellc.com/blog/2015/02/pgande-proposes-major-buildout-of-ev-charging-stations>

# New Study Finds That Public Charging Stations Are Not Essential For Faster EV Adoption

- From CurrentEvents the EAA Newsletter
- [http://www.electrictauto.org/global\\_engine/download.asp?fileid=5C456688-56A5-4296-AFFC-75A6C22F8324&ext=pdf](http://www.electrictauto.org/global_engine/download.asp?fileid=5C456688-56A5-4296-AFFC-75A6C22F8324&ext=pdf)

# 2016 Elux Karma – From Wanxiang

- **Fisker**

[Wanxiang Group](#), the Chinese auto parts and battery company that purchased [Fisker Automotive](#) out of bankruptcy in 2014, says it is ready to hit the market with a refreshed, upgraded version of the Fisker Karma plug-in-hybrid, now to be called the Elux Karma. 2016.

# Toroidian in Finland

- 1341 hp – 1MW

<http://www.toroidion.com/>





# Electric Mustang 1.94 sec 0-60 mph

Thanks to Steve Ledger for passing this along

- <http://blog.hemmings.com/index.php/2015/06/17/electric-mustang-records-1-94-second-0-60-time-builder-sets-200-mph-goal/#.VYFxlftGd0.email>
- Mitch Medford's zombi-fied electric Mustang **Zombie 222**
- 10.24-second quarter-mile run at 140.8 MPH
- 6.7-second 1/8-mile time at 111.5 MPH
- Two 11" GearVendor overdrive units @ 222V = 440V, 3,600 amps



# ZOMBIE 222

- <http://www.zombie222.com/home.html>

## APOCALYPSE CLASS SUMMARY

- All electric twin 11" motors/controllers drive train
- LiPo Prismatic Pouch High Tech Systems racing battery
- 40 to 140 mile drive range based on pack selection
- Massive 800+ HP and 1800lb.ft. Torque
- 0-60 in 2.4 sec
- Bilstein coil over front suspension
- SOT Floating 3-Link Rear with Watts bar
- Strange PRF180 Aluminum HD section
- Flaming River rack and pinion steering
- 13" Brembo disk brakes all 4 points
- Interior pieces by Mustangs to Fear and Corbeau
- Designed for street or track competition



# New Semi-Solid Battery from 24M

- <http://www.technologyreview.com/news/538741/exiting-stealth-mode-24m-takes-on-the-battery-industry/>
- MIT-based scientist Yet-Ming Chiang 6/21/2015 unveiled startup, 24M.
- Novel semi-solid thick electrode
  - Eliminates 80% of packaging bulk,
  - Reduces time to manufacture 80%
  - Reduces cost 30 to 50%.
  - Increases energy density 400%,
- Raised \$50M in capital



# Tesla Power Wall

- Stores excess energy from solar-panels
- Take advantage of lower rates from utility companies by charging during off-peak times.
- 7kWh for For \$3,000 Or 10 kWh for \$3,500 plus inverter and installation



[http://www.greencarreports.com/news/1098115\\_teslas-new-powerwall-batteries-7-or-10-kwh-for-3000-or-3500](http://www.greencarreports.com/news/1098115_teslas-new-powerwall-batteries-7-or-10-kwh-for-3000-or-3500)

[http://www.greencarreports.com/news/1098363\\_will-tesla-powerwall-home-battery-save-money-cost-calculator-helps-you-decide](http://www.greencarreports.com/news/1098363_will-tesla-powerwall-home-battery-save-money-cost-calculator-helps-you-decide)

# ROI Calculator for Solar Wall Battery

- <http://www.catalyticengineering.com/the-berlin-powerwall/#more-605>
- The larger 10kWh system is more cost effective
- If difference in at night vs day electricity cost is \$.18/kWh, system cost is recouped over 10 years
- Otherwise you're buying the system for backup purposes

## Outputs

### Common

|                                       |         |            |
|---------------------------------------|---------|------------|
| Total installation cost               | 5000.00 | \$         |
| Solar energy to charge battery, daily | 10.87   | kWh DC/day |
| AC energy discharged, daily           | 9.70    | kWh AC/day |
| Avoided cost, daily                   | 1.65    | \$/day     |

### Case 1: Don't buy a battery; sell power to the grid

| Revenue                             | per year |        | over lifetime |        |
|-------------------------------------|----------|--------|---------------|--------|
| Energy sold to grid                 | 3848.37  | kWh AC | 38483.70      | kWh AC |
| Earned revenue                      | 654.22   | \$     | 5748.07       | \$     |
| Net profit of selling surplus solar | 5748.07  | \$     |               |        |

### Case 2: Buy a battery and self-consume your solar

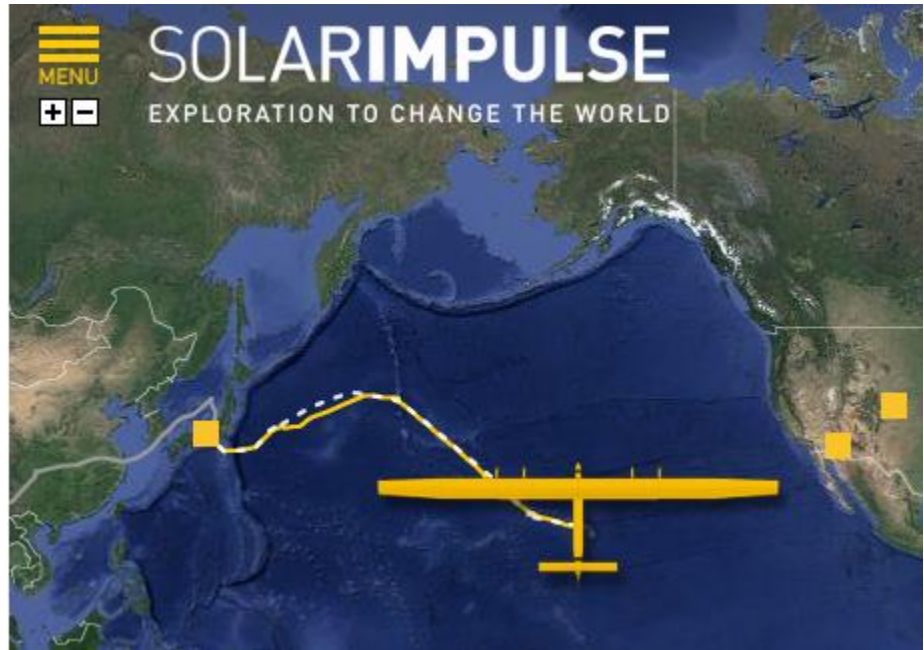
| Revenue                             | per year |           | over lifetime |        |
|-------------------------------------|----------|-----------|---------------|--------|
| Energy discharged and self-consumed | 3540.50  | kWh AC    | 35405.00      | kWh AC |
| Avoided electricity cost            | 601.88   | \$        | 5288.23       | \$     |
| Levelized Cost of Energy (LCOE)     | 0.14     | \$/kWh AC |               |        |
| Net profit of self-consuming solar  | 288.23   | \$        |               |        |

# *Tesla Gigafactory In 4k*

- [http://www.electricauto.org/global\\_engine/download.asp?fileid=866D4863-8DE7-453E-87A4-06C9151C48](http://www.electricauto.org/global_engine/download.asp?fileid=866D4863-8DE7-453E-87A4-06C9151C48)



# Solar Impulse2



**BREAKING NEWS: IRREVERSIBLE DAMAGE TO OVERHEATED BATTERIES PUSHES THE SECOND HALF OF ROUND-THE-WORLD SOLAR FLIGHT TO APRIL 2016**

# Solar Impulse 2 Battery Issues

- So far flown 5 days and 5 nights (117 hours and 52 minutes)
- Now undergoing maintenance on batteries due to overheating.
- During first ascent day one from Nagoya to Hawaii, battery temperature increased due to high climb rate and over insulation of the gondolas.
- Batteries were remotely monitored closely but lacked a cooling mechanism to decrease temperature as each daily cycle requires an ascent to 28'000 feet and descent for optimal energy mgmt.
- **The temperature of the batteries in a quick ascent / descent in tropical climates was not properly anticipated.**



BREAK

MIKE WILLUWEIT &  
GEORGE HILLER

LIMITS OF A WARP9 MOTOR  
USING LITHIUM BATTERIES

EV QUESTIONS

AND

ANSWERS

# Upcoming Attractions for the Months Ahead

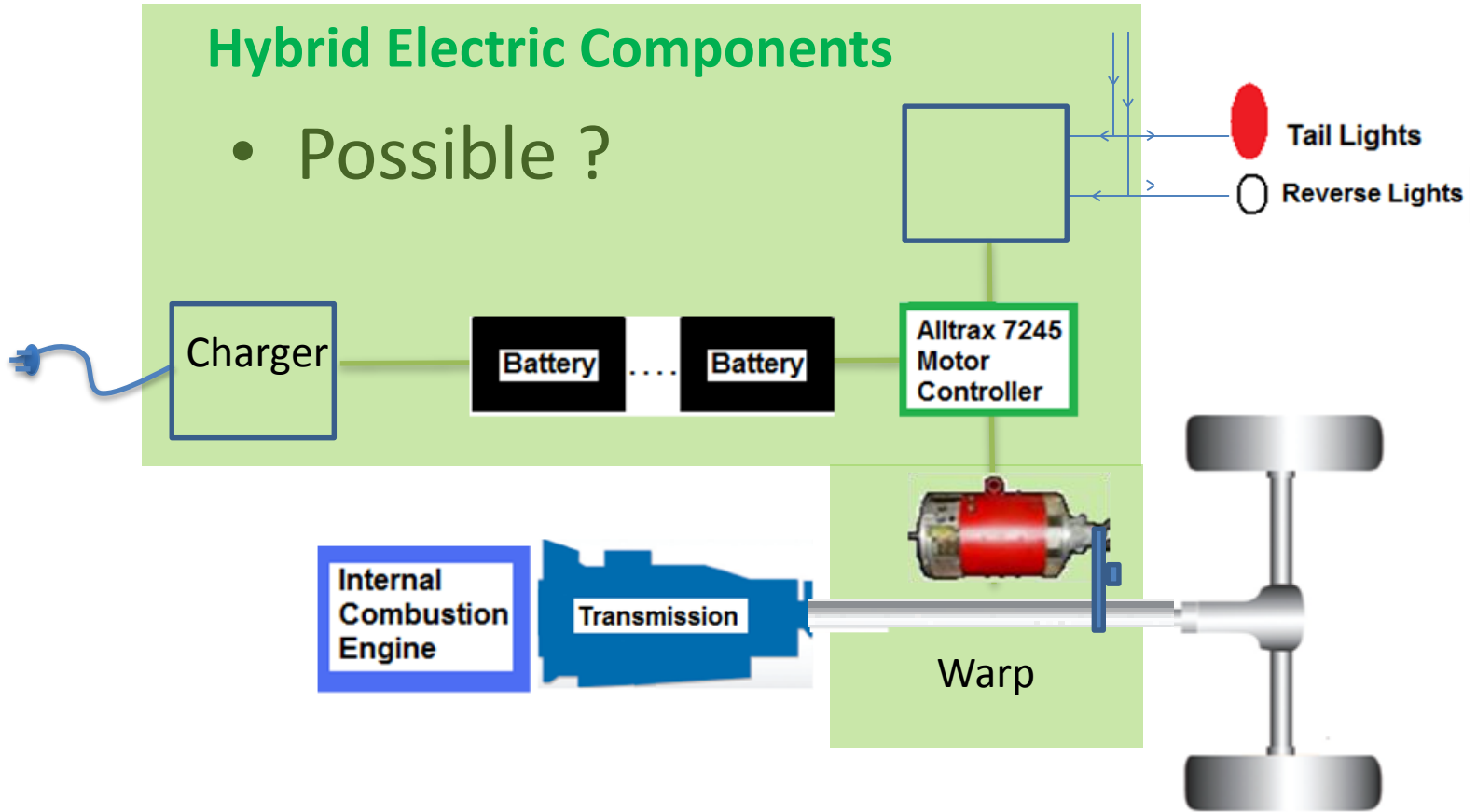
## Need IDEAS / Presenters

- August
- Pikes Peak Update – Rich Carroll
- Bob Baker's 3<sup>rd</sup> of 3 on How to Build an Electric Vehicle
- William McDaniels – Electric BMW
- Dodge Dakota, Jeep, and Porsche Conversion updates?
- September – National Drive Electric Week Event on Sept 20
- NetGain Technologies - Advanced Motor Technologies

# Poor Man's EMIS

## Hybrid Electric Components

- Possible ?





# Why Dealers are Good (??)

- [http://www.greencarreports.com/news/1095260\\_car-dealers-fire-back-why-negotiating-is-good-for-car-buyers-video](http://www.greencarreports.com/news/1095260_car-dealers-fire-back-why-negotiating-is-good-for-car-buyers-video)
- From the National Automobile Dealer Association (NADA)

# What if everything ran on gas?

- <http://www.egmcartech.com/?s=what+if+everything+ran+on+gas>
- (Thanks to Steve Ledger for passing this along from Leslie Grossman from Knoxville EAA)