



The Flying Wire

**Chapter 124
Experimental Aircraft Association**

**Volume 56 Number 7
July 5, 2017**

Board Meeting - 5:30 pm

Dinner - 6:15 pm (\$7 donation)

General Meeting - 7:00 pm

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www.EAA124.org

www.CafeFoundation.org

www.EAA.org

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July 5, 2017 Program

Andy and Sam Werback: REO Flying Cloud

If all goes well (meaning that the car makes it to EAA), we will have Andy and Sam's 1930 REO Flying Cloud on the ramp, followed by a presentation on REO (Ransom Eli Olds) and the Flying Cloud restoration project. We'll have before and after pictures, and some examples of special parts that had to be fabricated.

Dinner Menu

July 4 BBQ - Hamburgers, watermelon, cookies, \$7

Events Calendar

Please send info about upcoming events!

Please send us information if it comes your way!

Oshkosh: [AirVenture July 24-30](#)

Nut Tree Fly-In: [Fourth Saturday Each Month](#)

Boonville Airport Day: Saturday August 12, 2017

Bob Gutteridge: bob_gutteridge@pacbell.net

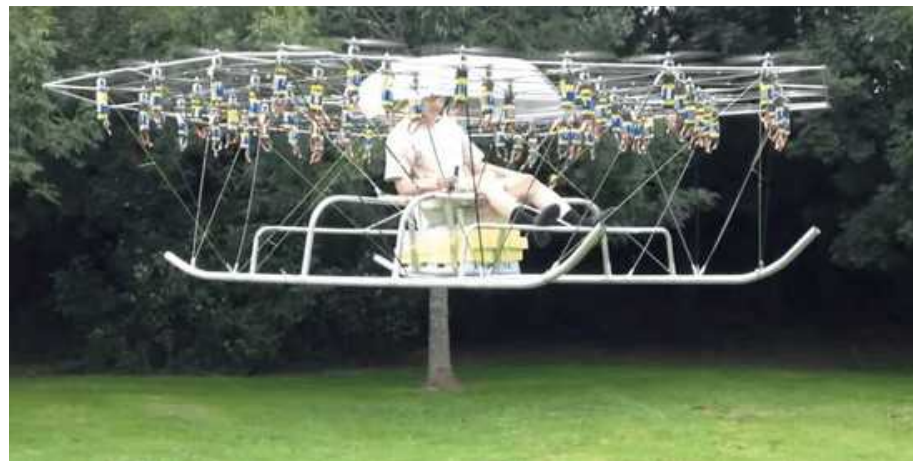
Stuart Deal: aaa124newsletter@sonic.net

Maybe It Isn't that Hard

(By Stuart Deal)

Since we have settled into the Light Sport rules the FAA has not been sitting still. They went on to clarify that autonomous air vehicles are not in our future with some exceptions. With recent drone flights into fire zones where tankers had to shut down operations for safety, drones have become the latest hazard to pilots. Perhaps they are more menacing than large birds because they can be directed by people of ill will.

With the theme of personal responsibility in aviation that the FAA has promoted, and the emphasis on using electricity to power aircraft, bigger and bigger drone style craft are getting attention.



[British Hobbyist Getting ready for Brexit](#)

As you can see, motors that can sustain flight are within reach of amateur builders and since amateur built is an EAA specialty, it seems fair to explore this topic.

Now helicopters are nothing new, but the ability to coordinate multiple motors under control of small computers has reached new heights (pun intended). Being a computer guy, I can tell you that in the same way that a bank account is actually a computer program residue, a computer program can balance the thrust of a number of electric motors and keep them flying.

There are at least four open source software projects that are meant to control unmanned flight systems, but if you add a pilot, the software is mostly the same, but the communications link is much shorter. Clearly, you need extra care to create the confidence to get in and fly it, but rather than the helicopter with the mechanical approach that alters the pitch of the rotor with pedals, a cyclic and a collective, multiple electric motors are run faster or slower with a fixed pitch to accomplish vertical take-off.

The gyroscopic controls to detect motion and vertical position are available for little money and the basic power circuits for the motors are not that different from light dimmers in your house.

The main shortcoming of using a pile of electric motors is not whether you can control them, but can you keep them turning. The one man 'copter above uses about 22 thousand watts to stay in the air for about 10 minutes. [A small turbine powered generator](#) to power remote cell towers and such puts out about 12 thousand watts. A typical portable generator would have about half that. So if you can handle the extra weight, a typical small generator would keep you up in the air an extra couple of minutes.

Let's look at another alternative. If you skip this idea of vertical take-off, you can use a motor glider concept. The way you take advantage of modern technology is by shaping the airframe mold-less foam with allowances for bagged carbon fiber lay-ups. Since there is software that helps get the streamlining and the laminar flow, it should be possible to make a slippery plane that needs very little power to cut through the air.

The difference is that you can build one multi-copter with a sketch on the back of a napkin and some open source software, but it won't take you very far. If you want to get somewhere in an electric plane, the aerodynamic design is as important as the motor and battery design.

As much as there is beauty in the concept of using electricity to fly, short of nuclear powered batteries, or a very sensible interchangeable battery standard, electric aircraft will have limited application, close to the airport, because of the limited energy density of self contained batteries. The George Jetson fantasy of a whirring multi-copter may need to be accomplished by burning petroleum or one of the [five new bio jet fuels approved by the FAA](#).

If you are willing to burn bio fuels, one conception of the Jetson multi-copter is that you use the computer controlled electric rotors to provide control thrust, but dependable turbine engines for the majority of the downward thrust. While this would be more complex, it could still be done more or less off the shelf if the jet engines are carefully coordinated with the faster reacting rotors to avoid thrust imbalances.

In addition, the jet engines would be placed closer to the center of the craft to create leverage for the rotors. The ideal is to have them under the center of gravity, but that is probably not pleasant for a pilot. If you remember the [research vehicles](#) that lead up to the lunar landing, center thrust would be ideal.

The advantage of the hybrid jet/electric multi-copter is that it is still mostly [off the shelf](#) and it would have more than twice the range of a batteries only set-up but you could also build in some generating capacity to extend your flight. Developing the software could be done without expensive turbojet engines by simulating them in software.

The idea that we could live up to a cartoon from our youth where vertical elevation is free may not be valuable, but it would be fun. The energy in our homes that comes from a hidden source in the wall gives the perception of being clean and perfect, yet it is basically earthbound. As people, we tend to have that idea that we are meant to overcome limitations that appear before us, in this case hoping to reduce the energy needs of flight and increase the energy provided by motors and batteries, even to the point of getting into the air with land based launch mechanisms.

An airplane is not abstract. It is a commitment to a specific reality. In spite of the idea that you can add streamlining here, free energy there, you have a range, an altitude and energy use. If you carry equipment to capture solar energy or use thermals to gain altitude and get "free" energy, you still pay a price for the equipment (solar panels) or you spend your time climbing in a column of hot air.

If you take the view that you just want to be in the air, that mission can be fulfilled with a very small engine or even no engine, but normal utility is going to suffer. So from the point of view of choosing what is cool or beautiful or efficient or useful, the sky is the limit. There is no end to the "you could" and "lets try" that might make it fun to think about. But if you are thinking about committing to an actual aircraft, that is not abstract, you have to commit to an engineering "trade off". Of course, that only means a decision.

Will you use a rubber band or a diesel engine? Will you be towed off the runway or launch straight up? What does it take to manufacturer a seamless bubble for a cockpit or is it okay to use just a screen on your panel to see out? Is it possible for a homebuilder to make or does it require a factory? At some point you may want either ease of building or inexpensive repeatability that gets the price of an aircraft within reach.



Boeing X32B -- Losing Joint Strike Fighter

What would make it so an aircraft would attract enough attention so it would become the new standard of utility and affordability? Undoubtedly, "coolness factor" would be part of it. If you remember how the Boeing X32B lost the Joint Strike Fighter competition because it reminded people of Kermit the Frog.

Having the air where you need it makes sense, but people are very interested in looks.



Ehang 184 Passenger Drone

With an endurance of 23 minutes and a speed of 63 MPH and a cost of cost of a quarter million dollars you better not have far to go with the attractive and autonomous Ehang passenger drone. From airport to hotel helipad in Las Vegas is probably all you could do with this. I imagine the theory is that you do not need the wasted space and weight of a pilot when a ground based combination of computers and pilots would work.



[Aurora LightningStrike Hybrid VTOL](#)

Current FAA rules want the passenger to be the pilot if there is some event that requires it. My thinking is that this is okay for pilots but does not open the market that manufacturers fantasize of taxi service for typical travelers.

As you can see from the Pentagon contracted LightningStrike built by Aurora Flight Sciences, turbine engines are the core power source. In the intervening time between now and when batteries and battery packaging allow reasonable endurance, which may or may not be just around the corner, a way to harness computer technology to balance multi-rotor vehicles while using more powerful energy sources may make practical travel a possibility.

If you are willing to hop from place to place, another alternative is to put a latch on the bottom of a large drone to switch batteries instantly. Charging between flights is cheaper but trashes flight utility. Once again the benefit of battery pack standardization seems like one possible path to real utility from electric only human flight.

Having had the experience of working for a LASER company before the concept of a tactical LASER was touted by defense contractors I realized what a complete bill of goods was being sold to tax payers. As an electrical engineer that is agnostic to the charms of electric vehicles I know that physics and economics will always win. Large ground based renewable energy systems will have a huge influence on the earth's atmosphere compared to what we fly. It is not right to conflate the technology of propulsion with the technology of guidance as a single leap into the future no matter how charming the package.

Red Bluff Rendezvous

(by David Heal)

On Friday, June 2, five intrepid Chapter 124 aviators rendezvoused at Red Bluff Airport to have lunch in celebration of Bill Massey's and Bob Gutteridge's coincident birthdays. Bill arrived from far off CalPines in his executive Tri-Pacer, Bob in his Australian Jabiru, Steve Smith in his high-tech Zenith 601, Doug Dugger in his off-road Zenith 601, and Dave Heal in his all-white RV-12.

After a raucous lunch, the group flew on down I-5 to visit Rainbow Aviation at Corning Municipal Airport. Rainbow's owner, Brian Carpenter, gave the group a royal tour of his EMG-6 aircraft manufacturing facilities and current projects (<http://www.electricmotorglider.com>) -- see photo of enthralled aviators.



President's Piece

(by Andy Werback)

It was nice to have several members talk about their times with Remo Galeazzi – always helpful with excellent skills and high standards. He really enjoyed building and flying, among other things, and set a great example for the rest of us.



Our June Presentation was by Phil Gattuso, talking about his background at Santa Rosa, and their (Phil and Steve Penning's) current project – a Douglas A-26 Invader. If you weren't here, you missed an outstanding presentation on the A-26's history,

acquisition, and 5 years of restoration progress. This A-26, SN 44-34313, flew over 1900 hours and 300 missions in Korea. On two missions, ground fire caused significant injuries and damage. After the war, it sold as surplus, eventually becoming a borate fire-fighting aircraft. It is being restored to its Korean War configuration, and its history is being preserved. There is more info at <http://napoleon130.tripod.com/id40.html> and <http://www.vinejet.com/aircraft-sales/1945-douglas-a26/>



I'd like to mention a couple of things that I think are important for the Chapter – even though we are pretty stable membership-wise, I think we can do more.

First, we need a Membership Coordinator – someone who doesn't mind making phone calls and following up with potential new members or old members we haven't heard from in awhile. I made a couple of calls based on John Whitehouse's list of non-renewed members and a couple of members immediately renewed, so there's a lot of potential – keeping our members involved, following up with our visitors, and just generally helping to represent the Chapter.

Second, the Web Coordinator – we have lots of activities that can go on the Facebook page created by Josh and Alan Hernandez – there's lots more opportunity here. And John Palmerlee has expanded the current EAA124 web site with Young Eagle announcements. Somewhere along the line, I think it would be nice to put the member's projects (photo album) and chapter history (another album) up on the web and make it a lot more visible. It can be fun and interesting (see for instance - <http://www.eaa62.org/progress/werback/>).

Well, time to start planning for the trip to Oshkosh - our daughter Katie will be relocating to Ft. Leavenworth, KS for about 10 months of classes, after finishing up her duties in Redzikovo, Poland. So that seems like a good place to spend a day on the way there, even though it's a bit south of our normal route.. The last time we stopped at a nearby joint civil/military base was Ft. Leonard Wood, about 10 years ago, on the way back from Oshkosh.

Have a great 4th of July! And the Chapter meeting is the next day, July 5. See you there.

Fly Mart

For Sale: (6-17)

40x40 Hangar for Sale \$42,500

Contact 707 291-8958

Email: rcassero@sonomajetcenter.com

For Sale: (12-16)

Tripacer wings- need recovering. \$2500

Lycoming O-320, 1230 SMOH Last annual: 2014

Strattus II \$500

Engine mount for Piper Pacer. \$150

Call Jim DuVander 707-953-0129 jim@duvander.com

For Sale: (11-16) 1974 Starduster too O-360 180 hp - Hartsell

Constant Speed Prop - Icom 250 - Intercom - Transponder -

642 TT In Annual - Same owner for the last 16 yrs

Contact Ray or Sher 707-584-9683 or 415-999-0949

For Sale: (10-16) 2009 Van's RV-9A TTSN 590 hours. Engine is a

Titan O-320 with dual Light Speed Engineering Plasma II+

ignitions systems, and Sterba prop. Instruments include--

Dynon D 100 EFIS, Dynon D120 EMS, Dynon 2 axis auto pilot

with AP74 panel, Garmin 196 GPS, Garmin GTR 225 comm

radio, Narco AT50A transponder, Byonics APRS tracking

system. Asking price is \$70K.

Bob Ferguson 707-539-5665

For Sale: (8-15) disassembled continental A65 - needs crank and

camshaft. New engine gauges, ammeter, airspeed indicator,

new aluminum prop extension and new brake actuator.

Paid \$400 - Byron Barnes 707-980-4818

barnesbyron75@gmail.com

For Sale: (7-15) Seat Parachute - needs a fresh repack but otherwise in very good condition. Will sell it cheap to a member if interested \$350. Steve Pizzo, 707-829-7038

For Sale: (7-15) RV-6A Tricycle, Less than 80 TT, 180 HP - \$79,900. See Flickr link below. Ogden Utah. Call Angelo at 801-391-3873 <https://www.flickr.com/photos/angelosrv6a>

For Sale: (7-15) Two Bendix magnetos for 4-cylinder Lycoming (O or IO 320); converted Falco to dual electronic ignition. 1 left, 1 right rotation; both with impulse couplings. Harness, impulse coupling adapters, long mounting studs included. Time in service: 344 hours. Also available: 4 new Tempest massive electrode spark plugs, 4 well-used Champion fine-wire spark plugs, 1 brand-new TSO'd magneto noise filter. \$250 each, \$450 for both. Peter Lert, peter.s.lert@gmail.com, 707-508-7500.

For Sale: (7-15) Garmin D2 pilot watch with GPS, worldwide airport database. Bought for Atlantic ferry flight that was canceled; worn 1 day to prove it works great, so basically new. Original box and all accessories included. New \$450, will sell for \$375. Peter Lert, peter.s.lert@gmail.com, 707-508-7500.



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News/Notes From...

A Reminder that CAFE Foundation EAS is at Oshkosh
Electric Aircraft Symposium 2017

Urban Air Mobility:
Emerging Technologies and Early Market Opportunities

University of Wisconsin Oshkosh
Alumni Welcome and Conference Center
Saturday and Sunday July 22 and 23, 2017

[Click Here for the web site.](#)

Interesting Aviation Links
(thanks to Larry and David)

Fun With Air - [Click Here](#)
Glide Times Nine - [Click Here](#)
There is a way - [Click Here](#)

EAA Chapter 124 Board Meeting Minutes

June 7, 2017

Called to order by Pres. Werback at 5:32 pm. Present: Marlon Young, John Whitehouse, Ben Barker, Steve Barnes, Dave Heal, Brien Seeley, Larry Rengstorf, Dan Steinhoff, Michael Knight

Old Business:

1. Committee Reports - Andy reported that Awards nominations have been submitted to EAA National for Major Achievement (Brien Seeley) and Newsletter (Stuart Deal). The newly-created Lifetime Chapter Achievement award (Remo Galeazzi) awaits adoption of criteria.

2. The Web Committee and Membership Chairs are open and Andy encouraged directors to volunteer.

New Business:

EAA National has a new Chapter Manager. John Egan is a

homebuilder from WI and replaces Bret Hahn.

Marlon reported on conversations with the County about offering tie-down space to tenants on the east side whose aircraft the County would like to relocate. The situation is complicated by the insurance requirements of the EAA lease and the small margin between potential income to the Chapter and rent paid on the space by the Chapter. Four or five aircraft are involved.

VP Report:

Andy's 1930 REO restoration will be the subject of the July program.

Treasurer's Report:

John reported that Andy has replaced Jim Boyer on the bank signatory list. The Chapter broke even in May.

Facilities:

Larry reported that he has now mowed five times and once more will be needed. Normally three mowings are enough for the year. The electric gate has broken down several times and parts are no longer available. The County has scheduled its replacement next week.

Young Eagles:

Andy reported for Josh that the Young Eagles event in Cloverdale went well, other than some intemperate speech by the parachuting operator. Thirty rides were completed.

Meeting adjourned at 5:55 pm.

Respectfully submitted,
Ben Barker, Secretary

EAA Chapter 124 General Meeting Minutes

June 7, 2017

Called to order by Pres. Werback at 7:16 pm.

Pre. Andy thanked the cooks and helpers - Sam, Geri, Gay, Tim and Dan.

Visitors were welcomed, including Michael Knight who worked in the STS tower in the 1990s.

Andy offered special thanks to Stuart for his fine work on the Newsletter, and to John Palmerlee for updating the website to display upcoming Young Eagles events.

The minutes of the April 2017 meeting were approved.

John Whitehouse said the Chapter continues to be stable

financially, having broken even in May. Andy is now a bank check signer, replacing Jim Boyer.

Larry reported the facilities are in generally good condition, although the grass has been unusually enthusiastic. It appears he will mow twice as many times as usual this year, a total of six mowings.

The Young Eagles report from Josh was of a successful Cloverdale event, with thirty rides given.

Marlon remarked that at our July meeting we will be treated to an appearance of Andy's 1930 REO sedan. The very thorough restoration included many tasks that homebuilders will appreciate.

Bob Gutteridge has a new Flyouts list.

Brien Seeley reported on Sustainable Aviation activities since their symposium in Redwood City.

John Palmerlee related that this year's CAFE Electric Aircraft Symposium will be held in Oshkosh just before AirVenture so that people can attend both. Chapter members and students are entitled to special discounts. The registration links are available from John and were published in a Chapter email.

Andy Werback said he has submitted awards recommendations to EAA for Brien and Stuart. He related the news from EAA of a new Chapter Manager, John Egan. Mr. Egan lives near EAA HQ and has built two aircraft, a Pietenpol Aircamper and a Pirate Cub. He is also the mechanical engineer who designed the rotating grill for Chapter 252's pancake breakfasts.

Andy also mentioned two items of interest: a high pressure Schrader valve, and a total solar eclipse on August 21 that will be visible just north of Bend, Oregon for two minutes.

Phil Gattuso, a principal of Vine Jet and well-known local pilot, gave a fascinating presentation on the meticulous restoration of the Douglas A-26C that he and Steve Penning acquired in 2011. The airplane has had an interesting history in both combat and civilian service.

Meeting adjourned at 9:15 pm.

Respectfully submitted,

Ben Barker, Secretary

Chapter 124 Contact Information

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**EAA Chapter 124
5550 Windsor Road
Windsor, CA 95492**

Chapter meetings are held on the first Wednesday of each month at 7:00 pm. FOOD (\$7) AND SOCIALIZING (free) from 6:15 to 7:00 pm. EVERYONE IS WELCOME!

Directions: The site is located on the west side of Sonoma County Airport. Take the Shiloh Road exit from Highway 101 in northern Santa Rosa. Turn left at the stop light (west) and continue to a "T" intersection. Turn left again and follow the road to the EAA sign on the left.

Members are invited to submit articles of interest. You will be notified whether or not an article will appear in the current issue.

Please email articles to: eaa124newsletter@sonic.net
or mail to: Stuart Deal
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Santa Rosa, CA 95401

Deadline for newsletter submissions is the 20th of each month. Articles submitted after that date will be included in the newsletter at the discretion of the editor. All articles are copyrighted. To reproduce any article, please contact the editor.

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