THE WINDSOCK

NOVEMBER 2020

Editor: Frank Huber | Layout Editor: Deb Huber

The President's Flight Deck

Here we are in November and already have had a few tastes of snow! Hopefully everyone is staying healthy and able to participate in aviation events. Since we are spending more time indoors this time of year it is easy to forget about chapter members that we don't see too often. That is especially true this year as we try to avoid the virus ourselves. If you find yourself doing the same, how about reaching out to another member and see how they are doing, it just might make their day!

As mentioned at the last virtual chapter meeting, the Emeraude project has found a new home. Specifically, the project has been donated to the chapter because Mark Heule and myself have agreed to acquire the project from the chapter upon it's completion. Mark and I will finance the project ourselves during it's construction, thus alleviating the use of chapter funds. The project is currently in Mark's hangar until a construction date is determined. Perhaps sometime this summer? We have agreed the CH701 project needs to be finished before the Emeraude project is started. The Emeraude project will be a geat educational project for the chapter, as it requires traditional wood and fabric construction methods. Many thanks to Clem Spencer for donating the project to the chapter, his workmanship is outstanding! Also many thanks to the crew of Bob, Mark, Keith, Jack and John, who helped safely move the project to Mark's hangar. If anyone has questions about the project feel free to reach out to me or Mark.

As an update on the CH701; it has been moved to Mark's hangar, as well, where the crew is in the process of attaching the wings. The crew continues to meet on Monday and Wednesday mornings to work on the project. This also means there is space in the chapter building if anyone is in need of short term project space. Let me know if you are interested.

Our virtual chapter meetings continue to show interest and we encourage all to attend if possible. I realize not everyone may be comfortable with Zoom meetings. If that is you, please reach out to me and I will help find someone to get you up to speed. Our chapter meeting this month will feature Paul Mouw, demonstrating the basics of Solidworks. Paul is an expert in it's use, as he uses it daily for his job. Paul will show us how to get started with Solidworks and is available to answer any questions you may have. This will not be a deep-dive into it's full capabilities, so don't worry if you aren't technically inclined. Even if you have no intention of using it, please tune in as you might just be impressed with Paul's capabilities! EAA offers a single user education version of Solidworks free to EAA members. You can find much more information at this link, solidworks resource center.

I received an email this week from the Tree of Hope organization stating they have only reached

12-1/2% of their goal of $65,000.00! They need our help to reach their goal by December 1st. EAA members across the state have always supported this worthwhile cause, and this year is especially challenging due to Covid. If you can help donate, please visit their site via this link 2020-Campaign.

Finally, if you are preparing your year end tax plans, please keep EAA 237 in mind as a donation destination for your 501(c)3 charitable contributions. Past contributions have helped keep EAA 237 the vibrant organization it is today.

Wishing you a very Happy Thanksgiving!

Emeraude Project Moving Day Pictures

EAA237 COMING EVENTS

The November chapter meeting will be a virtual meeting held on Monday, November 23, beginning at 7 pm. There will be a zoom update email, with the details and a link to the meeting, in the week prior to the meeting. This month's meeting will feature Paul Mouw, demonstrating the basics of Solidworks design software. EAA offers a single user education version of Solidworks free to EAA members.

The next Young Eagles event is planned for Saturday, December 12 out of the Lynx FBO at the Anoka County Airport from 9 am to 1 pm. Check the Young Eagles tab on the chapter web site for more information and to sign up to volunteer.

Because of Covid-19, we will not be holding IMC Club and VMC Club meetings. In the mean time, I will be providing links to articles that will cover areas of interest for both IFR and VFR pilots.

How To Hold A Glide Slope – The SECRET that pro pilots know.

by The Finer Points | www.youtube.com

What Makes An Instrument Approach Unstable?

Boldmethod by Swayne Martin | *11/07/2020* | www.boldmethod.com

What's the point of ground reference maneuvers?

Sporty's Student Pilot News by John Zimmerman | *October 5, 2020*
studentpilotnews.com

Going Down Fast - Emergency Decents

by The Finer Points | learnthefinerpoints.com

How Fall Weather Can Leave You Stuck Above a Fog Layer

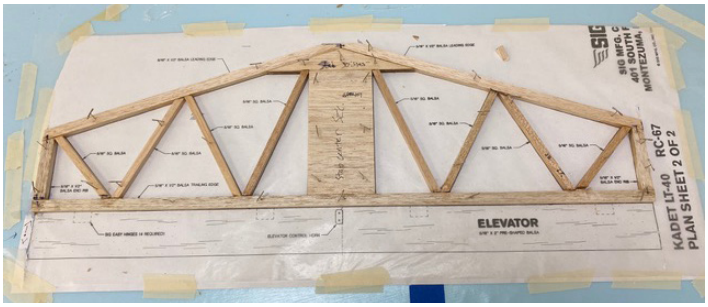
BoldmethodXC by Colin Cutler | *October 13, 2020* | boldmethod.com

GREAT READS for the Aviation Enthusiast

Flying Forts, The B-17 in World War II *by Martin Caidin*
Fighter, The True Story of the Battle of Britain *by Len Deighton*
Flights of Passage, Reflections of a World War II Aviator *by Samuel Hynes*
The Jolly Rogers, The saga of Navy Fighter Squadron VF-17 *by Tom Blackburn*
Gabby A Fighter Pilot's Life *by Francis Babreski*

Owen Larson, one of our 2020 Ray Scholars, continues to finish up his private pilot training with instructor John Johnson through the Flight Expo program at the Princeton Airport. Owen is preparing for his check ride, after he turns seventeen next month in December.

Edward Christian, our second 2020 Ray Scholar, will beginning his training this month up in Grand Forks, North Dakota. Edward, a member of the Anoka Civil Air Patrol squadron, and was going to begin training this past summer. However, the Minnesota Wing of the CAP suspended all flying because of Covid-19, so Ed was unable to begin his training. He is now attending the aviation program at the University of North Dakota and has been able to join the local CAP squadron. He has found two CAP flight instructors, who are seniors in the UND aviation program, who have agreed to provide him the instruction for his private pilot rating. He is scheduled to begin flying the CAP's Cessna 182, as soon as it's annual inspection is completed sometime this month. He plans to fly often, so as to finish his training before the spring semester starts at UND. Edward is the grandson of our late esteemed member, Al Eke.



AVIATION EXPLORING

Post 237

Michael Miller

The Chapter 237 Aviation Explorer group is continuing their work on the RC project. They have completed the wing structure and are now working on the elevators. They have also been practicing their flying skills using the RC simulator. They are preparing for their Explorer Post elections. They will be electing five positions that they fill every year, President, Administrative Vice President, who is the direct assistant to the President, Program Vice President, who is in charge of helping put together our annual post program of activities, Communication Vice President, who is in charge of all post correspondence and publicity, and Treasurer, who maintains all the post financial records. The Explorer post are set up so the participants handle the operation of their post.

Young Eagles Update

Michael Grzincich, Young Eagles Coordinator

In spite of Covid-19, Michael Grzincich and Mike Miller have each flown fifty-one Young Eagles this year!

The chapter held a Young Eagles event on Saturday, November 14 at the Lynx FBO at the Blaine airport on a cold blustery day. Mike Miller and Michael Grzincich braved the cold and windy conditions, giving Young Eagles rides to fourteen young people bringing our chapter total for the 2020 YTD to 203. In spite of Covid-19, Michael Grzincich and Mike Miller have each flown fifty-one Young Eagles this year! With a rule change from EAAHQ, pilots no longer need to reach 10 kids flown for the chapter to receive the $5 per YE vouchers. We use those vouchers to fund things like Air Academy scholarships.

Scott Nelson and Kieran Dostan took care of registering the kids and generating the Young Eagle certificates for all the participants. Several young men, from the chapter Aviation Explorer Post, took care of sanitizing the cockpits between flights. The next Young Eagles event is scheduled for Saturday, December 12 from 9am to 1pm at the Lynx FBO at the Blaine airport. Pilots and ground crews are always needed. If you'd like to volunteer for any role, please create an account at www.YEDay.org, complete the Youth Protection Program training, and drop Michael an email. Pilots: you can fly Young Eagles on your own using the www.YEDay.org registration site. Details are on the web site.

Zenith 701 Chapter Project Update

The project has been moved from the chapter building into Mark Heule's hangar, giving us the room to mount the wings and finish the project. Mark's hangar has lots of room, is heated, well lit and even has a bathroom. The crew is now working on mounting the leading edge slats onto the wings. Once that process is finished, they plan to move onto mounting the hardware for the flaperons on the trailing edge of the wings. The painting of the instrument panel is complete and the process of mounting everything back onto it is underway. Once this is completed, harnesses for the transponder, com radio and EFIS will have to be made. The crew is still working on the project every Monday and Wednesday morning from 9am until usually 12:30 to 1pm. Mark's hangar is on the west side of the field at 2155 Kansas, is the third hangar from the end and has a green door. All volunteers are required to wear a mask for Covid protection.

The leading edge slat has been mounted on the left wing.

AVIATION ADVENTURES
Out and About In Our Neighborhood

Thanks to everyone who took a guess at what the photo of the arrow was all about. No one got it right.

There are giant concrete arrows scattered amongst the landscape across the United States and most are them are in good condition, but some are losing the battle with time. Many are often in remote locations and difficult to access.

Their purpose was important as early NAVAIDS for U.S. transcontinental flights. In 1924, the Postal Service developed a system of airmail routes to allow night flying and improved time and reliability of the mail system. Their solution was effective, if not elegant.

They erected towers with rotating beacon lights that could be scene 10 miles away in good weather. Below them was a secondary set of red and green lights that flashed a morse code to identify the station. On the ground was a concrete arrow, painted yellow, pointing the direction to the next beacon. The arrow in the photo is one of the few remaining and its in the metro area.

To accommodate for emergencies, they created intermittent emergency fields with different rotating beacons. The system was a success and by the end of the first year the airmail service had 18 terminal airfields, 89 emergency fields and over 500 beacon lights.

As technology improved, soon spur routes were added, light strength and distance increased. But, just like the Pony Express became obsolete, technology took more leaps, making land based visual guidance systems obsolete and were replaced by low frequency radio range LFRR technology. Despite that, some systems stayed in use until last operating light operating airway beacon was shut down in 1973,

We are fortunate to have both an arrow and beacon that have survived in the metro area. The arrow is on a private farm in Cottage Grove and can be seen driving on 90th St. The beacon can be scene from Hwy 52, Interstate 94 and from Fleming field. It is located up the bluff overlooking the field and is in Indian Mound Park. You can do an internet search to find more information.

For next month I offer a picture of a decommissioned Air Force Base near Chicago. Can anyone tell me what this base, Anoka Airport and Superior WI have in common? Send your answers to VicePresident@EAA237.org.

EDUCATION RECREATION

EAA

HOMEBUILDERS

What our members are
building, restoring and flying

JEFF MULLIN'S PEGAZAIR PROJECT

Jeff has completed covering the fuselage, wings and tail surfaces with white Oratex fabric. He has recently finished painting his color design on all those components, using the water based Stewart System paint. Jeff has begun the installation of the firewall forward engine systems. As you can see from the pictures, Jeff has created a colorful beautiful design.

QUICK LINKS

The Bad News And Good News About Engine Failures

AIR FACTS by John Zimmerman

This article discusses general aviation accidents and those caused by engine malfunctions in particular. Many of these accidents are preventable by proper fuel management, good maintenance and good operating habits. John Zimmerman does a nice job discussing all those issues and offers some sound advice. airfactsjournal.com

If Your Engine Fails, Should You Fly Best Glide Or Minimum Sink?

Boldmethod by Colin Cutler | 02/08/2020

This comprehensive article takes you through the things you should be prepared to do in the event you have an engine failure in flight. boldmethod.com

When the Unthinkable Happens, An Engine Failure in Flight *by Frank Huber*

As the two previous Quick Links discussed, engine failures in flight do happen and things unfold quickly following an engine failure. Back in late 1998, I decided to purchase an Aeronca L-3B, WWII reconnaissance aircraft, to add to the gaggle of aircraft at the American Wings Air Museum. I found an L-3 for sale at an airpark, located in La Crosse, Wisconsin. The aircraft had recently been restored and looked very nice. After agreeing on a price and one failed attempt to fly it home because of significant issues that needed to be fixed, I took off from the airpark on a cold Saturday in early December.

Given that the engine burnt around four gallons per hour and the aircraft held twelve gallons of fuel, I figured I had a two and half hour endurance with a thirty minute reserve. It was a 107 mile leg to the Anoka County airport, so I felt comfortable with the fuel planning. So after a careful preflight and engine run up, I took off heading north along the Mississippi River. I think the Good Lord sent me a message right after takeoff to turn back. At about two hundred feet in the air, I saw the hub cap of the left wheel go flying off, but I pressed on. I also noticed that the engine tach rpm was not very steady. It was a cold and damp day, so I quickly noticed that I did not have any cabin heat when I turned it on. I was using the carb heat regularly and was getting a rpm drop when I used it. So the flight progressed normally and I passed the Red Wing airport looking good on time for the fuel burn.

I had just gotten the Anoka airport ATIS and was getting ready to call the tower, over the city of White Bear Lake at a 1000 feet AGL, when the engine suddenly quit. I remember thinking that there was no way to try a restart, as the engine was a Continental A-65 engine that was hand propped to start. I looked to the left and saw a school with a good sized athletic field behind it, so I flew towards the field and planned to make my first landing in the airplane. As I got closer, I could see a snow fence that I would have to clear before landing. That worked out fine and I touched down just past the fence, feeling a rush of relief. However, there was a lot of snow on the ground and as the airplane quickly slowed and the wheels dug into the snow, it ever so slowly went over on it's back.

I got myself out of the airplane and walked around it, surveying the damage. The bottom of the cowling was slightly damaged and left wing strut was bent because the plane started turning the last fifty feet. I next noticed that there was no fuel leaking out of the wing tank. It was, at that point, that the shock of what just happened and the worry about appar-

ently running the airplane out of fuel hit me. Someone came over and offered me the use of their warm car. I called my wife and told her what had happened and then called the museum for help in recovering the airplane. I had to wait some time for an FAA inspector to show up and the museum guys to show up with a trailer to haul the airplane to the museum on. That night, the nightly news ran the story and my young daughter, Meghan, wanted to know why daddy had landed the plane upside down!

It wound up being Sunday before we were able to move the aircraft to the museum. Meanwhile, I was trying to figure out how I could have run out of fuel only one hour and forty minutes into the flight. I called Don Berndt to see if he had any ideas. He offered to come over the museum to take a look, which he did that Sunday evening. We took the cowling off and Don immediately said that I had carburetor ice on the flight because I had no carb heat. The aircraft had a Aeronca Champ exhaust system, instead of the original L-3 system. It has a heat muff that covers the area, where the two exhaust pipes come together. It is suppose to have a baffle that forces the air around the exhaust pipes to heat it up. That was missing. Just as important, there is suppose to be forced air coming into the muff to give force to the heated air down to the carb. That, too, was missing. Don explained to me that when the ice forms in the carburetor it causes the engine to run very rich, thereby significantly increasing the fuel flow. Don also found numerous other things that were potentially dangerously wrong. Don wrote a letter to the FAA inspector, explaining all the things that were wrong with the aircraft and that the missing parts had caused the high fuel burn that resulted in the forced landing. Because of his status as a long time FAA maintenance inspector and accident investigator, I was held blameless for the incident. Being an active airline pilot at that time, it was huge what Don had done to clear me from any responsibility for the forced landing.

It took some time to make the repairs on the aircraft and after flying it once, it became apparent that the engine needed to be overhauled. Don Berndt, the great friend that he was, helped me with that project. He knew those engines so well, I think he could have overhauled it blindfolded.

I took away a lot of lessons from this misadventure. First, don't get enamored with an airplane because of how it looks. Always get a pre-buy inspection by someone who knows that type of airplane well and you trust to do a thorough inspection. Second, don't assume that an airplane signed off by an IA is good to go. Third, have a plan in mind in case of the unlikely event of an engine failure. I was on the ground in not more than a minute, so there wasn't much time to consider any options. I had to just fly the airplane. Fourth, try to maintain your aircraft in the best condition as possible. Fifth, always carefully plan your flight to ensure you have adequate fuel to safely complete it.

And, most importantly, I'm very thankful for all the great people I have had the pleasure knowing through aviation. My hope is that none of you will ever have to experience a forced landing.

Electric Propulsion

by Ronald Borree

General Aviation Electric Propulsion Projects
Starting in this article we will begin to look at and follow current "flyable" GA airplanes or commercial/experimental projects under development and describe the technology used. Pipistel Aircraft has a number of flying total electric powered planes with their home base in Slovenia. Pipistrel offers a motor/controller system for retrofit or new build described in this article.

The two seat model Alpha Electro is described and is type certified in Europe. Details below are from the Pipistrel website. www.pipistrel-usa.com

The Alpha Electro technology summary is:

Motor: The electric motor used is the Pipistrel anti-freeze/water cooled PEM 60MVLC and is an AC high voltage axial flux synchronous motor. This 60+ kW electric motor weighs 44 pounds and is more powerful than the popular Rotax 912 series.

- Maximum power is 60 kW per 1 min
- Cruise power is 50 kW @ 2100 – 2400rpm.

The base motor manufacturer before extensive modification is Emrax (cooling, mechanical parts added by Pipistrel). The time between overhaul of the motor is 2000 hours with a 6000 hour life.

Inverter and Battery: The Pipistrel Electro 60 inverter converts the 399 volt DC battery voltage to high voltage AC. The 21 kWh air cooled battery pack is dual redundant with two packs and designed to be either quickly replaceable within minutes or charged in less than one hour. The air cooled battery pack uses small cylindrical cells manufactured by Samsung. The battery box design and assembly is by Pipistrel as is the Battery Management System (BMS).

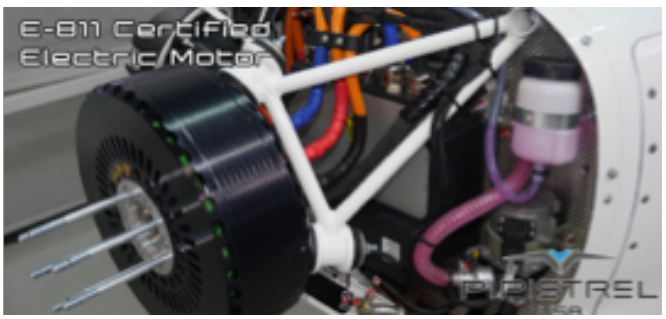
Weight and Flight Time: The airframe uses proven features from hundreds of Pipistrel's aircraft flying worldwide with the basic empty weight with batteries at 811 pounds.

- The maximum take-off weight (MTOW) is 1,042 – 1,214 pounds (LSA)
- Flight time at cruise/cross-country is 45minutes @18kW and 75 kts IAS (Indicated Air Speed) with a cruising speed (75% power) of 85 Kts IAS.
- The max climb rate is 1,220 fpm with a service ceiling of 12,800 feet.

E-811 Electric Motor/Controller Package for Retrofit or New-Build The model E-811 engine/controller electric propulsion package offered by Pipistrel is shown below with photos and basic specifications.

The E-811 propulsion package is a liquid cooled state-of-the-art axial flux synchronous permanent magnet AC electric motor combined with a liquid-cooled power controller/inverter giving 57.6 kW (77 hp) of peak power, and 49.2 kW (66 hp) of maximum continuous power.

Depending on the chosen architecture the controller/inverter requires high-voltage 250-400 volts DC to convert to high voltage AC. Various energy sources can be used, which may be batteries connected via a battery management system (BMS), or a generator, or a fuel cell, or combinations thereof.



E-811 Motor

E-811 Controller

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Financial and Property Donations

As an educational entity, Chapter 237 reminds you that we are a 501 (c)(3) corporation and gladly accept donations to promote aviation education to our members. For additional information please contact EAA 237 treasurer Mark Heule at treasurer@EAA237.org.

On The Lighter Side

If a telemarketer calls, give the phone to your 3 year old and tell her it's Santa!

The emotional support dog after I get done telling it my problems.

In future Windsock editions, I plan to showcase aircraft that our members are building, restoring and flying. Please email me with the aircraft you are building, have completed building, are restoring or have purchased and are flying. I will follow up with you to provide a questionaire and will come out to take pictures to include with your article.

If you have a story or photo you would like to see in our newsletter, contact Frank Huber | eaap51@comcast.net | 763-245-0170

To view past issues of The Windsock, visit www.eaa237.org and select newsletters.

Articles and photos for consideration in our DECEMBER issue are due on or before DECEMBER 10.