
May 2024

# EAA Chapter 1387 Newsletter

**President's Corner** | May 2024 | Bill Jagust

## 2024 05 MAY
## LEARNERS AS WE GO
## "THE WAYS OF THE GYROCOPTER"
## mr. bill

Good Day EAA 1387'ers. I hope this newsletter finds y' all doing well. And hopefully your aero machines are getting the Spring cleaning and tweaking they need. Speaking of "tweaking," Mr. Jim M. was out yesterday re-certifying the transponders for the Troy Airpark Airfleet and it was good to see our awesome pilots and their planes out in the open air after all the rain the last couple of days.

The Mighty FlightStar II getting its radios checked.

Well at this Saturday's meeting we will explore the world of Igor Bensen and his gyro copter. Though developed and marketed by Dr. Bensen in the 1960's it was truly brought to life by Ken Brock with his kit sales and flight demonstrations at the EAA Oshkosh Airshows in the

1970's and 1980's. Remember these flights around Airshow Center? This video was from his Paso Robles, California Airshow. Man could this man fly the machine!

https://youtu.be/icL52ny5OtQ?si=6aH7eSHJENAUoe6Q

Those Bensen/Brock kits were advertised to be assembled in a weekend. And through the power of time lapsed photography, YOU too can see that happen…….

https://youtu.be/hSp4eULcBB4?si=9hch3-YgwpVN78-c

Well with some luck and some touch and goes at Smartt Field this week, I shall try to bring out a Vancraft Lightning Gyrocopter. It looks something like this…..

https://youtu.be/bMVOv8vBlnw?si=HybvSTM5TzGKWwU2

What you see in this video is the ultralight gyro being stated and taxiing off the ramp, right onto the taxiway that is parallel to the runway. Upon reaching flying speed, one of the neat tricks is to takeoff the taxiway and "hop" over the grass and land on or "slow flight" over the runway, until the end of the runway, and then land (usually in about 50 feet) and stop at the end of the runway. This pilot shuts down the gyro for his dramatic ending to the flight.

Other than buzzing around in the skies or over the countryside at 10 feet in the gyro at 65 mph, there is a "I BET YOU I CAN" landing TRICK that the gyro can do. Watch this video to see how the gyro descends QUICKLY!

https://youtu.be/sfCiGI_TB_E?si=XkEpksYBkvdaYoAA

OK class. You saw the video and how fast it can descend. The trick is to be ONE thousand feet above the middle of the runway right over the taxiway you plan to turn off on. BUT you are 1,000 feet above it!

With a 25-mph headwind, and at 1,000 above the ground, over the runways turn off taxiway, YOU pull FULL back on the gyro control stick and let the airspeed go to ZERO! Then you let the gyro descend as you work the rudders LEFT and RIGHT which causes the gyro to fly backwards as it is descending at about 200 feet per minute.

At 500 above ground level, YOU MUST push the control stick forward to get to 65 mph airspeed by diving for the turn off taxiway, which is now about 300 feet in front of you. (Because you backed up with the headwind.) So, you aim for the runway and taxiway intersection, flare, touchdown and stop in 50 feet, and look to your right and there is the runway turn off intersection, that one minute ago you WERE 1,000 feet over. SO, that was fun to SEE AND DO!

Other than that, flying along at 50 feet off the ground at 65 miles per hour "Cranking and Banking" is about it for the gyrocopter.

Gyrocopters were originally designed because airplanes STALL. And Mr. Juan de la Cierva had a dear friend die in an airplane stall and spin accident. So, he set out to design a safe flying machine.

The gyro was the fore runner to the helicopter.

Q? How did Ken Brock travel to and from the Oshkosh Airshow?

A: He had a 1957 Volkswagen Beetle that had a trailer with the gyro in tow. He would drive it from California to Oshkosh and back.

One last video of flying gyro's back in the day. Yep, let us take off on the highway of life!

https://www.youtube.com/watch?v=ca2php3Tuv0&t=4s

## May Meeting (0900 Sat. 4 May) – Bradsher's Hangar @ Stearman and Aero Dr., Troy Airpark

Safe flying everyone, mr. bill 314-494-3987

• • •


As the Newsletter editor at large, I'm always seeking your input for sharing with the Chapter. To this end, all input for the Newsletter is due at the end of the month for the next issue. Please feel free to submit any item of interest to share. Thanks for your support and blue skies!

Joe V.

## VMC Question of the Month

**Question**: What is the difference between torque and P-factor?

**Answer**: Torque is the force that counters rotation of the propeller, whereas P-factor refers to the asymmetrical propeller thrust caused by the difference in angle of attack between the ascending and descending propeller blades. Both are responsible for the left turning tendencies experienced by a single-engine aircraft during climb.

**Source**: FAA-H-8083-25C, Pilot's Handbook of Aeronautical Knowledge, Pp. 5-30, 31

## NEWS FROM HQ

**In the May Chapter Video Magazine, Charlie Becker gets you up to date on EAA happenings:**

1.) International Young Eagles Day June 8th

2.) Chart it All Special

3.) Homebuilt Aircraft Council

4.) Ray Scholar Milestone - 500 Pilots!

5.) AV Chapter Camping

6.) AV Chapter Pancake Breakfast

7.) AV Forum Presenter Application


AIR FACTS
the journal for personal air travel—by pilots, for pilots

ARTICLES MOST POPULAR VIDEOS NEWSLETTER WRITE FOR US WHAT IS AIR FACTS?

## Why the Starship was such a disaster

JANUARY 3, 2018 / 77 COMMENTS / BY MAC MCCLELLAN

When one examines a failure of such monumental scale as the Beech Starship program, the inevitable question is, “Why did they do that?” As in almost every instance where things go badly wrong, it was a series of decisions made under shifting circumstances that led to the ultimate disaster.

To understand the roots of the Starship program decisions, we must think back to the early 1980s when they were made. Beech had been acquired from the founders by Raytheon, a leader in high tech of the day. A recession — that hit general aviation particularly hard — cast a pall over the future. And so did memories of the crushing oil embargos of the 1970s. Serious and knowledgeable people predicted the world would run out of oil, not just run out of cheap oil.

*Who could have guessed that the trusty King Air would outlast the sexy Starship?*

Who could have guessed that the trusty King Air would outlast the sexy Starship?

Beech dominated the turboprop market with its King Air family. In fact, other makers of turboprop twins had dropped production, or gone out of business entirely. We could not then predict the steady and impressive gains turbofan engines would make in fuel efficiency so the turboprop held important advantages in an oil worried world.

That was the setup for the decision makers at Raytheon. The thinking went something like, “Our company, Beech, dominates the turboprop market. Turboprops hold a vital fuel efficiency edge. Ergo what we need is an advanced turboprop to cement our market position for decades to come.”

When an aviation decision maker goes looking for great leaps forward there is always somebody with an unproven idea ready to fulfill their dreams. In the early 1980s one of the most talked about bits of aviation magic looming on the horizon was composite construction. Using carbon fiber reinforced plastic could cut airframe weight by huge amounts, proponents claimed. And we all know that a lightweight airplane is everything good. It’s faster, carries more, and is more fuel efficient.

And composites seemed to be at least somewhat proven. I remember that Gulfstream made a composite rudder for its jet and saved 200 pounds. If you can save that much on a rudder, think how light an airframe built entirely from composites would be. The mind boggles.

The other propeller airplane configuration that always tantalized, and even could be proven in wind tunnels, was mounting the engines on the rear as pushers. A pusher prop produces more thrust on the same power, and because the props are aft of the cabin, the passengers experience jet-like smoothness and quiet.

Once the Raytheon decision makers bought into the incredible weight savings promise of composites, and the benefits of the pusher propellers, the other design decisions — most of which turned out to be awful — cascaded down on them.

The Starship could have been designed with a conventional wing and tail, much like its contemporary, the Piaggio Avanti, was. But the futuristic look of Burt Rutan's canard creations was so exciting. Burt's "Eze" homebuilt designs were popular, looked fast, and were. The fact that an Eze empty CG is so far aft that the empty airplane can't even sit on its nose gear without tipping over backward didn't seem to register with Raytheon.

To get that futuristic look and make the airplane practical in terms of CG location the Starship wing needed a large amount of sweep. Wing sweep looks fast, and does reduce drag above critical Mach that is usually faster than Mach .70, but at turboprop speeds sweep adds headaches and penalties with no benefits. A swept wing is less structurally efficient, which means it's heavier than a straight wing. And sweep degrades stability, particularly in yaw-roll coupling.

*The design was radical for the time, but it didn't deliver the results.*

The design was radical for the time, but it didn't deliver the results.

Some believe a forward wing (canard) instead of a conventional horizontal tail is more efficient because it always lifts while the normal tail produces balancing downforce. But because it's always lifting the forward wing must always stall before the main wing so the nose will pitch down making recovery possible. But to have enough lift at low speeds for adequate pitch control with wing flaps extended, the Starship forward wing had to be too big to not stall at higher airspeeds. The solution was a mechanism that would sweep, and unsweep the forward wing.

Because the forward wing sweep was obviously critical to airplane performance and stall behavior, lots of monitors and backup equipment were required. The result was more weight and complexity with not much, if anything, in the way of measurable performance benefit.

The Starship also had the unfortunate timing of being caught between avionics technological developments. Electronic flight instrument systems (EFIS) were in service, but the displays were

actually little more than TV tube pictures of conventional instruments. It was not possible to combine all six primary flight instruments into a single display. But, to continue with the airplane of the future theme, the Starship designers opted for an EFIS display of every individual cockpit instrument. There were 16, as I recall, individual TV tubes in the instrument panel burning amps and pumping out gobs of heat. The avionics cooling fans were an absolutely critical item.

If you lived through that time you'll remember the aviation world being divided on the Starship. Not necessarily evenly, but divided. One camp believed that airplane would deliver its promise of 400 mph cruise speed, jet level of vibration and quiet, and range pushing out close to 2,000 miles. The other camp believed a plastic airplane couldn't be built and certified, and the strange configuration would not work, and the whole program would flop.

I remember one evening sitting in a Wichita bar with Mike Potts, who worked in Beech PR at the time — imagine that, a writer and PR guy in a bar — discussing the Starship's future. In a stroke of brilliance, or maybe it was gin, we realized there was a third possible outcome. What if the Starship is certified and built, but just doesn't do anything well, and certainly not better than other airplanes.

And that's exactly what happened.

It didn't take long to learn that composite construction could not deliver the promised weight savings. As the Starship empty weight soared, the whole program would have collapsed except for a new FAA certification program called commuter category. The "small" airplane category the Starship was launched under maxes out at 12,500 pounds takeoff weight. In exchange for more stringent structure and performance requirements the commuter category allows takeoff weight to go higher. Those commuter category requirements undoubtedly added even more weight but did allow the program to continue. The eventual maximum ramp weight of the Starship topped 15,000 pounds.

More than the usual amount of tweaks and mods were required to bring the Starship flying qualities in line with the rules, but Beech persevered. In the end the Starship was the most stable airplane I have ever flown. I didn't believe an airplane could be too stable, but the Starship is. It plows through bumps like it's on rails. And the only way to initiate a reasonable roll rate is to stomp the rudder hard as you turn the wheel. Stability is great, but stability is the antithesis of low drag. Because of that, the big miss on weight, and no realized efficiencies from the forward wing configuration, the Starship missed all of its performance goals, by a lot.

About the only place you see a Starship these days – hanging from the ceiling.

Beech built 53 Starships and only a handful were sold. The rest were leased because almost nobody wanted to sign on for an open-ended conventional ownership. In the end Beech tried to buy back all of the Starships to put a couple in museums and destroy the rest to end the cost of

*About the only place you see a Starship these days – hanging from the ceiling.*

supporting the tiny but complex fleet. I was invited to fly a Starship on its final flight into McConnell Air Force Base in Wichita where it would go on display at the air museum there. It was fun to make that final flight, and to buzz the runway a few feet high at red line airspeed. But I couldn't help thinking what could have, and should have, been instead of the Starship.

The Starship disaster is unusual on the long list of new airplane failures. Most importantly it did get built. Most paper airplanes never fly, and certainly almost none are certified and produced. The other big difference is that no order holder lost their deposits on the Starship. Raytheon stockholders didn't do so well, but Beech didn't screw the aviation public.

But the Starship was a disaster for all of aviation in terms of lost opportunity. The billion bucks — closer to two billion in today's dollars — that Raytheon spent going down the wrong technology paths could have been, and should have been, spent on an improved conventional turboprop. Today's King Air 350 is a terrific airplane, and a best seller, but if that billion dollars had gone into building on the King Air instead of chasing a dream we would have an airplane now that is several inches larger in cabin section, more fuel efficient because of a newer wing design, and less costly to maintain because of modern system design and materials use.

I cringe still when the Starship is described by so many as high-tech, and futuristic. It was a failure in every respect. Raytheon shot for the moon and ended up with an exotic looking airplane that didn't do anything as well as airplanes already there, and costing much less. And all of aviation was robbed of the really terrific airplane that a billion dollars could have created.

Author Recent Posts

**Mac McClellan**

When people ask Mac McClellan what he does for a living, he replies, "I fly airplanes and write about them. And I'm one of the most fortunate people in the world to have been able to make a career of doing what I love." Mac has been a pilot for more than 45 years, an aviation writer for more than 40 and has been lucky enough to get to fly just about every type of personal and business airplane in production from the 1970s onward. He was on the Flying Magazine staff for 35 years and editor-in-chief for 20 of those years. He has private pilot privileges in single-engine airplanes, commercial pilot in helicopters and ATP in airplanes with more than one engine. He holds several business jet type ratings and has logged more than 10,000 hours. His first airplane was a Cessna 140 and for the past 27 years he has owned a Baron 58 flying it more than 5,000 hours to cover the aviation industry. And now he is a part-time corporate pilot flying a King Air 350.

Chapter 1387 Events for 2024. Always looking for membership inputs on what everyone is working on or what you'd like to share with the Chapter. Building projects, Items of Interest, etc. would be ideal. Please review and send me your input to share! Thanks, Joe V.

| 2024 Chapter 1387 Calendar of Events-Meetings on 1st Sat of the month at Troy Airpark |
|---|
| May<br>• **13-18th – EAA Learn to Fly Week**<br>• IRS Form 990N due by 15thJa<br>• Plan for Chapter Camping for AirVenture<br>• Major Achievement Awards deadline<br>• Member Input – Bill Jagust – Flying the Gyrocopter |
| June<br>• International Young Eagles Day - June 8, 2024<br>• Member Input – John Roser – The Retired Airline Boyz |
| July<br>• 22-28 July - EAA AirVenture – Chapter Breakfast and Picture on Wed- 24th |
| Aug<br>• Member Input – Tech Update? |
| September<br>• Member Input -<br>• Chapter Poker Run Fly Out |
| October<br>• YE Rally at Mexico<br>• Member Input - Volunteer Needed<br>• **Leadership Academy Training - 24-25th at EAA HQ** |
| November<br>• Officer Elections – Secretary and Treasure<br>• Member Input - Volunteer Needed |
| December<br>• Chapter Christmas Social<br>• Election Results<br>• Chapter Renewal by 31 Dec for HQ |

EAA LEARN to FLY WEEK
May 13–18, 2024 | Supported by sporty's

**Upcoming Webinars Schedule**

# Upcoming EAA Webinars

**EAA gratefully acknowledges the support of Aircraft Spruce and Specialty Co. for their generous sponsorship of EAA webinars. Registration is required, and space is limited.**

**Borescope Initiative | Qualifies for FAA WINGS and AMT Credit**

**Wednesday, May 1, 7 p.m. CDT with Mike Busch**

*The borescope is one of the most important and versatile tools for inspecting GA aircraft, and is the gold standard for assessing cylinder condition in reciprocating aircraft engines. However, aircraft and engine manufacturers have provided no guidance on how to perform a proper cylinder borescope inspection, and A&P training doesn't cover it. In this webinar Mike Busch, A&P/IA, discusses what his company (Savvy Aviation) has done recently to fill this vacuum.*

**Slip Slidin' Away – All About Uncoordinated Flight | Qualifies for FAA WINGS Credit**

**Wednesday, May 8, 7 p.m. CDT**

*We were all taught, from our very first lesson, to step on the ball and avoid uncoordinated flight. After all, slips and skids can lead to stalls and spins, can't they? And then, three or four lessons later, we were taught how to slip. But why on earth would anyone want to do that? Doesn't that lead to the dreaded stall/spin accident? In this FAA Safety Team WINGS award webinar, you will learn how to do forward and side slips, staying both uncoordinated and perfectly safe.*

---

**Solid Edge Synchronous and Ordered Modeling**

**Wednesday, May 22, 7 p.m. CDT with Doug Stainbrook**

*Doug Stainbrook with Siemens Solid Edge provides training on the use of the Siemens Solid Edge computer-aided design (CAD) program made available to EAA members by Siemens. The webinar will focus on the differences between Ordered (traditional history-based) modeling and Synchronous modeling offered in Solid Edge; moving Ordered models to Synchronous; hybrid modeling, combining ordered and synchronous features in the same model; creating dimensional formulas; and driving dimensions from the variable table and Excel. Learn how to take advantage of this powerful 3D modeling tool and create complex 3D models.*

---

**Building Your Dream Airport**

**Wednesday, May 29, 7 p.m. CDT with Gary Stevens**

*Considering a private airport, or wanting to learn more about your airport? This presentation covers the basics of*

*airports, a comprehensive 101 discussion by Gary Stevens, former state and federal airport development and compliance inspector. This presentation will emphasize design, operations, construction, and alterations of privately-owned turf airports and review the approval process of FAA, state, and local zoning authorities. Additionally, it will review how to find additional resources to help your private airport.*

---

**Minimally Invasive** | **Qualifies for FAA WINGS and AMT**

**Wednesday, June 5, 7 p.m. CDT with Mike Busch**

*Medicine has enthusiastically adopted minimally invasive procedures. Instead of biopsies, we do ultrasounds and MRIs. Instead of open surgery, we use laparoscopic and endoscopic procedures. In this webinar, maintenance expert Mike Busch A&P/IA makes the case that we should also be using minimally invasive methods in the maintenance of our aircraft.*

## How Can We Help?

**EAA Chapter 1387 President**

Bill Jagust
bsarj@cs.com

**Vice President**
Don Glaser III
dglaser3@gmail.com

**Secretary**
Dale Baldwin
dale.baldwin@gmail.com

**Treasure**
Pat Donovan
pa24pilot@centurylink.net

**Young Eagles**
Bill Jagust
bsarj@cs.com

**Ray Scholarship**
Bill Jagust
bsarj@cs.com

**WEB Editor**
John Roser
311bonanza@gmail.com

**Newsletter Editor**
Joe Veile
jveile01@gmail.com

**Technical Counselors**

**John Tracy**
jtracystl@yahoo.com

**Dale Baldwin**
dale.baldwin@gmail.com

**Flight Advisors**

**Bill Jagust**
bsarj@cs.com

**Mike Bradsher**
mikebrad@troyairpark.com

**Pat Donovan (VMC/IMC)**
pa24pilot@centurylink.net