



Chapter member Pierre Levy and Young Eagle, Española Rally 2022

EAA Chapter 691 Newsletter November 2022

On the Web @ www.eaa691.org

EAA 691 is:

President: Will Fox

Vice President: John George

Secretary: Pierre Levy

Treasurer: David Young

Web Editor: Brian O'Neil

Newsletter Editor: April Fox

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Chapter members will be asked to vote as we move towards Non-profit, tax-exempt status!



Steve Hill
Talk this
Saturday!

Upcoming Events

- This Saturday-KLAM meeting @ 10:00am. Please be there to vote, or send your proxy to Will @ tailspinfox@gmail.com
- Dragonfly Work Sessions every Wednesday and Saturday @ 2:00pm @ KLAM. Contact Will Fox for more information
- Chapter Christmas Party, Hosted by America and David Young December 17th... Potluck and White Elephant Mark Your Calendars!



Chapter 691 Holiday Party

December 17th @ 11:00AM

Potluck and White Elephant

Hosted by David and America Young

819 Gonzales Rd

Santa Fe, NM 87501

Steve Hill Bio:

Steve Hill is a Mechanical Engineer, sailplane pilot, power pilot, and former propeller maker. He was born and raised in Albuquerque. Before starting Twisted Composites in Moriarty, he worked at Boeing, Northrup, Lockheed, Gulton, DeVore Aviation, and Owens Composites. He is Crew Chief for Nemesis Air Racing and Sport 10 Air Race Team. Steve, his wife Lilly and many dogs have lived for 35 years in a solar home they designed and built themselves in the Manzanita Mountains south of Tijeras, NM.

My talk will include the following:

- The Sharp DR-90
- The Sharp NXT
- The 2015 NXT Thunder Over Moriarty record setting event
- The NXT Ferry Flight to the NASM at Dulles
- The NASM Nation of Speed Exhibit
- The Rolls Royce Spirit of Innovation Electric NXT



Letter from the editor

by April Fox



The reason for the season

I want to thank our member Josh Sandoval for coordinating a community trick or treat at the Sandia Airpark on October 31st, and for opening his hangar up to the East Mountain community for a Halloween party. There was an awesome turnout, and the kids had a great time playing games and winning candy and treats. Thanks for putting this together!





I want to thank all our members for your dedication and love of sharing aviation with kids. We had two very successful YE rallies this year and hope to continue to host rallies at the Española Airport in the future. Sonyamaria Martinez was an integral part of hosting the Española (E14) rally, thank you Sonyamaria, you are AWESOME! I also want to thank Melissa Salazar for bringing her and Gary's camper to serve up hot cocoa and donuts for the kids at the E14 rally, what an awesome community we have in Española. Finally, thank you pilots and groundcrew at both rallies. You inspired many kids (and adults) at these rallies, and it could not be done without you. You are ALL greatly appreciated.

Rusty Henson took some amazing photos at both rallies, thanks Rusty!

President's Report

by Will Fox



The Chapter airplane movers have been on the job moving the Ercoupe and Volksplane that Chris Trapp donated to the Chapter.

Airplane Donations

"We make a living by what we get. We make a life by what we give." – Winston Churchill

I have some really good news. The Chapter now owns an Ercoupe and a Volksplane, or at least the airframes and a motor☺ Chris Trapp has had a dream of designing and building his own airplane for a number of years. During that time he acquired an Ercoupe airframe and a Volksplane experimental airplane in the hopes of using parts from them to create his dream aircraft. Chris is now passing those aircraft along to us to support our goal of building an electric airplane. I can't thank Chris enough for his generous donations. They will help us to expand our STEM program and bring the the Electric Dragonfly to life.

Speaking of donations, the Chapter is moving rapidly towards becoming a tax exempt nonprofit organization. Thanks to the efforts of Skip Egdorf and Pierre Levy we now have a path forward to make that happen. It will require a change to our Articles of Incorporation and our Bylaws, which we will discuss and vote on at our November meeting.

Steve Hill will be the speaker at our next meeting on November 19, 2022 at the Los Alamos terminal building. We will have coffee and donuts at 9:30am and the meeting starts at 10:00am. Steve is an engineer, pilot, propeller maker, and composites expert. He will be talking to us about his experiences as a crew chief racing at Reno, and working on the Sharp DR-90, the Sharp NXT, and the Roll Royce Electric NXT, among other things. It should be a very interesting presentation and you won't want to miss it. For more information about Steve and his projects check out Steve's website at <https://www.twistedcomposites.com/>.

Ercoupe and Volksplane move





Member Happenings



John George just acquired this Ultralight SCH-2A Coaxial Helicopter. The helicopter is made by a company in Slovakia called the Miro Copter Company. Miro Crv is the designer and company owner. The empty weight of the copter is 249 lbs and it can carry up to 280 lbs. It uses a 60 hp two-stroke engine with dual ignition. The set of counter rotating blades eliminates the need for a tail rotor and also increase the efficiency of the helicopter.

John, has a strong interest in gyrocopters and helicopters and has a pilots license for gyrocopters as well a fixed wing aircraft. He owns a gyrocopter, has owned a helicopter in the past, and now has a coaxial helicopter as well. He also recently received a patent for a hybrid coaxial gyrocopter. He plans to build one of those in the not too distant future to demonstrate its advantages over conventional helicopters and gyrocopters.

The fellow in the pictures with John is Mark Rumsey who is a distributor for the SCH-2A. The price for the SCH-2A is \$35,000. Mark delivered the SCH-2A and explained to John and me how to assemble and operate it. I got a chance to sit in the helicopter and amazingly I fit. I need to get a picture of John sitting in it as well.

You can see more at:

Interview with Miro Crv, the designer
<https://www.youtube.com/watch?v=53yDkGdInBI>

Flight testing the SCH-2A
<https://www.youtube.com/watch?v=zIVhhu3IfjA&t=57s>





Española Young Eagles
September 2022



Los Alamos Young Eagles
October 2022

Is the Flying Car Back?



Tech Corner

by Will Fox

Ever dream about a car where pushing a button turns it into an airplane, and pushing another turns it back into a car? I doubt there is a pilot out there that hasn't thought about it while waiting in traffic or for better weather. A flying car could be the best of both worlds. A dependable road warrior, to get you around on the ground and a speedy steed to go from airport to airport in the air. Plus you would have the convenience of being able to park it in your garage. It would also be pretty cool to own one, and it certainly would come in handy should you need to make a [quick getaway](#) sometime. The dream of creating such a vehicle has inspired inventors for more than a century.

Well, for designer and inventor Stephan Klein, who has been working on flying cars for over thirty years, the dream has come true. Klein recently received an airworthiness certificate for his AirCar after over [70 hours of flight testing](#) and 200 takeoffs and landings. Testing included cross country flights, exploration of the AirCar's performance envelope, and takeoff and landings without the pilot touching the controls. Pretty impressive accomplishment by any standard, but there is more. The AirCar converts from a [car to a plane](#) and back again with a push of a button. The wings automatically fold into the car body and the booms supporting the empennage retract as well, resulting in a sporty looking roadster. Actually it's more than sporty looking. There is a certain elegance to the design. If the Terrafugia is the Volkswagen Beetle of flying cars, then the AirCar is the BMW Roadster.

Speaking of BMW, the prototype AirCar uses a six cylinder, 1.6 liter, 160 hp BMW engine to power the drive train.



The Klein AirCar is a flying car that was recently granted a Certificate of Airworthiness by the Slovak Transportation Authority. With a push of a button, it automatically converts from a car to an airplane.



The AirCar has a reported top speed of 124 mph in the air and 96 mph on the ground. It takes off in 1200 feet on pavement and 1700 feet on grass. That's right, grass. Part of its flight testing included takeoffs and landings on a grass field. The AirCar recently [completed an intercity flight](#) between two international airports that included driving to and from them as part of the trip.

The aerodynamics of the AirCar are also interesting. Klein built a full size remote control [Flight Test Bed](#) to evaluate the flight characteristics of the vehicle, including its stall behavior. The wing produces three quarters of the lift, and the car body provides the remainder. The AirCar weighs a hefty 2400 pounds and can carry another 450 pounds in payload. It is also equipped with a ballistic parachute system. Klein hopes to have a commercially available version of the AirCar available in a year and is also working on a more [powerful version](#) of it that will use a 300 hp motor and deliver more performance.

OK, now how about a dose of reality. While I am amazed at the elegant design, convertibility, and sophistication that Klein's AirCar exhibits, like pretty much all of the flying cars that have come before it, it is heavier and slower than an equivalent aircraft with the same amount of horsepower. No surprise there, because a normal aircraft is full of compromises, but turning one into a flying car requires compromises on top of compromises. The result is that the combined vehicle performs neither role as well as its purist sibling. Flying cars built to date have been heavy, noisy, cramped, cumbersome to convert, and slower than their purist brethren both on the ground and in the air. The argument for the combined vehicle is that the speed, flexibility, and convenience that it offers will be sufficient to offset its performance deficits and additional cost. I have to wonder if the AirCar will be anymore successful in the market than all of the other flying cars that have come before it. So let's go down that rabbit hole for a moment by looking at the Aerocar and the Terrafugia. Both were flying cars that the inventors hoped would be a commercial success.

Molt Taylor's Aerocar and Carl Dietrich's Terrafugia were both certified to be used as an aircraft and as a car. The Aerocar first appeared in 1949 and was CAA certified in 1956. Taylor hoped to to sell them for \$8000 but they ended up costing \$15000 (\$175,000 in today's dollars). Ultimately, only six Aerocars were produced and sold. The Terrafugia appeared in 2012 and was FAA certified as an LSA in 2021. The initial cost was expected to be around \$194,000, and the most recent figure quoted is \$400,000. I say quoted, because no Terrafugias have actually been produced for sale and may never be, because the company has shut down its operations. While there have been many attempts at building flying cars, none of them have achieved any level of commercial success other than that of entertainment value. After all, the Aerocar appeared in the TV series, [The Bob Cummings Show](#).



The Molt Taylor Aero Car (top) and the Terrafugia (bottom) were both flying cars that were certified aircraft but neither was successful in the market.

It would be easy to stop here with a prediction that Klein's AirCar faces the same fate that flying cars historically have faced and won't succeed in the commercial market. That may turn out to be the case, but I think he has certainly taken a step in the right direction with a flying car that not only automates the conversion, but also accomplishes it in a manner that results in a vehicle that looks good and can fit in the family garage. These are distinct improvements in the flying car concept. So I wonder, if Klein were able to incorporate some of the technology we are seeing in electric cars, autonomous vehicles, and air mobility platforms, into the AirCar, could it become commercially successful?

Let me explain. I believe that for a flying car to be commercially successful, it needs to be affordable, at least for the General Aviation crowd, because they will most likely be the early adopters. It also needs to be able to convert from car to plane to car again automatically and end up in an attractive, garage sized car (like Klein has demonstrated). It needs a hybrid electric propulsion system to reduce weight and improve performance. It needs to be capable of at least semi-autonomous operation in flight as well as on the ground. Its performance in one form or another needs to exceed that of its monopolar competition. I think this is really important. Do you know why companies like Tesla, Rivian, and Lucid exist? It's not because they build green cars. It's because, even though they are expensive, they offer performance and technologically advanced features that weren't available from other car manufacturers, and the early adopters were willing to pay for them.

I'm not going to try to design a flying car in this article, but I do want to take a minute to discuss why a hybrid propulsion system could make or break the project. The propulsion system for an aircraft or a car is critical to its success, and in both cases the engine that drives it is considerably oversized for the job. It has to be oversized so it can handle momentary loads such as acceleration from a stop in a car and takeoff and climb in an airplane. One solution to this problem that is now commonly employed in [auto racing](#) is the use of a hybrid electric propulsion system with short term battery storage to handle peak loads. Why not do the same thing in a flying car? You could have Tesla acceleration in car mode and STOL performance in airplane mode. In addition the use of electric wheel motors can all but eliminate traditional drive trains and their accompanying weight. Advances in propulsion always lead to advances in aviation.

I think the future for flying cars could be promising if inventors incorporate technological advances that are occurring in other transportation industries. I am far from giving up on them. Like Henry Ford said "*Mark my words, a combination airplane and motorcar is coming. You may smile, but it will come.*"



The Glenn Curtiss Autoplane (top) and the Sampson Switchblade (bottom) are flying car concepts. The former only made a few hops down the runway, the later has only driven down the runway to date.

EAA Chapter 691 Membership Application/Renewal Form



Please mail this form along with \$25 to our Chapter Treasurer, Checks can be made out to EAA Chapter 691:

David Young
819 Gonzales Rd
Santa Fe, NM 87501

Name: _____

Spouse/partner's Name: _____

EAA #: _____ Expiration Date (MM/YY) ____ / ____

Address: _____ City: _____ State: _____ ZIP: _____

E-mail: _____

Home phone: _____

Work phone: _____

Cell phone: _____

Please list your currently flying A/C and any finished or in-progress projects:

Proxy Form

Name: _____

EAA number: _____



I give _____ authorization to vote on my behalf on all issues put to vote by EAA Chapter 691 during the November 20, 2022 meeting.

Signed _____

Dated _____