

## COZY NEWSLETTER #83 Oct., 2003

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Co-Z Development Corp.

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Subscription rate: \$16.00/2 yrs., \$20.00/2 yrs. OUS

(2-year renewals save us record keeping)

Cozy Mark IV Owners Manuals - \$15

Cozy & Cozy Mark IV decals - \$5 ea. (specify color)

Subscribing to the Cozy Newsletter is a requirement for all builders. The Cozy Mark IV plans are obsolete unless updated by all changes or corrections in the newsletter. All builders must subscribe to the newsletter. First Edition plans holders need newsletters #34 to present. Second Edition plans holders need newsletters #52 to present. Third Edition plans holders need newsletters #74 to present. New plans purchasers will receive an assortment of back newsletters (we no longer have copies of all back newsletters) plus a complimentary one-year subscription to start them off on the right foot. They will need to renew when that has expired. The older copies, which we can no longer supply, are available on the Unofficial Cozy Web Page. The newsletter is the principle means by which we communicate with builders and support their projects. The newsletter contains plans corrections and changes, builder hints, information and updates about our suppliers, shopping info, first flight reports, and other news of interest to builders. We answer telephone calls whenever we are home and personal letters as well, but please enclose a stamped, self-addressed envelope if you expect a reply. We encourage newsletter input from builders (letters and pictures) which would be of interest to other builders.

“Cozy” and “Cozy Mark IV” are trade names of Co-Z Development and are the names given to airplanes built according to the plans and instructions of Co-Z Development. Just because you buy a set of Cozy or Cozy Mark IV plans, does not mean you have to build your airplane exactly according to plans. It is an experimental airplane and you can, in fact, make whatever changes you desire. But then you have a new, untested design, and shouldn't register or insure your airplane as a Cozy or a Cozy Mark IV.

Co-Z Dev. and Aircraft Spruce are the only ones authorized to sell plans and construction manuals, and Co-Z Dev is the only one authorized to provide builder support for the Cozy airplanes.

### AUTHORIZED SUPPLIERS

Authorized suppliers are those suppliers we selected because of their excellent reputation in the industry, whose parts and materials we proofed in our plans model and who agreed to supply the same parts and materials to our builders.

#### 1) Basic Materials

Aircraft Spruce West Box 4000 Corona, CA 91718 (909)372-9555	Aircraft Spruce East Box 909 Griffin GA 30224 (800)831-2949	Wicks Aircraft 410 Pine St. Highland IL 62249 (800)221-9425
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#### 2) Metal Parts

Brock Mfg. Co.  
11852 Western Ave.  
Stanton CA 90680  
(714)898-4366

#### 3) Fiberglass Parts

Feather Lite  
1327 S State St, Arpt.  
Ukiah, CA 95482  
(707)462-2939  
(707)462-3424

#### 4) Canopy & Windows

Airplane Plastics Co.  
9785 Julie Court  
Tipp City, OH 45371  
(937) 669-2677

B & C Spec.  
PO Box B  
Newton KS67114  
(316)283-8662

#### 5) Specialties

Custom Aircraft  
14374 Olde Hwy 80  
El Cajon CA 92021  
(800)561-1901

#### 7) Propellers

Performance Props  
Box 486  
Patagonia AZ 85624  
(520)394-2059

Sensenich Props  
2008 Wood Ct.  
Plant City FL33567  
(813)752-3711

#### 8) Prop Hub Exten.

Saber Mfg.  
3601 Nassau Ct.  
Granbury TX 76049  
(817) 326-6293

### OTHER PARTS WE RECOMMEND:

We can recommend the following items:

- 1) Improved **Rudder pedals** for lay-down brake cylinders, adjustable both sides. Dennis Oelmann (319) 277-5996.
- 2) **Electric speed brake actuator kit.** Wayne Lanza (772) 664-8953; [wlanza@bellsouth.net](mailto:wlanza@bellsouth.net)
- 3) **Switching and breaker panel.** Wayne Lanza (772) 664-8953, [www.CompositeDesignInc.com](http://www.CompositeDesignInc.com).
- 4) **Fuel sight gages.** Vance Atkinson (817) 354-8064.
- 5) **Electric nose-lift.** Steve Wright (615) 373-8764.
- 6) **Electric nose-lift, Spring steel safety catch,** and improved **MKNG-6 and NG-6 Pivots** with tapered roller bearings. Jack Wilhelmson (843) 884-5061.
- 7) **Electric pitch trim.** Alex Strong (760) 254-3692.
- 8) **Voice annunciated warning system.** Richard Lewis (423) 376-1450.
- 9) **Rebuilt flight instruments.** Howard Francis (not a Cozy builder) (480) 820-0405.
- 10) **T-shirts,** etc. Bill Walsh, [nogofsu@sprintmail.com](mailto:nogofsu@sprintmail.com). (407) 696-0942.
- 11) **Antennas.** RST Jim Weir (530) 272-2203.
- 12) **Teflon & Stainless Hinge Pins Replacement.** Gary Hall (954)979-9494.
- 13) **Nosegear crank ratchets.** Bill Theeringer (805) 964-5453.
- 14) **Embroidered clothing.** With pictures of a Cozy, name, N number, etc. in any color. Trish Vermeylen (609) 693-4819.
- 15) **Featherlite:** Their email address is: [fhrlite@pacific.net](mailto:fhrlite@pacific.net)  
Check there for latest prices.

### DESIGN CHANGES/CORRECTIONS

- 1) Chapter 23, p.10, Fig. 40: Add a note that the baffle shown for cylinder #4 is upside down.

### BUILDER HINTS

- 1) Nick Parkyn suggests this to avoid corrosion of the canopy hinge attach bolts. Saturate the bare wood in the holes through the longeron with epoxy to seal the wood fibers. Do this by dipping a cotton swab into epoxy and then inserting it into the hole. Alternatively, you can drill the hole slightly oversize, fill it with flox, and after cure, redrill it to the correct size.

## FOR SALE

- 1) **Cozy III N527ES for sale.** E3D 0-320 Lycoming with 1600 total hours, 150 hrs on a yellow tag top overhaul. It has a Narco 12D with ID 825 head, a Narco AT 150 transponder with an AR 850 encoder, cruises at 200 mph at 2500 rpm. \$50,000. E-mail Ed Strickland at [edscozy@aol.com](mailto:edscozy@aol.com) or tel (912)639-8300.
- 2) **Cozy project in France.** The canard, spar, fuselage, both wings, main gear, nose gear and turtle back are completed. Must sell because I am moving to a smaller house in the center of the city and must spend more time in my profession. Guillaume de Bellefon, tel (33)0 476 71 7895. [Guillaume.debellefon@wanadoo.fr](mailto:Guillaume.debellefon@wanadoo.fr)
- 3) **Cozy Mark IV N2269H.** 1996 Oshkosh Plans Built Grand Champion. Engine IO-320 160 hp. Constant speed propellor Hoffmann HO V72. Fuel injection, 2 coms, 2 navs, 2 CDIs, ADF, transponder, ELT, intercom w/stereo, and moving map GPS. Navaid, Rocky Mountain Monitor and encoder. \$150,000. Contact Debbie Merrill (563)534-7188 or (563)419-5432 cell.
- 4) **Plans built canard, wings and centerspar.** Both upper and lower winglets are attached. Ailerons and rudders are cut out. The wings are match-drilled to the spar. Contact Dennis Oelmann at (319) 231-2635.
- 5) **Cozy Mark IV canopy and side windows:** New in box. Will deliver in LA area. \$400 OBO. Don (909)678-1363.

## DESIGN CHANGES/CORRECTIONS

- 1) It is recommended that builders drill a 3/16" hole through the side of MKNG-6 and strut and install an AN-3 bolt of the proper length and nut to prevent the MKNG-15A assembly from coming loose from the strut and departing the aircraft in the event of nosewheel shimmy (see article entitled **NOSEWHEEL FRICTION DAMPER** later in this newsletter). It will also help to make the MKNG-15A assembly attachment more secure to dimple the strut and fitting before floxing the fitting in place.

## FIRST FLIGHTS

- 1) We learned that Tom Manella, in Boonton NJ is flying his Mark IV, and we have written to him asking for a first-flight report for the newsletter.
- 2) Brad Crawford advised that he will be flying by the time this newsletter goes to the printer.
- 3) Jindrich Tomas, in the Czech Republic said that his Cozy has been completed and he is ready to fly.
- 4) And we learned that Jean-Patrick Lacot is flying in France. He writes:

Hi everybody,

8/08/03

The day of glory came!! My Cozy MKIV took its maiden flight on July 23, 2003.

I finished its construction in mid June, this year, after 3 1/4 years and 3600 hours of building time. I moved it to Pontoise Airport (northwest of Paris), passed the GSAC inspection, and got a permit to test fly it.

During construction, I had the pleasure and the privilege to have visitors and advisors like Benoit Lecoq, Alain Raposo, Yves Pranal, Steve Wright, John Slade, and Yves Olliver. Also I took advantage of the Cozy Forum of Marc Zeitlin, with all your good

advice and questions/answers, and of course with all the feedback given by Nat.

Before flying alone, I had the chance of flying with Benoit Lecoq, Alain Raposo, Yves Pranal, Gerard Maurel, Eddie Vann in their Cozy MKIVs, Classic and Long EZ. In the last 10 days (since July 12), I did 4 takeoffs and landing with Alain Raposo's Cozy, took six 1 hour lessons with a pro chief pilot (27 landings at 80 kts in order to get used to a speed approach) and flew 2-1/2 hours alone.

My first flight: what to say? Everything went fine, a bit fast. The plane was steady, stable, very quick to answer when you move the throttle, excellent visibility, and I landed after 40 minutes and had the complete day after that to think about it. Well, I felt (and still feel) good and I hope that you will enjoy your 1<sup>st</sup> flight pretty soon.

You might like to keep in mind the following: I have a Performance 3-blade prop. After the 1<sup>st</sup> taxi, I checked the torque of the 6 bolts and had to add 1/2 turn on each of them in order to get back to 40 ft/lb. After the 1<sup>st</sup> flight, I had to add about 1 turn each. After the 3<sup>rd</sup> flight, I had to add 1/2 to 3/4 of a turn. So it seems that checking torque is important.

Jean-Patrick

Versailles, France

We know there are a lot of builders close, but are there any other new fliers out there?

## \$50 AWARDS

Our best advertising is enthusiastic builders who invite others to see their projects or take them for a ride. We prefer to spend some of our advertising dollars by rewarding those builders who influence others to become Cozy builders, and to show our appreciation, we send \$50 to builders whose referrals result in a new Cozy builder. Latest to receive a \$50 award is **Steve Brooks**, Chappells, SC, for inviting Ed Michaels to come and see his project and influencing him into becoming a Cozy builder. Thank you, Steve. **Eric Westland** also influenced a new builder but asked me to use the \$50 to extend his subscription and to take Shirley to dinner. Thank you Eric.

## \$100 AWARDS -- COMPLETIONS -- COZY

Any EAA member who completes a homebuilt aircraft between December 17, 2002 and December 31, 2003, will receive a centennial dataplate and a certificate of accomplishment from EAA as part of the commemoration of the original homebuilders' (the Wright brothers) first powered flight's 100<sup>th</sup> anniversary. EAA will also display a picture of the proud homebuilder with his completed aircraft on the EAA website. Send your name, EAA number, a copy of your registration Form 8050-3, a picture of you with your aircraft, and a brief description of your project to:

EAA Aviation Information Services

P.O.Box 3086

Oshkosh, WI 54903-3086

Also, both Sport Aviation and Kitplanes are requesting all builders to send in pictures of their completed projects, with short write-ups, because that is one of the most interesting features for their readers. We have found that these pictures and write ups are more impressive with prospective builders than an equivalent sized picture ad. **That is why we award each builder \$100 for their entry in either or both**

**magazines**, or an Alex Strong pitch trim, which would otherwise sell for **\$175**. Awards this quarter:

- 1) Ed Strickland, August Sport Aviation and September Kitplanes.
- 2) Kevin Funk, September Kitplanes.

### **OSHKOSH (AIRVENTURE) 2003**

Lee Parlee came down to Mesa again this year to take care of Cozy business while we were away at Oshkosh. We left early and headed for Minnesota to visit family before heading to Oshkosh. Our first destination was Duluth, MN, for a Christening of our newest grandson. We picked a good day for flying. It was severe clear from Mesa to McCook, NE, our favorite fuel stop, except that over New Mexico at 11,500 ft we ran into a swam of bugs (can you believe it?) that really plastered the canard, wings and canopy so bad we could hardly see. Then, after leaving McCook, we ran into a little weather disturbance in northern Nebraska, but after circumventing a couple of thunderstorms, it was clear the rest of the way to Duluth. It took us 7-1/2 flying hours from almost Mexico to almost Canada. That's better time than we could have made going commercial.

Our next destination was St. Cloud, MN for a family get-together at son Matthew's new lake cottage. Then on to St. Paul to visit our daughter and badly injured son-in-law. Then to South St. Paul to visit Shirley's sister, and then on to Oshkosh.

When we checked in and set up our exhibit on the south side of Bldg. A (same place as the last 5 years), we obtained 10 extra weekly passes, so we contacted Kim and Daryl Lueck, who put a note on the internet that we would furnish weekly passes to the first 10 builders to show. They were all gone the first day.

The theme at Airventure this year was 100 years of powered flight which, incidently, was also 100 years of canard powered flight. Wicks really scored a home run by picturing on the cover of their new catalog the Wright Flyer 100 years....and then the Cozy Mark IV.....to the next 100 years, with the heavens in the background. This is a real collectors item. If you don't have a copy, we suggest you ask for one...right away!

Our exhibit is a favorite spot for our builders and prospective bulders to stop, sit in the shade (or shelter if it is raining) and meet others they haven't seen for a year. Even Burt Rutan stopped by to say hello and invite us to his forum where he was talking about his "White Knight" and "Space Ship One". We saw many of our builders, but missed Chrissi and Randi, whom we heard were there. We took various builders out to dinner, and got to know quite well one of our new builders from Brazil, Dr. Fernando Miranda. David Domeier camped with us and showed us his new RV-7.

We set a personal record on the number of plans sold. We want to thank our builders, especially Kim and Daryl, for relieving us for periods each day, so we could grab a bite and visit some of the other displays. We find that Cozy builders are the best sales people at Oshkosh and other fly-ins.

During our breaks, we visited all the engine suppliers, including the Jabiru, which some of our builders are installing, and Eggenfellner (Subaru), Aero Sport Power, and several other companies that assemble the XP-360.

We looked at many new instruments/avionics. The new Dynon EFI at \$1995 was very attractive. We are hoping they will come out with a matching engine monitor. The new Vision Microsystems VM1000C for around \$3400 is very attractive. And Stern Technologies has a very attractive engine monitor for \$2790. The Mico Air Nav/Com and Transponder are very attractive and light weight packages that mount in 2-1/4 dia. panel holes without requiring trays.

We like the Garmin 196 hand held, with the flight instrument page, and purchased one from Aircraft Spruce. Both Aircraft Spruce and Wicks had show discounts.

There were 4 Cozys entered in the Airventure Cup Race.

Three were Dr. Kevin Funk and son, Tim and Wendy Freeze, and Marc Zeitlin and Wayne Hicks. I forgot who the 4<sup>th</sup> was. They were 1 day late in arriving because they were held up by weather in Dayton OH. Marc gave a very detailed account of the entire affair, but it was too long to reprint here. They all had a good time and the Cozys did very well. Even though they were not out to beat everyone else, Tim Freeze was very pleased to have beaten the RVs.

There were too many things going on to even try to attend all. We had to skip the homebuilders picnic so we could attend Dave Martin's (Kitplanes) retirement party on Thursday evening.

Kim and Daryl arranged a very nice Cozy buffet dinner at Robins on Saturday evening. Peter Meszaros, the MGS distributor, asked if he could contribute to the dinner party to show his appreciation to Cozy builders. Kim and Daryl suggested wine, so he furnished carraffes of 3 different kinds of wine at each table. He outdid himself then by contributing a large number of door prizes—most impressive! We had a lively discussion about epoxies.

We had an unusual number of showers this year at Oshkosh. On Monday, the last day, many airplanes wanted to get off before the airshow (Surprise! 100LL was only \$1.99/gal.). But Oshkosh was IFR until just after 12 noon. Even though we had pulled our airplane out to be near the taxiway, when the field went VFR, there were suddenly about 100 airplanes ahead of us. We sat in line, engine running, for about 1/2 hour, until it was finally our turn. We were required to fly 5 miles SE before we could take up our heading, and we finally found a hole in the soup so we could go up on top. So up we went, and stayed there until guess what, McCook NE. FSS told us about a huge thunderstorm just south of the field, and when we called in, McCook radio said they would like to put us in a hangar because they were expecting heavy weather. Sure enough, as soon as we taxied into their hangar, all hell broke loose, including rather large hail.

The FBO loaned us a courtesy car (not a McCook police car this time) to go into town to the Best Western, our favorite motel with a swimming pool and courtesy hot breakfast. The next morning it was severe clear, and we sailed home to Mesa in record time. Our 31<sup>st</sup> Oshkosh, in the books!

### **THE COZY BUILDERS FORUM**

Since the Airventure theme this year was 100 years of powered flight, it seemed appropriate for us to review where we have been, where we are, and our plans for the future.

Most of you know that we got into this business by accident. We were burned by Jim Bede going bankrupt, and

couldn't complete the kit we had paid for, so we were impressed by Burt Rutan's philosophy of buying plans from the designer and then getting all the materials and parts from existing, established suppliers. We were also intrigued with the canard configuration and composite construction.

The Varieze project, after our very disappointing experience with the BD-5, was fabulous. The composite building from plans was so easy, and flying the Varieze was so much fun, we were eager to build another Burt Rutan design. But another tandem airplane, the Long EZ? No way! So then the light bulb went on. Just buy a set of Long EZ plans, widen the fuselage in the front and relocate and/or change a few other things and then two could sit in the front seat side-by-side.

At first Burt didn't like the idea, but he finally came around, thought it was a good idea, and suggested we sell plans to a side-by-side Long EZ and pay him a royalty. We were reluctant to take this step, but Bud Meyers at Wicks said their business depended on plans-built designs, and pleaded with us to make plans available so they could supply the materials. So we bit the bullet and undertook what was a big job, the writing of plans and instructions. Just after we really got rolling, Burt decided to get out of the homebuilt business, and tried to convince us to do the same. For awhile, we were concerned about the liability aspect (since Burt had been sued many times), but our 3-place design was well received and we got to know a whole lot of very nice people—our builders! I retired from my position at 3M in 1985, and we moved to Mesa, where we decided to add an art studio and workshop to the new home we had purchased, only a mile away from Falcon Field.

After the Velocity appeared on the scene a couple of years later, I kicked myself for only building a 3-place, and thought I should prove that I could build a 4-place Cozy as well. So I first prototyped a 4-place in '88, and then built a plans model in 1990-1992. We added a lot of improvements to the 4-place (compared to the 3-place), named it the Cozy Mark IV and published plans, which turned out to be even more popular than the 3-place. We have learned that there are a certain number of builders each year who wish to build a high performance, 4-place, composite canard airplane from plans. Ours is the only design available, there is nothing on the horizon to replace it, and after 11 years, it is growing in popularity, so we have been deliberating about what is the best way to make this design available to builders in the future, after our demise. This has been a retirement hobby for us these last 18 years, and we have enjoyed doing it. But who else would have this same motivation and interest? It is not a business that would make anyone rich, or even provide a decent living in the absence of some other source of income. Clearly it should be part of some other aircraft business, and what other business would be better than a supply business that depends on a continuing supply of builders who wish to build from plans?

With these thoughts in mind, we talked to both Wicks and Aircraft Spruce. Wicks is basically an organ company, and the owners are concerned about liability in the aircraft business, and did not wish to be involved in selling aircraft designs. Aircraft Spruce, on the other hand, is dedicated solely to the aircraft business, has been expanding both its product line and its locations, and already sells plans to other designs, and they

are the only source of spar cap tape. Its 2<sup>nd</sup> generation owner, Jim Irwin, was very much interested in buying our copyrights and taking over our plans sales. So we reached an agreement that Aircraft Spruce would buy our business, effective in January 2004, and we (Co-Z Development Corp.) would continue to provide builder and sales support as long as we are asked, and as long as we are able. The copyrights on the Cozy designs are good for at least 70 more years, which is probably a little longer than we will be able to provide support. However the design has been pretty well optimized, and there is a pretty active group of builders who are quite eager to assist new builders, so builder support well into the future should not be a problem.

We will continue to publish the newsletter and provide support. We do not consider that we are bowing out, but rather making arrangements for the Cozy program to continue as long as there are builders wanting to build Cozys. This has been a wonderful experience for us, and we hope this design will continue to be enjoyed by builders in many years to come.

### **JIM IRWIN'S Email TO BUILDERS**

To Cozy Builders:

I first want to thank all of the members of the Cozy newsgroup who posted their comments regarding Aircraft Spruce's acquisition of the cozy design rights in January 2004. For the builders who posted comments critical of Aircraft Spruce, we appreciate you voicing your concerns over the customer service issues of the past, and we apologize for any inconvenience this may have caused. Many important concerns were brought to my attention, and we will continue to make our staff aware of these issues so that they do not reoccur. For those builders posting positive comments of Aircraft Spruce and sending me private e mails of support, we are glad that you have been pleased with our service and we will continue to work hard to earn your continued satisfaction. Aircraft Spruce has grown by leaps and bounds over the past 10 years, all directly related to the confidence builders have shown in our company by placing their orders with us. We have always taken great pride in providing friendly, efficient service to our valued customers, and our customer surveys tell us that overall we provide exactly that. At times however, our growth has exceeded our ability to provide this high level of service on every order, particularly when we acquired Alexander Aeroplane and converted it to Aircraft Spruce East in 1996. The transition was very demanding, and more than one problem was caused as we integrated that facility into our business. It is now 7 years later, and Aircraft Spruce West (CA) and aircraft Spruce East (GA) both ship over 1000 orders a day, with 97% of the orders shipping the same day that they are placed. Order accuracy has greatly improved. If a problem does occur we can correct the problem for the customer immediately. To any builder who may have experienced problems with our service years ago and given up on Aircraft Spruce, I do hope that we will have the chance to serve you again soon and restore your faith in us as a supplier.

Aircraft Spruce is pleased to have accepted Nat Puffer's offer for us to acquire the Cozy design rights next year, and we are committed to a smooth transition as Nat and Shirley enjoy their well deserved retirement. We will not let them get away completely however! We will contract with Nat to provide

builder support, assistance on the Newsletter, and representation with the airplane at fly-ins. In addition to Nat, we will count on the excellent builder support provided between builders on the Cozy newsgroup. The original group of approved suppliers of Cozy materials, Aircraft Spruce, Wicks, Brock, Featherlite, and the Airplane Factory will remain intact, and new builders will be able to obtain plans, owners manuals, and info packs from Aircraft Spruce.

I posted my responses to individual emails that were posted to the group, as I feel it is important to give the group my responses to various issues that have been brought up by builders. I would ask that from now on, if you have any specific problems that you want to bring to my attention, please direct them to me privately at [jjj@aircraftspruce.com](mailto:jjj@aircraftspruce.com) and I will respond to you immediately by private email. Again, thank you for all your comments and suggestions, and the staff at Aircraft Spruce looks forward to your support as we will all move forward with the Cozy program.

Jim Irwin, Pres.  
AircraftSpruce

### WICKS

One of our builders, Denny Mortensen, asked Janet Schumacher, who handles Cozy orders at Wicks, what was their take on Co-Z selling the Cozy design rights to Aircraft Spruce. She replied on August 18<sup>th</sup>:

Denny,

Thank you for the information and concern. I truly appreciate your concern for us. One thing I want to note, is that we have had a good working relationship with Nat Puffer throughout the years and wish him the best. We will continue to sell parts for Cozy and other composite aircraft. We also expect to have a good relationship with Aircraft Spruce and Specialty as we have had with Co-Z Dev.

The support from our customers is heartfelt and means so much to each and everyone here at Wicks. All of our employees have contact with the builders at some point during the builders projects. We feel in many ways we're all one big family. Truth and respect go hand in hand in customer support. We've taken our lumps once in a while regarding errors or mistakes, but we try to do our best and consider what it would be like if we were in the customers shoes. Our customers are more than dollar signs. First, you are our friends, then our associates.

Sincerely,

Janet Schumacher  
Wicks Aircraft

### MARC'S BUILDER SUPPORT

Builders,

8/14/03

With respect to the Cozy Builders mailing list, I have no intentions of ceasing administration of the list at any time in the future, although I have had multiple offers by others to take over the list at some point if I ever do lose interest.

Builders (just in case I, and the others interested in administering this list get hit by a bus tomorrow) always have the ability to join the "canard-aviators" list if they're not already members, and get similar support from builders and flyers of all sorts of canard aircraft, including many COZYS.

Acton, MA

### LOOSE ENDS

With Aircraft Spruce purchasing our design rights, we didn't want there to be any question about whether anyone else might have a claim on our design. So we requested the Federal Court, who was responsible for enforcing our Settlement Agreement, to review the reasons it was terminated in May of 2002 (as reported in newsletter #78) and confirm that it was in fact properly terminated for more than sufficient reason, and that the former licensee has no right to use our design, or our trademarks, or our name. Our motion was filed with Federal Court on July 11, 2003, and it was unopposed.

### COPPERSTATE 2003

Copperstate fly-in will be held October 9-12 at the Phoenix Regional Grand Valley Airport (A39), same as last year. This airport is located about 25 miles south of Phoenix between the cities of Casa Grande and Maricopa. It was well attended last year, and we had 4 Cozy Mark IVs there. Gene Davis won't be represented this year, so we hope others will make up for his absence. For further information, check [www.Copperstate.org](http://www.Copperstate.org).

### FLUTTER – SECOND CONFIRMED CASE

Control surface flutter is a very dangerous occurrence. In many airplanes it can cause the destruction of the airframe. We are very fortunate that our composite structures can withstand flutter, at least to date.

We had our second confirmed case of elevator flutter, but the first in the Mark IV. It was reported in a private e-mail, so we will not disclose the builders name. It is a vitally important subject, however, so we will reprint the correspondence:

Hi Nat,

8/11/03

This afternoon I experienced a severe canard elevator flutter. After takeoff, I was climbing to 2400 ft at 100 kts. At 2400 ft, I leveled the plane, got distracted by the radio telling me that the ceiling was 2500 ft., and suddenly I heard a lot of noise. The canard was vibrating, and the elevator oscillating. I pulled back the throttle from 2400 rpm to 800 rpm. It took awhile to slow down and to stop the fluttering (Maybe it was only a few seconds, but it seemed like an eternity for me!!!). I went back to the airport at 90 kts and landed okay.

I cannot tell you what my speed was, but I think it was 130 kts and accelerating. I had previously flown at 145 kts without a problem.

I thought that my elevator was okay after painting, but I will take it off tomorrow and check it again. Meanwhile, any more advice would be welcome.

*Editor: I answered saying that I was sure his elevator was out of balance, and that he was very lucky. His reply:*

Hi Nat

8/12/03

I removed the canard and the elevators from the canard this morning. When resting on the hinges, the bottom skin of the elevators was horizontal. I sanded the top and bottom of the elevator trailing edges, and then the nose was hanging down. After a very light repaint job, the angle of the bottom skin is 30 degrees from horizontal. Is that enough?

*Editor: I answered saying I am sure that would correct his flutter problem.*

### PROP HUB EXTENSIONS

In the last newsletter, Larry Aberg wrote that he thought he detected a crack in his prop hub extension, so he sent it back to Saber Mfg for examination (Saber sent an immediate

replacement, even before receiving the return). After extensive (and expensive) destructive testing, Saber could find no defect, and wanted us to publish the results of their testing:

Dear Nat,

8/6/03

Here is the article to address the prop extension Mr. Aberg thought had cracks in it.

After receiving Mr. Aberg's prop extension, I sent it to Hurst Metallurgical Research Laboratory for testing and analysis. There it underwent a battery of tests, including the following: visual and macroscopic examination, fractograph examination, microstructural examination, and energy dispersive x-ray spectroscopic analysis. Upon completion of these tests, Hurst Metallurgical Research reported the following:

The composition of the 2024 aluminum was found to be substantially homogeneous. Brinell hardness test results were consistent with tensile and hardness requirements of T-351 temper. We took transverse and longitudinally oriented samples through the indicated areas where cracks were thought to be present; micrographs showed the material to be **STRUCTURALLY SOUND** and homogeneous. The areas where cracks were thought to be present were only indications of some distorted metal locations, or simply surface imperfections, not cracks.

I hope this information eliminates any concerns that you may have. To those of you who contacted me with inquiries concerning your prop extensions, I would like to thank you, and add that the prop extension is a functioning part of the airplane and should be inspected at every annual. If anyone would like more information regarding this issue, please contact me at (817) 326-6293 and I will send you a copy of the full metallurgical analysis.

Sam Tilleman

Saber Mfg. Inc.

Granbury, TX

## **CARE OF GLASS CLOTH**

In response to a builders question, I advised that if glass cloth wets out and becomes transparent, it is safe to use. If it stays white, throw it away. Gary Hunter (fiberglass expert) writes:

Builders,

8/24/03

As usual, Nat is pretty much correct.

Glass fibers have a "sizing" applied to them when they are made. Most resins do not inherently wet out or adhere to the glass fibers very well by themselves. Primarily because of a disparity in their surface tensions. The sizing is applied to the fibers as a very dilute dispersion or solution in water. The sizing solution does several things. The water (introduced as a fog or spray) is used to cool the fiber from its molten state. It is also the carrier solvent for the sizing. The solution is also a lubricant for the downstream processing of the fiber up until it is put on a spool and dried in an oven. Most importantly, the sizing reduces the disparity in surface tensions between the glass fiber and the resin. The sizing formulation is tailored for the specific kind of "resin" that will be used to wet out the glass fibers. A polyester (boat resin) required a different kind of sizing than an EPOXY resin. There are some sizings designed to be "dual" compatible. The only way to know what you have is to make sure you buy the fiberglass specifically called out by the designer of the aircraft.

Most of the fiberglass you buy at the auto parts store, or marine supply house is intended for polyester resins. However, with West Systems Epoxy being sold through many auto and marine supply stores for auto body and boat repair, most of the fiberglass is probably dual compatible. You can probably use that fiberglass to make or repair your wheel pants or fairings and such, but, under no circumstances should you consider that glass source for structural components of your aircraft.

One way you can tell if the fabric sizing is compatible with the resin you are using is a visual indication of "wet out". Just like Nat said. If it doesn't wet out the glass fabric, it doesn't turn transparent or translucent, it stays whitish.

Since these sizings are introduced to the glass fibers as a water solution, they generally contain an extremely minute amount of surfactants to keep them dispersed in water while they are being applied to the fibers. These surfactants remain on the fiber after the water is dried. As such, if water is re-introduced to the glass fabric, the sizing can be washed off or moved about. You have probably noticed that if you had accidentally dropped a bead of sweat onto your glass fabric, it makes a permanent mark in your laminate, even if you allowed it to dry before you did the lay up. This is because the sizing was washed off the fiber in that particular area. Similar results can occur if the entire roll of fiberglass were to become wetted.

**DO NOT USE** glass that has become wet.

Exposure to high humidity generally doesn't hurt the fiberglass like direct contact with water. However, it can run the risk of mildew forming on the fabric. Generally, this will only occur on the first layers of the roll. Further down in the roll, the glass fabric is probably OK.

SO, if you think the glass is suspect, throw away the first few layers, and check the fabric below before using it.

Properly stored, the fiberglass we use should have an infinite shelf life. I ALWAYS store my fiberglass wrapped up in polyethylene plastic to protect it from contamination of all sorts A 3 or 5 mil polyethylene painters tarp, rolled around the roll several times. Make sure the polyethylene plastic is about 1 foot wider than the roll. Tuck the ends of the polyethylene plastic into the ends of the cardboard roll, and wedge it into place with a mixing cup. This is very handy and eliminates hassles with masking tape and stuff.

Gary Hunter

## **CLEANING UP**

In the handling of chemicals, we urge caution. Epoxy resin, by itself, is inert and unreactive. But the hardner has active ingredients, which you can become allergic to if you are not careful. So we recommend the use of barrier creams on your hands which are water soluble (hydrophillic) which you can wash off with soap and water, but are not penetrated by organic materials (oleophobic). Now when it comes to cleaning mixed epoxy from hands and tools, a word of caution. It is best to try to hold the use of organic solvents to an absolute minimum. MEK (methyl ethyl ketone) is a very powerful organic solvent. It will certainly remove epoxy from your skin and tools, but it can be deadly! It can penetrate your skin, and inhaling the vapors can also cause damage to internal organs. Acetone is a cousin of MEK. It isn't quite as bad, but can still cause damage. So it is best to avoid the use of solvents as

much as possible. How do you do this? Use barrier cream on your hands, and try not to soak your hands in epoxy, and replace the barrier cream quite regularly. Wash it off with soap and water. You can use gloves, but not latex gloves, because they can also cause allergies.

When it comes to tools, for paint brushes, use a cheap variety that you can throw away. If you insist on using them more than once, washing with hot water (really hot) and soap works very well. You can store them in a large bottle with a little solvent for later use, or you can wrap them in plastic and put them in your freezer. With squeegees, wipe them with a paper towel. Rather than using solvents, let any remaining epoxy cure and then sand it off with your belt sander. With sissors, you can wipe them off, and periodically scrape any cured epoxy off with a straight edge razor. Builders report that apple cider vinegar cuts epoxy very well on hands or tools, but we have never tried this. Vinegar is acid, so it should be neutralized or flushed later.

### **CAUTION – POLYURETHANE PAINT**

The finish paint that we recommend is acrylic-urethane, such as PPG “Deltron” or “Concept”. Do not confuse this paint with POLYURETHANE, such as duPont “Imron”, which is exceedingly dangerous. In response to Dennis Butler’s comment that he was intending to use Imron, the following comments were offered by some of our experienced builders:

- 1) Be very careful with Imron. We had a fellow who was painting his plane with Imron, OUTSIDE and dropped dead from the over-spray. Ken Brimmer.
- 2) Hard as it is to believe, it is true. I remember when I first became aware of how deadly isocyanates can be. I read about it in a safety column in RCM (radio control hobbyist’s magazine). We all become somewhat jaded by the warning labels on products, and how many of us really read the fine print? DuPont makes it clear that there is no respirator good enough, and that if you can smell the paint AT ALL, you have exceeded the safe ppm level for exposure. Air-fed respirator is the ONLY approved method. The safety column cited several deaths of people who chose to disregard this warning. The truly insidious part was that many people get away with spraying several projects with no apparent effect. Then, like in the case above, the person literally drops dead in the middle of spraying. The trick is to be able to spot the danger that is many times larger than the others, when warning labels look pretty much the same (at first glance). I don’t know the relative danger with urethane, but I know that two-part systems, in general, are far more toxic than the simple lacquers and enamels of yesteryear. Air-fed can be done for a very reasonable price, and seems like a good item to share amongst several builders, or use and pass on for sale, etc. What is your health worth? Howard Rogers.
- 3) The resin part of a urethane product is not very hazardous, because they do not become “polyurethane” until they are reacted with a diisocyanate. These diisocyanates are the problem. Diisocyanate hardeners are capable of causing severe respiratory allergies and lung damage. Most notably, they cause a debilitating incurable occupational illness called “isocyanate asthma”. Sudden respiratory spasms and anaphylactic shock on exposure to

diisocyanates also has resulted in death among workers using urethanes. There have been cases in which deaths occurred suddenly and without warning in people with no prior history of allergies. Larry A. Capps.

- 4) Speaking from experience, I have painted two aircraft, both with polyurethane. One with Stits (Polyfiber), Alumathane, the other with Aerothane. ALL polyurethanes are dangerous for the same reason. The catalyst hardener contains isocyanates, generally a diisocyanate. Isocyanates are not only toxic, but provoke powerful allergic reactions. If you breathe the catalyzed mist, sniff the harderer or catalyzed paint, get it on your skin, etc. YOU WILL BECOME SENSITIZED! NOT MAYBE! YOU WILL SOONER OR LATER! It’s only a matter of time, and number of exposures. Once sensitized, further exposure will result in ever greater allergic reactions, including asthma, and life threatening shock. If you are going to use it, DO wear a mask with organic vapor cartridges AND supplied air; take care to prevent ALL skin contact for your own good also. Burke Bell.
- 5) DO NOT USE POLYURETHANE PAINT. Nat Puffer.

### **FUEL CAPS**

When we built our Cozy Mark IV, we used “Usher” fuel caps, which seemed to be the best choice available at the time, but for the last several years, a gentleman from England named Robin Voice has stopped in at our booth at Sun n Fun, Oshkosh, and maybe also Copper state, with a brief case full of very attractive fuel caps of various designs, and brilliantly polished. We were especially intrigued by a model that he makes for RVs, which locks with a key and its nozzle just happens to be of the exact correct outside diameter to fit into the Usher nozzle. The only apparent problem was that there was no obvious way to attach a grounding wire, which we consider to be an absolute necessity for composite airplanes. Nevertheless, we asked to buy two key-lock fuel caps from him at Oshkosh. He didn’t have extras with him, but offered to send us two from England when he returned home.

After receiving and studying them, the solution to the problem of a grounding wire became obvious. There was a drive-pin in the bottom of the cap which held the parts together, and my friend, Tom McNeilly, replaced the drive pin with a roll pin, and presto, we were able to attach the grounding wire to the bottom of the cap with safety wire through the roll pin. So I floxed the new nozzles with caps into the Usher nozzles and now I have very attractive key-lock, water-proof fuel caps.

According to Robin, Aircraft Spruce stocks these nozzles and caps under part number 05-01006. They can be installed directly in the tanks without installing the Usher first. You can also contact Robin directly at [RobinVoice@yahoo.co.uk](mailto:RobinVoice@yahoo.co.uk)

### **NOSEWHEEL FRICTION DAMPER**

The nosewheel friction damper has a couple of functions. The first is to keep the nosewheel from shimmying, and another is to hold it straight after rotation so it can be retracted into the nosewheel well. It should be adjusted just tight enough (compressing the Belleville washers) so that the wheel won’t shimmy, but not so tight as to make steering difficult. The tightness is determined by pushing sideways on the nosewheel,

with the weight off the nosewheel. You will need at least 2 lbs of force, but you could require more, depending on individual builder differences. A shimmy can be a little unnerving, and can lead to more serious problems, as Jean-Patrick Lacote reports in this email:

Hi everybody, 9/09/03

After landing, I had a shimmy and the strut slipped out of the MK NG-15/MK NG-2, and I lost the nose wheel. In fact, my 4 bolts on MKNG-15/NG-2 were not tight enough and I failed to notice during preflight inspections that the strut was slowly creeping out of MKNG-15. The shimmy speeded up the process and got the strut loose.

Now, I put an extra bolt (AN-3) through MKNG-5 and the strut, plus 4 well tightened bolts in MKNG-15 and I check regularly the torque on the Belleville washer.

In order to gain (and regain) confidence after my mishap, I flew with Alain Raposo's Cozy to Vannes in Britany 1 hr 15 min. away (170 knots one way @ 2400 ft, 183 knots @8500 ft the other way) and Benoit Lecoq came twice to Pontoise (the last time with his Cozy) to inspect and test my plane after the repair (he taxied twice up to 70 knots). Since then, I have logged 6 flights and 16 landings.

Jean-Patrick Lacote  
Versailles, France

Jack Wilhelmson writes:

Jean-Patrick, 8/15/03

I have been advising all the builders using my noselift, in the installation instructions, to install a bolt through MKNG-15 to be sure the casting did not depart the strut under any conditions. Your experience, really unfortunate, proves that this needs to be a standard procedure. I hope they all read this and do it now if they have not already done it. I can't understand why this hasn't been a thread topic before because this has happened to other canard aircraft that use this type of strut and nosewheel casting. You can rest assured that you are not cursed. When this happens, the strut can catch on something and cause the NG30 bulkhead to fail as well as other progressive damage. In fact, I would say you are blessed.

Mt. Pleasant, SC

## ENGINES

- 1) Greg Richter (Blue Mountain) removed the Mazda 13B from his Cozy to install a turbine, so we now have only one auto conversion Cozy flying, and that is Al Wick, with his Subaru.
- 2) At Oshkosh, Aero Sport Power was advertising Lycoming O-360s, with all new parts, for \$17,900, and assembled Superior XP-360s for \$20,000.
- 3) Zoche was not at Oshkosh.
- 4) The Continental diesel was not at Oshkosh.
- 5) Continental was displaying a Honda, horizontally opposed, 4 cylinder, liquid cooled, direct drive, 310 lbs (lighter than the IO-360), 225 hp engine, runs on auto or 100LL, with price undisclosed.
- 6) It was rumored that the Delta Hawk diesel would cost \$31,000.
- 7) We learned that two of our builders will be installing the 180 hp, 8 cylinder Jabiru engine in their Cozy Mark IVs.
- 8) We have been notified that we can obtain the XP-0-360 engines from Superior at an OEM price (substantially below retail), and pass this on to our builders. Already assembled

this could be less than \$19,000, and in a do-it-yourself kit form, about \$1,500 less. They have a build center, where you can either watch your engine being built, participate in the building, or build it yourself under their supervision. This current offer is good until year-end.

- 9) We have been offered an OEM price on the 180 hp, 8 cylinder Jabiru which we can pass on to our builders. The exact price has not yet been determined, but it will be less than retail. Contact us if you are interested.

## LIABILITY

Builders sometimes worry about their liability exposure if they decide to sell a homebuilt later on, and how to best avoid it. Here are 3 builders takes on this subject:

1) Neal Johnson (who is a lawyer) writes: Here's a little spin on the liability aspect from a lawyer. Corporations are fine for protecting owners and officers. Rarely is the corporate veil penetrated. The problem is that a corporation can't build an airplane, it's merely a paper entity. Only a person can and that person can be held liable for faulty workmanship along with the corporation. It's like getting run over by a Sears truck. You look to the driver and Sears. The only protection you can offer yourself is in a good release form when and if you sell the airplane. But even that is limited to releasing yourself from the purchaser and parties that deal with him. It doesn't affect third persons. Say if an airplane falls on a house. The owner of the house did not sign a release. The most protection can be had through building a proven design and using good workmanship. The Rutan (and Cozy) design has had a fantastic record for structural integrity. Think of how many of these birds have been constructed, by amateurs, and their safety record insofar as structural failures. This record is amazing. Secondly, follow the plans and scrap or repair any part which you have any suspicions about the integrity of. Remember, it's your ass that is going to be flying it.

Neal Johnson

2) Joe Hull writes: If I ever sell my project or finished plane, I'm going to rely on a very specific and very strong release of liability in the sale agreement (e.g. Buyer is aware that seller is an "Oaf" and the plane is likely to fall apart at any time and the buyer, his heirs, relatives, friends, acquaintances, and all fellow mammals release seller and sellers heirs, relatives,.....from any and all liability).

Joe Hull

3) Jim Sower writes: I don't believe there's any legal protection from a motivated lawyer, so instead of raking over the legal aspects of the issue, I address motivation. Lawyers work on contingency. It's real easy for me to avoid having "deep pockets". The first step of any suit is disclosure of how much money I have. No lawyer worth his salt is going to go to all the fuss and bother for 30% - 40% of what he can get out of me. Burt and doctors and folks like that can't work that angle, but an awful lot of us can. After all, if we had lots of money, we wouldn't be building Cozys  
© Safe as a church mouse. J. Sower

## LETTERS FROM BUILDERS (some from the net)

Builders, 8/14/03

I usually don't comment on things not directly related to building, flying, etc., but I was at the Forum at Oshkosh and as I hear it, Nat offered the plans to Wicks, etc., and spruce was the



only taker. I appreciate his effort to keep these plans available. The alternative might be for the Long EZ source of plans...find some used ones! In fact there was a set of Long EZ plans in Barnstormer for \$1200. When the existing sources of Long EZ plans is exhausted, that is it! There are few other sources of just plans available, probably because of a lot of headaches, little money, lots of liability, etc. All the reasons Burt Rutan got out of the plans business. At least with Spruce having Cozy plans, they will be available indefinitely. What a wonderful thing for those of us in the canard community!

As for builder support, we still have Nat and the entire Cozy/canard community for help I think we're very fortunate in this regard.

Timothy Freeze  
Wilmington, DE

Dear Nat & Shirley, 8/30/03

We were able to make it to Oshkosh this year but were unable to make it to the dinner because of a prior commitment. It is very comforting to see more Cozys on the parking ramps and enthusiasm continuing. We were able to get the shop cleaned up and start back on #0218 after we returned from Oshkosh, and have a fresh biennial so we're back in the air also—life is getting better!!! I'm really happy to be getting back to work on our Cozy MKIV. We're finishing the inside of the canopy and working on the fuel cell/wing strakes. The wings are finished except for attaching the vertical stabilizers/rudders and I have to retrofit the Wright electric gear retract mechanism (really a quality unit).

I look forward to seeing the newsletters I've missed and congratulations on the plans deal with Aircraft Spruce. I continue to believe in a solid design and will see it through to completion. May you fly blue skies and may the wind be at your back.

Kip Davis,  
Neosho, MO

Dear Nat, 8/15/03

I am a little disappointed in the news that you have sold the your Cozy IV design. However, I believe that I understand your motivation and support your decision. I fell in love with the Long EZ when I first saw one on TV when I was only 11 or 12 years old. Much later, I hear that you had taken this brilliant little airplane and turned it into a 4-place. My wife has been very supportive of my ambition to build a plane and her only stipulation was that it have enough seats that she and our two little ones didn't have to stay at home while I had all the fun. Choosing the Cozy was therefore a very easy decision. Your support has been great and is much appreciated. I am very pleased with our contract and you have more than fulfilled your end of the bargain. I look forward to your continued support but also wish you well in your retirement. I am not sure why I felt the need to tell you this, but as useful as the support group is (and it has been very useful to me) I think some people have lost sight of what it is we are doing and why. I will fly down to see you and show you the results of your plans in my hands one day. In the mean time, you are always welcome to Victoria BC and I can almost assure you that you would enjoy the trip. Mike Ursel

Calgary, AL  
8/14/03

Builders,

I was irked years ago when Burt Rutan pulled the plug on all of his plans. I really wanted to do a Defiant, but the plans were not available and support was not available if one found a second hand version.

The continuation of the availability of the Cozy MKIV plans is a good deal for builders in the future. It is becoming the last of such a means to build an airplane and there will always be someone wanting to do it. The process has been so extensively learned, new builders will always be able to find someone who has done it for help and advice if formal builder support is no longer possible. In fact, many of us built a canard airplane with very little direct support from the very beginning, the plans are so well written and documented.

It is no surprise that Nat and Shirley will step aside. I know them well and am amazed that they are still able to make the annual trek to SNF and OSH. It is no small feat to fly to and serve the public at these events, especially when approaching 8 decades of life. Would only that many more of us have the energy and strength to do such things in the years ahead instead of spending those years in a nursing home as so many Americans do.

All I can say at this point is LONG LIVE AVIATORS! Let's keep doing it as long as possible and not be too critical of some of these mile posts that really are not very important in the total scheme of things.

David Domeier  
Chesterfield, MO

Builders, 8/14/03

It strikes me that Nat selling Cozy rights to ACS is not that big a deal. This was one of the reasons Nat built a Varieze many years ago and one of the keys to why I decided to go with a plans-built Cozy, besides it being a really awesome plane ☺. I have my plans, and no one can prevent me from going to Wicks or whomever. I think that this just makes builder support from experienced builders that much more important. I have learned a lot just from reading and if a builder question doesn't get answered, I jump in with the experience I've gained.

John Wood  
Acton, MA

Nat, 8/15/03

Thanks for your email. I have pored over the online newsletters and archives so now it is probably time to order plans and materials and get to work. I'll probably delay until the end of the year. The basement is stubbed in for a bath, so it would be best to have a nice clean-up area there.

I would like to say that I enjoy your posts and newsletters. It is unfortunate that at times there is a lack of civility on the mailing list, and it troubles me especially when it is directed at you. Some people carry a quite a bit of hostility I guess, and email affords a semi-anonymous outlet for them. I hope you don't take any of their missiles personally. You have already established quite a legacy with the Cozys, and as a future builder I would like to say thank you very much for your efforts. If you are ever in St. Louis, please let me know. I'd love to buy lunch/dinner/a beer or whatever.

Tim Cheatham

St. Louis, MO

Dear Nat, 8/20/03

I want you to know that I appreciate that you are taking the trouble to make sure the Cozy plans live on by working with Aircraft Spruce. Thank you.

Larry Robertson  
Placerville, CA

Dear Mr. Nat Puffer, 9/07/03

Thank you very much for the prompt reply.

I was impressed by your response. It seems that you are passionate about your design and want to make sure that your

customers have all the support needed to complete the project. After talking to my wife, looking through your web site and learning about homebuilt aircraft via my friend, I am going to buy the Cozy Mark IV plans and build my own aircraft. I am going to enjoy this project. Its nice to know someone will be there when I need the help. Thank you again. Phil Butler

Builders, 9/08/03

The experience I had working at Rick Maddy's house a couple of weeks ago REALLY helped me get into the work more easily, without a huge amount of anxiety about mixing the epoxy, using the squeegees, stippling, applying epoxy to the glass cloth, and so on. Anyone thinking about starting this project, I HIGHLY recommend getting a day or two of practice with someone else, it's very educational. D'Armond Speers

Denver, CO

Hey guys, 9/09/03

You MUST be aware of the position of the nose wheel when retracting it. You are especially vulnerable when retracting in a crosswind (if your friction damper isn't tight enough). This is the most likely time the wheel will be out of position, and will not retract into the well. With the electric retract, you WILL hear the sickening crunching sound followed by the racheting of the internal clutch in your electric retract. If you can see which way the gear is cocked, simply put in some opposite rudder (at cruise) and the gear will straighten out. You can then retract it fully.

When I designed my original system, I put a two inch sq plexiglas window in the top/side of the nose wheel well, shaped just like the curve of the piece I cut out. This allows me to see very nicely the angle of the wheel when retracting.

I also have nose gear doors. It can make a mess of them when retracting with the wheel not in the proper position. Don't ask me how I know. You should always have your hand on the retract switch and your eyeball on that window after takeoff while retracting the gear, so you can reverse things as they go downhill. Hey, it's part of the charm, quirks of the system.

Vance Atkinson  
Dallas, TX

Builders, 9/04/03

So it's actually been a full year and 107 hours on the COZY since "Precious Time's first flight last August 4<sup>th</sup>. I spent the last two weekends out at the airport doing the first conditional inspection as required by the USA FAR's.

Before going out to the airport, I sat down and made a list of every nut, bolt, hinge, feature, electrical wire, component, device, connector, etc. in the plane that I could think of without having the plane in front of me. After beginning the inspection, I discovered that I only missed a few. I listed these by area and listed what I needed to do to it during the inspection - i.e. just look at it, lubricate it, poke it with a stick, whatever.

I started at the nose and worked my way back. I also used the opportunity of having everything open and off to look for all air leaks and seal them up. I wrapped the canard torque tube offsets with two layers of electrical tape and sealed the surrounding area with clear silicone, both on the canard and the fuselage. I now have a very close fitting seal that should keep most of the air out. I also sealed around the landing brake cover, although that still seems to be leaking a bit.

I had noticed some play in the canopy latch hook bolts, the three that screw into the nutplates buried in the upper longeron.

There is very little bearing area (just the 3/16" diameter of the bolt) in the wood, and the hole in the wood was becoming elongated upward, allowing the canopy to move about 1/16" and air to leak in. I drilled out the three holes and superglued in a 5/16" OD x 3/16" ID aluminum bushing in each hole to increase the bearing area. I had to adjust the spacing of the front latch after this, but it seems to have helped.

There were no major issues in the inspection, but I did use the opportunity to add tie wraps on some wires and hoses, add a hose clamp here and there, swing the compass again (it had somehow gotten 30 degrees off), adjust the sensitivity of the Navaid autopilot, and install Gary Hall's Teflon hinge pin kit in the aileron hinges (except for the outer right hinge, from which I could not get the original hinge pin out).

One thing that I actually did have to fix was a broken spring in the landing brake system - one of the two long springs had broken it's end hook at the top end. I bent a new hook with a larger bend radius and re-attached it. The LB felt better after the fix - it had felt a bit soft for a while - duh!

Interestingly, after all the stories I've heard about foam bits and other crud in the gascolator after some number of flying hours, even after cleaning the tanks well, I had about 1/100<sup>th</sup> of a teaspoon of foam bits in the gascolator - I must have gotten lucky on the tank cleaning. Also, I found that if you wash the strake tops and "Usher" gas caps (the stock plans caps, which seal perfectly under normal conditions) with a hose, you'll get some water in the tank - I had to drain about 2 test cups full.

I'll reiterate that the Polyfiber Top Gloss paint sucks big time. It's completely oxidized on the top, and will need a repaint in a year or two. I find that after oxidation it will come off with any cleaning solution and rubbing. It also does not stick particularly well, even to the Smooth Prime primer (which I still like a lot) and pulls off with strong tape. Polyfiber has taken it off the market, and I'll be contacting them to get a refund in the near future.

It was very useful to take all the covers off and take a good long look at everything, looking for vibration damage, wear, rust, corrosion, loose connections, or anything else that wasn't right.

Acton, MA

Builders, 8/22/03

Regarding the use of RainX on Plexiglass, keep in mind it contains alcohol. You do NOT want to apply any more chemicals than necessary. The canopy is not your hardware store Plexiglas. It easily scratches and will cloud over with enough chemical applications. All I use is a mild soap and water solution (NO AMMONIA) and a clean 100% cotton towel to clean the canopy. I then apply a layer of regular Pledge (NOT THE GLASS CLEANER WITH AMMONIA). If you can't tell, the thought of anyone having to replace their canopy really bothers me.

Mobile, AL

Builders, 8/22/03

I have a chemist friend who specializes in acrylics and he has told me that acrylics (i.e., Plexiglas) weather much better than polycarbonates (like Lexan). The problem with polycarbonates is that they turn yellow in time after exposure to UV radiation. So if you have an outdoor application like a window or a canopy, Plexiglas is a better choice.

Lee Devlin

Greely, CO

Builders, 6/20/03

Regarding paint peeling, from my long experience in boat building and repairs, I know that polyester resin products (like

Feather Fill) are bad news. They are affected by moisture. There is a whole industry for repairing under the waterline hull blisters.

On my plane, I use only epoxy based products, period. No exceptions. Filler, primers and paint are epoxy based. Next door a Long EZ has developed chips and blisters in every place where they used polyester glazing putty. In June/July issue of Professional Boatbuilder magazine there is a 15 year test on different resins published, in case you are interested.

Bulent Aliev  
Ft Lauderdale FL

Builders, 8/23/03

Yesterday I had the pleasure of meeting John Eplin and his wife at the Whiteside county airport (SQI). John was departing the airport for Moline (MLI) when I heard his N number and recognized it (from this group) so I called him. John then went around the pattern and landed so I could look at his Cozy. Very nice! Once again proving we definitely have one of the best group of builders and flyers going!! Again, thanks very much, John.

Dixon, IL

Builders, 8/02/03

I'd like to give a public "thank you" to Dr. Kevin Funk for taking the time to give me and my friend, Tom Caves, a ride in his Cozy at Oshkosh on Thursday. It was a great morning for flying and his machine was impressive and thrilling. It was my first time up in a Cozy and I must admit it surpassed all of my expectations. What a zippy, fun bird you guys have (builders – keep up the work, the final result is fantastic). Congratulations to Nat on a great design.

On the way back in, Oshkosh was closed for about 10 minutes and we had to circle over Ripon before proceeding in. Too bad for us that our little jaunt was thus extended, eh? ☺

Kevin, you are a great asset to the Cozy community for giving rides like this. Your easy-going manner and helpful nature make the trip fun and educational. Thank you so much for making yourself and your plane available to quench the desire for a ride by folk like me; good luck to you and your family on your future endeavors. Also, congratulations to you, Tim, Marc, and Jorgen on your fine showing in the Air Venture Cup.

Bill Albert,

Fellow resin mixers, 6/22/03

I ran out of things to do, so we rolled the beast out and fired it up! Pretty amazing how you can take one of these engines (IO-360A3B6D), pre-oil it, and then start it by the book, and it actually runs! I have been helping a Mustang builder debug his 0-290, going through carburetors, Ellisons, and finally a different Ellison look-alike. He has been fighting his fuel system for a month now, and is finally getting it to work. I rolled out the beast, gave it three seconds of prime, turned on the dual Lightspeeds, hit the starter, and BINGO! Advance the mixture and we are taking the slack out of the tie down ropes! Hot starts, no prime, crack the throttle, hit the starter, slowly advance the mixture and off we go! Started maybe 8 times, never a hiccup. Just watch, that will all change once it gets to the airport!

Things I found. If you put your radio stack in the middle, you wipe out the springs for the pitch trim. The STRONG system goes in next. Remember to cross-over the brake lines. Laying under the plane pumping brake fluid in, it made sense that the tube that showed fluid first was the port side, and thus was connected to the port cylinder. Oh, WRONG buffalo breath! Not a big deal to

change, but necessary. And it is a trick to swap the lines when both are full of fluid.

I used the reversing three lever throttle quadrant from Wicks. It fit the heat duct perfectly, and works well. I had to make a rod extension for the mixture control. The cables are available every 12 inches, and I needed only 6. So I made a simple extension.

The installation of the dual Lightspeed system was quite simple, once I stopped trying to over engineer it. The engine compartment wiring cleaned up nicely when I figured out that if you run the sensor wires down the LH side, then it makes sense to mount the sensors on the LH side. This leaves the RH side clean for changing the oil filter and such. I think it might have worked better to run the EGT and CHT wires up the middle of the heat duct, as the wire lengths would be more centered on the engine.

Anyway, a big milestone for me to light the fire! No evidence of any leaks or issues with the engine. I am convinced that the engine builder who told me this engine was junk was looking to steal the engine. Lesson learned. ~~Never~~ ~~ask~~ ~~an~~ ~~engine~~ ~~builder~~ ~~who~~ ~~buys~~ ~~and~~ ~~sells~~ ~~engines~~ ~~for~~ ~~advice~~. Find a local mechanic who has no interest in buying the engine you are looking at.

Norm Muzzy  
Cedar Falls, IA

Builders, 6/22/03

As a first time builder, I took a couple of scraps from my first layup to work with me. I am fortunate enough to work for a major aerospace company with a composite lab. One of the lab guys himself is a composite expert who has built homebuilt airplanes, boats, etc. He had them section and polish my layups and look at them under a stereo microscope. They assured me the quality was excellent. I had the somewhat mottled look where the micro was slightly thicker. I found it works best to use enough micro until the mixture is thick enough that it just flows, squeegee it on hard, and squeegee the glass aggressively to remove excess epoxy. In other words, follow the directions Nat gives and you'll be fine.

Southington, CT

Cozy Builders, 8/19/03

Deltahawk is based at our home field, Racine Batten Field. Doug Doers is the CEO and a friend of ours. In addition, Carl Bumburs, the marketing director, is a partner with us in a Cherokee 140. Deltahawk is flying their engine, and yes the price has gone up since it was first conceived 7.5 years ago. What hasn't gone up?

The interesting thing with the Deltahawk is that the "160 hp" engine is currently developing 175 hp on the dyno after 20 hours in the air. Deltahawk is currently flying 2 Velocitys, one with the Deltahawk 160 hp engine and the other with an IO-360 Lycoming. The Lycoming is stronger up to 3000 ft, but then the Deltahawk walks away. It will maintain it's rated hp up to 25K ft. The Deltahawk is also making more torque at take off. Both planes have the same prop. Doug may be making some prop changes in the future. Doug and Carl were at our EAA meeting last Wednesday with the plane.

If you're in need of an engine in the next year or so, I would highly recommend you check them out.

Daryl Lueck  
Racine, WI

Builders, 6/26/03

I just received a beautifully restored airspeed indicator a month or so ago from Howard Francis (see "Other parts we recommend") and he is currently working on a vertical speed indicator for me. I

think he did mention something about not being the right source if you wanted something quick. He is very particular and meticulous with his work and I would expect it would probably take more than a year to receive a set of 'basic six' instruments. Plan on ordering well ahead of needing them, but they are definitely worth the wait and reasonably priced.

David DeSosa  
Garland, TX

Builders, 6/25/03

I just got back from one of my work tours and saw the post about Skytec vs B&C starters. I have to answer it.

My cozy is 16 years old with 1500 hours on it. A lot of those hours were testing various products and ideas (much to Nat's chagrin). One of those products was Bill Bainbridges light weight starters. Yes, I bought one of the very first ones in 1987, and yes, they were cheaper then.

That starter is still on my engine and has never faltered once, not even during several months of hard kickbacks while testing a cold air induction system, a tuned pipe system, fuel injection combined with electronic ignition under various voltages and loads. I am amazed at the abuse it has taken...kinda like the watch that took a lickin' and kept on ticken'. B&C will stand behind their products no matter what and it's a hell of a product. I cannot say Skytech is worse or better, but I know the product Bill puts out and it is top drawer!

Vance Atkinson

Bedford TX

Dear Bob, 7/01/03

There is a problem with the fuel system you describe, i.e. both tanks plumbed together. There is a reason that all low wing certified aircraft have left, right or off only valves. Because of the differential pressure between the fuel vents in flight, fuel will seldom feed evenly with a valve that feeds from both tanks simultaneously. There is a great probability that when the fuel gets low, there will be fuel left in one side, and the engine driven pump will be sucking air from the tank with the higher vent pressure. If you can buy, or borrow the Tony Bengalis books that are published by EAA, they have good info on how to design and test fuel systems. I am sure someone will write in telling us that they have been flying a low wing with a both-on system for years with no problem. I sincerely believe they have, but there have also been many fuel starvation accidents attributed to that type of setup. Every aircraft fuel vent system ends up different. It (both-on) works great in high wings, but not in low wings. Happy building and flying.

David Vollrath

Kingsport, TN

Hi all, 8/22/03

I want to tell the group of a new product I tried. It is the Al Trak from True Track. It is a new product and I am one of the first ones to put it in a Long EZ. I had a few issues to work out (electrical noise, light dimming, etc), but I can report the altitude hold works as advertised. The plane holds about +/-10 ft. When going through clouds, it begins heavy recovery at about -70 ft, overshoots the assigned altitude by about +70ft, then smoothly recovers back to assigned alt with no oscillations.

This is the first time I have flown with alt hold and must say I LIKE IT! I flew from Wayne Hicks airport, Norfolk VA to Charleston SC at 8000 ft and didn't touch the stick for almost 2 hours. Talk about EZ flying!

The installation was EZ for the Long and I will be putting together a web page to show how I did it. I believe that they are

going to hike the price up about \$200 to \$300, according to what they said at Oshkosh. Currently it is \$1495.

Nick Ugolini  
Charleston, SC

Nat, 8/22/03

In my last email, I said I had just received the video and couldn't wait to get started. To my complete astonishment, my wife ordered the plans and gave them to me on our Anniversary. I had been looking at it for about 9 months. I had called her from Oshkosh to tell her that I was certain the Cozy fit our needs the best. She decided then that she was going to get the plans for me. She was a little worried that I might bring a set home from Oshkosh!

I want to tell you that I am extremely impressed with the plans. As complex a project as this is, I am following along easily so far. I've read up to chapter 7 so far.

Thanks again, I can't wait to start. Drew Chaplin

Portland, IN

Builders, 8/24/03

The correct way to "finish" matching surfaces (wing/strake) is to assemble the wing to the spar/strake and micro over the whole mess, including the gap between the wing and the spar. Sand and contour until you are satisfied.

Now comes the tricky part. Draw a line down where the wing separates from the spar. HAND SAW the line, and then split the pieces. Open up the line using your long sanding board to the desired width. Mine are about 1/8".

Keep in mind that the fine edge you have just made is not very strong, and is going to take a beating when pulling the wing off and putting it on over the next decade, so you might want to back it up using some glass cloth over it. Not the BID cloth in the kit, but some lighter stuff you find at hobby shops, used on model aircraft, because it is much more pliable. By the way, any where you have more than an eight of an inch fill, you should use this lighter cloth over the top of that area to keep it from cracking out later in the planes life.

Vance Atkinson

Bedford, TX

Builders, 6/24/03

I had two or three brake failures on my Long EZ before I finally figured out what was causing them (long story). Not a big deal. I shut down the engine and got ready to retract the nose gear, but never had to do it. Engine shutdown gets it done. I dribbled off the side of the runway once or twice, but not fast enough to do any damage.

Engine shutdown is a primary solution for any stopping problem from an aborted T/O to brake failure to too fast in the groove. Just shut down coming over the fence and it squeaks right down on the numbers. I'm amazed at how engine shutdown spooks so many people and doesn't even occur to many more. Works for me.

Jim Sower  
Crossville, TN

Builders 8/29/03

Someone asked about how I did the "bench seat". I'm using the electric landing brake so I did away with the console in the center of the front seats and put in a folding arm rest. It can be folded up to provide more hip room. I also doubled the width of the map pocket and seat brace to make that more usefull. See [www.geocities.com/kspreuer/CozySeats.html](http://www.geocities.com/kspreuer/CozySeats.html).

Keith Spreuer  
Los Angeles CA

Builders, 8/11/03  
X-Plane (version 7.0) simulates the flight characteristics of the Cozy very well, including top-speed, stall behavior, etc. You can also change the c.g. and you feel the difference in canard stall and landing speed. In my opinion X-Plane is an ideal tool to plan your first flight because you can provoke frequent failures to be well prepared for all kinds of eventualities. Aron Lentsch

Alfortville France  
Hello Nat, 8/10/03

I've waited a few months to report another incident in my Cozy until I had the complete facts. I had another engine out and had to dead stick my Cozy into a remote area.

The engine I purchased from Dan Brown was basically assembled from used parts, some so called yellow tagged, and some not. This engine lasted a whole 14 hours and quit. I should have thrown the complete engine away at that point. I easily would have been well ahead. You printed my article on the subject and Dan Brown's rebuttal which was total non-sense.

I had the engine rebuilt with new cylinders, camshaft, bearings, etc. The one part that was reused was the crankshaft. Although it passed inspection, it was flawed.

This crankshaft severed itself completely in two during flight 42 miles outside Burns OR a couple of months ago. After sending the crankshaft to Lycoming to determine the cause, they reported the #4 rod bearing journal failed because someone had welded the crankshaft and re-ground the surface in an attempt to fix a problem. This was a failure waiting to happen. The crankshaft should have been thrown away. Lycoming would never approve welding a crankshaft.

Needless to say I am throwing this engine away and starting over. Two dead stick landings is enough. I was lucky to walk away from a forced landing and my bird is still in one piece. I wonder if the next guy who has one of Dan's engines will be so lucky?

Vancouver, WA  
Builders, 8/09/03

I am allergic to just about everything that grows (93 positives out of 101 scratches) and developed a reaction to epoxies about 3 months into building, after a long layup on the canard. I tried lots of things, but what worked for me was butyl gloves. I do use latex gloves over the butyl, because the butyl gloves are expensive, but I suppose vinyl gloves would work just as well.

Rob Tester  
Chandler, AZ  
Builders, 8/09/03

I had heard there was an annual air show in Abbotsford, BC, but otherwise I knew little about it. It wasn't until fellow Cozy builder and friend Giles Sydnor, told me more at the Arlington Fly-in that we decided to go. It was awesome and I thought I would share our adventure.

Abbotsford airport (CYXX) is only about a 20 minute flight from our home airport, Arlington WA (AWO) and since it is in Canada, I knew I was going to have to read up on what is required to fly to Canada, as well as get back into the USA. AOPA has an excellent guide for their members at their web page: [www.aopa.org/members/files/travel/canada/](http://www.aopa.org/members/files/travel/canada/). They will also mail members a free copy for the asking along with some blank customs forms. The US Customs service also has a publication, but there was not much additional info there except for many warnings about what terrible fates would fall upon you if you messed up in the slightest way.

Before leaving home, I filed a flight plan and made the required call to Canadian Customs. When they answered the phone, I started the conversation by saying, "I'm calling to let you know I'll be flying into Abbotsford this morning", to which the agent replied, "OK" and hung up. So much for the required call. It evidently is not too required ☺

Papers in hand, Giles and I launched north about 9 AM along with my two sons, Paul and David. We activated our required flight plan, set our transponder to the requested squawk code and except for a slight delay while an F-18 landed, we were in Abbotsford before we knew it. The tower was very friendly as well as curious about the Cozy, but eventually handed us off to ground control. Canadian Customs was very friendly and processed us quickly. Afterwards, I asked ground control if we could taxi to the homebuilt display area – I didn't want to park in the grass and I had heard the display aircraft would be roped off. They directed us over to a closed runway and we were greeted by an army of helpful volunteers that pushed us to shared parking with all kinds of military aircraft. We were not out of the airplane a few minutes before they had it roped off. Registration was about 100 feet away, so the four of us walked over to register and pay for the show. They gladly took our names, but would not take our money and gave us passes for the day. We talked with several of them for some time and felt very welcome.

Later that day, we walked about looking at a large range of military and civilian aircraft along with a bunch of war birds. The airspace closed about 10:30 AM and the air show flying started almost right away, continuing until 5:30 PM, pretty much non-stop. Crowd size was pleasant and we sat close watching demonstration flights by F-14, F-15, CF-18, the Blue Angels and the Snowbirds, warbirds and many others. Food was reasonably priced even before the exchange rate.

This was a three day show ~~and we went~~ the first day, Friday. I'd expect there to be bigger crowds on Saturday and Sunday, but I can't say as we left Friday evening. Once again, we were pushed out by a large group of very helpful volunteers and encouraged to return next year. We'll gladly do so, but next year I would like to camp up there at least one night, which is accommodated as well. I'm certain they would welcome all of the canards that wanted to attend as well.

Our flight back was relatively smooth. We had to land at Bellingham to clear US Customs and the agents we dealt with were friendly and helpful. All-in-all, a great way to spend a day.

Eric Westland  
Mulkitoe, WA

The famous skier, Picabu Street, in every day life is a nurse, working in an ICU department of a large metropolitan hospital. She is not allowed to answer the telephone, however. There is too much consternation when she says: "Picabo, ICU."

Howard Lanphear

Good judgement comes from experience, and a lot of that comes from bad judgement – Ken Brimmer

Never trade luck for skill – John Vance

Navy truism – There are more planes in the ocean than submarines in the sky – John Vance

Changing times in airline flying – now, a flight attendant can get a pilot pregnant – John Vance

Remember, the Ark was built by a first-time homebuilder, but the Titanic was built by experienced experts. – Jim Weir.

**Co-Z Development Corp.**

**2046 N. 63rd Place**

**Mesa, Arizona 85215**

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