

COZY NEWSLETTER #82 July, 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.

3) Fiberglass Parts

Feather Lite
1327 S State St, Arpt.

Stanton CA 90680
(714)898-4366

Ukiah, CA 95482
(707)462-2939
(707)462-3424

4) Canopy & Windows 5) Specialties 6) Exhaust Systems

Airplane Plastics Co. 9785 Julie Court Tipp City, OH 45371 (937) 669-2677	B & C Spec. PO Box B Newton KS67114 (316)283-8662	Custom Aircraft 14374 Olde Hwy 80 El Cajon CA 92021 (800)561-1901
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7) Propellers

Performance Props Box 486 Patagonia AZ 85624 (520)394-2059	Sensenich Props 2008 Wood Ct. Plant City FL33567 (813)752-3711	Saber Mfg. 3601 Nassau Ct. Granbury TX 76049 (817) 326-6293
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8) Prop Hub Exten.

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
- 3) **Switching and breaker panel.** Wayne Lanza (772) 664-8953, 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. (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
Check there for latest prices.

DESIGN CHANGES/CORRECTIONS

- 1) Chap. 1, p.2, Change the area code for Co-Z Dev. from (602) to (480).
- 2) Chap. 8, p.3, Step 7, 1st para. Where it says to install with 5-min. epoxy, change to install with flox.
- 3) Chap. 8, p.3, fig. 15. Change 1-7/16R to 1-7/16D.
- 4) Chap. 11, p.3. Change NG-12 to NC-12.
- 5) Chap. 16, p. 1, Sch. B. Change 8.7 for CS-129 to 9.1.

BUILDER HINTS

- 1) **ELTs.** Many ELTs are heavy and require a ground plane that has to be attached to the fuselage. It would seem more logical for the ELT to be portable, so it could be removed from the fuselage in the event of an off-field landing, and used to locate the pilot and/or passengers. Why not a portable ELT? There

is such a unit, and EBC which is pocket-size, has a whip antenna, and doesn't need a separate ground plane. Much more practical, we think.

- 2) **Spray guns.** Robert Peplinski says he bought a model 5726 spray gun for priming from Harbor Freight for \$49 and it worked great. He says that with a Binks Model 7, he used 1-1/2 quarts of thinned 2k Urethane Primer priming the top of the right wing/strake and winglet, but with the HVLP gun, he needed only a little over 3/4 qt for the left side. With the Binks gun, overspray covered everything in the garage, but not with the HVLP gun.
- 3) **Tachometers.** Here are some things to consider when selecting a tachometer: a) The mechanically driven ones are, or should be out of the question not only because of the distance between the panel and the engine, but also because the cable would have to execute a 180 deg. turn. b) There are, or used to be, tachs which employ a signal generator attached to the tach drive on the accessory case which send a signal to a meter on the panel. These have the disadvantage of interfering with the vacuum pump (unless you don't use one). This disadvantage can be overcome by using a very short mechanical cable from the tach drive to the signal generator. c) If you use the least expensive system (like Westach), which uses one P-lead to drive the meter, it only reads the RPM from the mag who's P-lead was selected. When that mag is turned off (in a mag check), you have to rely on engine sound to tell whether the other mag is firing all 4 cylinders. You should not put both P-leads thru the same meter, because then when the first mag fires, it interferes with the firing of the second mag. This is a particular problem on Continental engines where the mags are timed differently. d) You can still use the least expensive system, as above, if you use separate toggle switches for each mag, with a single-pole, double-throw switch for one mag, and a double-pole, double-throw switch for the second mag, wired in such a way that the double-pole switch switches P-leads when the first mag is turned off. e) There is still another alternative. Some companies, like Electronics International, make digital tach instruments which use both P-leads, but are designed so as to prevent cross-communication between the mags. These systems are extremely accurate and reliable, but unfortunately, very expensive. Cozy builder Eric Westland reports that he purchased a tach from Jeff Rose that is very accurate, and reads from two sources, 2 mags, 2 electronic, or a mix, and he has been very pleased with it.
- 4) **BID tape.** The plans call for using BID tape in almost every situation where two parts are joined together. Although you can buy BID tape from our supplies, we strongly disapprove because this BID tape has a 90 degree fiber orientation which is not as strong and doesn't lay into corners as well, so it is a **waste** of money. What we recommend is to save all of your BID scraps from larger layups, and when tape is called for, arrange them neatly on flexible plastic, or aluminum foil (there is some concern about wax paper), wet them out, and then cut the layups into 2 inch wide strips with a 45 degree fiber orientation, lay them across the joint, stip off the plastic, and cover them with peel ply. This will not only save you money, but will result in much stronger construction.
- 5) **Spare Lycoming parts.** Eric Westland says that A.E.R.O. Aviation (618)797-6630, near Chicago, handles both Lycoming and Superior parts and is about 40% less than the better known suppliers.
- 6) **Mixing Micro.** Richard Riley reports that he bought a paint shaker similar to what paint stores use, and it works wonderfully in mixing micro.
- 7) **Alarm circuit:** Jean-Patrick Lacote suggests including the alarm circuit in the nav/com circuit, particularly if you have the electric nose lift. Doing so will prevent the alarm from sounding during parking operations. It would only be activated when the avionics are activated.
- 8) **Fein tool and Dritz scissors.** A number of builders are raving about the Fein tool with carbon steel saw blade for trimming cured layups, and the Dritz electric scissors for cutting cloth and peel ply, and trimming wet layups.
- 9) **Snubbing hinge pins.** There is a note on Chap. 19, p. 17 to "snub" the hinge pins on the aileron hinges so the pins cannot come out. This is not necessary if the hinges are inset into the wing (or rudder) fiberglass as shown on Chap. 20, p. 4, fig. 21., because this will prevent the pins from coming out.
- 10) **Gluing foam blocks together.** Ken Brimmer recommends using "HOT STUFF". It is a urethane foam which adheres well. Wayne Hicks recommends using 3M Temporary Spray Adhesive, available at Home Depot, but not 3M Super77, which dissolves styrafoam. Dennis Oelman recommends using Great Stuff expanding foam sealant available at hardware stores and Home Depot.
- 11) **O'Keeffe's Working Hands Crème.** Paul Stowitts said his hands took a beating during the sanding process. He said O'Keeffe's Working Hands Crème, available at Walgreens, was excellent for preventing cracking and helping healing.
- 12) **Canopy strut lock.** Colby Farmer installed a lock on his canopy gas cylinder to prevent the wind from slamming it shut during taxiing. It is an Advance part #8200 Lift Lock, and is normally found in the gas spring display at Advance Auto Parts. The manufacturer is Pylon Mfg., Deerfield Beach FL 33442. Eric Westland reports that it is also available on-line as NAPA #8195339.
- 13) **Heated epoxy storage.** Dan Tomlinson said he "acquired" an old non-working upright freezer from "recycling" (side of the road) and fitted it with two 60 watt bulbs with a thermostat inside. He sets it for 85-90 in summer and 70 in winter. In addition to storing epoxy there, there is room for brushes, squeegees, sticks, peel-ply, waxpaper, saran, micro, flox, etc. I often keep the scale and pump in there too. Makes life much easier!
- 14) **Rudder pedals and MKNG6.** Dan Davidson reports that he is extremely pleased with the Dennis Oelmann rudder pedals and the taper bearing MKNG-6 from Jack Wilhelmson.

FOR SALE

- 1) **Plans built wings, centersection spar and canard for the Cozy Mark IV.** Both upper and lower winglets are attached. Ailerons and rudders are cut out. The wings are match-drilled to the spar. Please contact Dennis Oelmann at (319)231-2635 or (319)231-2634 cell.
- 2) **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 or tel (912)639-8300. I have a new Cozy III N554E that had its first flight on 3/7/02 with an 0-360 Lyc. Thanks for a great aircraft. Ed Strickland.

- 3) **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

FIRST FLIGHTS

There were two this quarter:

- 1) Doug and Patti Pitzer: On 5/15/03 they write: N433DP went for it's first flight in Corona, CA on 5/14/03. All temps in the green and within 86 F or each other. The only squawk the test pilot had was the elevator trim springs were not strong enough. Keep building. You cannot believe the thrill of seeing your baby in the air. Thank you, Marc, for you Cozy Builders forum, it helped a lot.
- 2) Lloyd A Gimple: On 5/31/03 he writes: After 4-1/2 years and 3252 hours of building, Cozy Mark IV N1421LE took to the air at 6:35 am Double Eagle II Airport, Albuquerque, NM. My first call to the advisory radio was, "This is experimental Cozy 142 Lima Echo on the very first test flight. I will take off on 22 and climb to 10,000 MSL and spend an hour doing test flight maneuvers directly over the field. Please give me plenty of room. Thank you!"

I did the normal things on takeoff, like rocking the wings at 50 kts to test aileron control – then at 75 kts I eased back on the elevator and was airborne at 80 kts. I made a shallow climb at 110 kts to keep things cool. I continued to climb to 10,000 ft (airfield elevation is 5,834 ft).

At altitude, I did the rudder yaw 5 deg left and right with no undue response. The elevator 3 deg up and 3 deg down movements were also done well by the Cozy.

Then I went to the banking maneuvers with 5 deg angle to the left and right, then 90 deg clearing turns in both directions with 10 deg bank angle. Then 360 deg turns in both directions at 20 deg angle. At this point the Cozy looked at me and said, "is this all you are going to do?" "Give me a challenge!" And I felt like that is really what this aircraft wanted – it was very responsive to all control inputs.

After 15 minutes in the air on a climb to 10,000 ft and cruise at 110 kts 2000 rpm (the OAT was 59F) and CHTs were 299, 325, 304, and 300 (bottom probes) and EGTs 1206, 1230, 1207, and 1213. Yes, the #3 cylinder was hottest even though I have a fiberglass dam to direct air to #3. I guess it is too soon to worry about the temps as long as they are under control.

I then went to 90 kts – speed brake down and noticed little change in control pressure. I flew a traffic pattern down to 9,000 ft, including the approach.

I then tested the trim system with the Strong pitch trim and the standard Cozy aileron trim. The air was smooth so I was able to trim it to fly pretty much hands off, the Strong system was very responsive. The standard Cozy aileron system held wings level without using either right or left aileron! I will admit that I had sort of counterbalanced my 200 lbs with 40

lbs of weight in the right front seat and an extra 30 lbs of fuel in the right tank. Even so, it was great – no extra washers needed.

I then did a low speed approach to a stall. I figured that the Cozy should stall 60 kts so I added 5 kts to get close to but not into a stall condition. The Cozy sneaked up on me this time and at 65 kts the canard did the typical subdued bob. I held it for a second one and then pulled the elevator all the way back and watched while it slowly danced up and down. Very controlled.

By this time my oil pressure readings were starting to slowly decline (all temps were well within limits) so I decided to go home (which was right below me). I entered the pattern at 90 kts, gear was already down – boost pump on. On base I put the speed brake down and tried to keep the speed at 85 kts. But I was a little high and fast. I kept about 1200 rpm, made a small flare, and landed on the main gear – nose gear in the air – and used about 2/3 of the 6000 ft runway! Not a thing of beauty, but we were home after flying 1 hour 10 minutes! Tomorrow, I will retorque the prop, change oil and filter, and try to figure out my oil pressure problem so I can get back in the air. Only 38 hours and 50 minutes to go! Lloyd A Gimple.

\$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 Ken Laundry, in Romeoville, IL. Thank you Ken!

\$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 100th 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) **Kevin & Carrie Funk.** Sport Aviation June 2003
- 2) **Stanley Magill.** Kitplanes May 2003
- 3) **Marc Zeitlin.** Kitplanes May 2003.

SUN n FUN

Another Sun n Fun is history. The weather was really nice going. Clear skies all the way, except for a few cumulus along the Gulf. Made a fuel stop at Georgetown, TX, and stayed overnight at Mobile downtown. Those folks are really nice. They loaned us a "crew" car that seemed brand new. We were early, and Sun n Fun was quite deserted. We stayed at the Country Inns and Suites in Kissimmee with Jack and Donna Wilhelmson. Accommodations and complimentary breakfasts were nice, but the commute was long.

The weather was good during the show. Not too hot. We saw many builders. Dr. Kevin Funk gave a lot of rides. His transponder konked out, but Carl Denk was able to fix it. Marc Zeitlin arrived in his Mark IV with Wayne Hicks. Marc's Mark IV looked very nice. Many others were there, too many to mention.

The Cozy banquet was Saturday nite at the Red Barn. There were some who complained about either the noise or the steaks, so Bill Walsh said he will try to arrange a barbeque for next year.

Going home was a bummer. The first day we couldn't get any farther than Gainesville. The lineboy taxiied Jack into a deep hole which did major damage to the nose gear structure (NG-30s). He had to rent a car, drive home to Charleston for supplies, and then back to fix it.

In the meantime we decided to press on the next day. We ran into weather that was too high to climb over. When we found a hole and went down to land, we were in Georgia. Finally on the 3rd day we were able to sneak under the front. Mobile Approach was kind enough to warn us about two towers on our course that were over 2000 ft tall. Once we got to Mobile, it was clear all the way home. That was the longest it ever took us to return from Sun n Fun.

WHAT ELSE WE'VE BEEN DOING

When we went on vacation in January, in the resort there was a fitness center close to where we were staying. Shirley and I went over there almost every day to work out, and we really started feeling good (for our age). So after we returned, we decided to convert part of our shop into a fitness center. Sure looks different now! We have vowed to work out almost every day in addition to our morning walks.

Did all the tests the FAA requires (nuclear stress test, etc.) for my special issuance medical, and the cardiologist said I did well. He even questioned why the FAA requires it. Shirley had cataract surgery in one eye, and was really surprised how different everything looked.

We were planning to fly up to Minnesota for 2 grandkids graduations and the christening of a new grandson, but the weather looked so bad we decided to drive instead. The weather was bad, and what a bummer, driving, that is. Hope the weather is better in July when we will be flying up for sure.

AIRVENTURE CUP RACE

In Newsletter #79, Cozy pilots Tim and Wendy Freeze reported on their experience flying in the Airventure Cup Race, from Kitty Hawk to Oshkosh. They hoped to interest other Cozys to enter this year so there would be a separate Cozy Heat. It would take at least 3, and there are 3 prizes in each heat, besides fuel and meals provided along the way (there was one overnight stop).

The word is that there will be 30 or more canard entries this year (we don't know how many Cozys). The race starts on Sunday, July 27th from Manteo (KMQI) in the northeastern corner of North Carolina, about 10 miles west of the First Flight Airport. The pilot's briefing is July 26 in Manteo. Wayne Hicks is suggesting a mass fly-in. The plan would be to assemble at Suffolk Executive (KSFQ) in the southeastern corner of Virginia, very near the Virginia/North Carolina border on Saturday, and then fly to Manteo. The flight from Suffolk to Manteo is about 60 miles. For more information, see www.glassovercast.com. Steve Volovsek is coordinating the glassovercast, and will be at the SFQ airport all day on Friday in hangar D-10 with refreshments and helping with accommodations and transportation. He can be reached on (757)638-3463 H or (757)638-6130W.

OSHKOSH (AIRVENTURE) 2003

We will be there as usual, God willing and if the creek doesn't run dry, as they say. Look for us outside the south entrance to Exhibit Hangar A. The Cozy Builders Forum has been scheduled for Friday, August 1. Hope to see you all there. Daryl and Kim say that the Cozy dinner is all set at Robbins for Saturday evening at 6pm. Drinks and a social hour will start at 5pm. We will have a separate room all by ourselves. The buffet at Robbins last year was spectacular, and we don't expect any less this year. Peter Meszaros (MGS distributor) asked if he could show his appreciation by furnishing wine. What a nice gesture!

The Homebuilders Dinner will be Thursday, July 31st from 6pm to 9pm at the EAA Nature Center Pavilion. This is a casual event where fellow Homebuilders can do a little hangar flying and enjoy some great food and camaraderie. The dinner will be catered by La Sure's Restaurant. Tickets must be purchased in advance at Homebuilders Headquarters.

FLUTTER

We have had only one confirmed case of flutter in a Cozy, a 3-place, and it was determined to be due to elevators that had not been balanced to be nose-heavy. It was an unusual situation where a second owner had disassembled a flying 3-place Cozy, had it repainted, and then advertised it for sale. The 3rd owner assembled it and began flying it. On one flight, the canard began a violent flutter. This can be a terrifying experience, sometimes resulting in the break-up of a non-composite airframe. The pilot chopped power and the flutter stopped. When he called me, I told him the elevators were most likely not balanced, and that he should disassemble them, hang them from their hinges, take a picture and send it to me. Sure enough, the elevators were tail-heavy. I told this person to sand the bottoms of the elevators until they balanced nose down, even if he had to go through one layer of glass. That corrected the problem.

On May 6th, Marc Zeitlin reported that he decided to resume his flutter testing. He went up to 8,500 ft., pushed over to 190 mph indicated (which is really much faster TAS), whacked the stick in all directions, and nothing happened. Then he pushed over to 195 mph and repeated the stick bashing, a "large vibration began". He said the magnitude of the excursions of the canard tips was not large, maybe only an inch or two, and there was no vibration of the stick, but it was

very loud and the entire airplane was vibrating. He immediately pulled back on the stick, reduced throttle, and it went away as he reduced speed. He then climbed back to 8,500 ft., pushed over to 190 mph again, and nothing happened. After landing and inspecting his airplane, he could find nothing wrong.

He said that his ailerons and elevators balanced within tolerance after painting, but close to the aft limit. He asked for suggestions.

This is an area where we do not have a lot of experience. It is possible that a borderline balance might result in only a mild case of flutter. I replied to Marc that it sounded like elevator flutter to me, and that he should add some lead tape to the outboard balance weight—enough so the elevators definitely balanced nose down, and repeat the tests. I also commented that Burt has recommended over-balancing the ailerons, because even though they don't flutter, they could vibrate with input from the engine and propeller.

Marc has subsequently determined that what he thought might be flutter was actually a vibration cause by one of his rudders banging against the stop. Apparently all it took to eliminate the vibration was to adjust or revise the stop.

MORE VARIEZE CORROSION

Ernie Joiner donated his 21 year old Varieze to RAF for destructive testing. An unexpected development was the discovery of extremely corroded attach bolts that hold the canopy and the rudder cable bellcrank brackets to the firewall. The canopy hinge attach bolts were necked down by corrosion to a 1/16" diameter with no clue on the visible parts of the bolts. Apparently the wood longerons and birch firewall hold moisture and will cause corrosion to through bolts. This bolt corrosion issue affects designs similar to the Varieze and Long EZ, such as the Cozy III and Cozy Mark IV. RAF recommends taking corrosion proofing action during new construction, and occasional inspection of old construction by replacing one bolt at a time.

Mark Knaebe, Cozy builder who works in the Forest Products Lab of the Forest Service states that there is only a problem when the moisture is high, so keeping the wood dry will alleviate problems. He says that unless the wood is wetted, its moisture content is related to relative humidity, and it would need to be over 95% RH for extended time to be a problem. He says if one keeps the temperature of wood above the dew point, you should have no problems.

SIMPLICITY

Burt Rutan used to preach keeping an airplane simple. And that is the philosophy we tried to follow with our Mark IV plans. We wish to quote excerpts from a recent article by William Wynne in the "Experimental" magazine entitled "Simplicity":

"So you're going to build an airplane, and you're developing your criteria. The best advice I can offer any first-time builder that would greatly increase the odds of the journey being successful would be to develop, nurture, and worship an uncompromising allegiance to absolute simplicity.

"The day your aircraft actually flies is an incredibly special moment in your life. The greatest way you can ensure that you experience this moment, an experience out of the grasp of any

king, millionaire, or genius 100 years ago, is to choose simplicity at every possible opportunity.

"If you're a first-time builder, it may be counterintuitive, but you need to know that first-timers have not yet learned all of the reasons to worship simplicity.

"Many first-time builders have a long list of features they would like on their plane. Some of these lists include complex items like constant-speed props, fuel injection, liquid cooling, IFR instrumentation, retractable gear, power accessories, and an interior to rival a Cadillac. Some would-be builders feel that unless their project incorporates all of these features, the achievement of construction would be lessened. In reality, all these complicated items do is cripple the chance of the airplane ever actually being completed.

"Ask any builder who has completed an airplane, and he or she will tell you that when the airplane was finished and flown safely, it did not matter if the options list was lacking.

"Recently, *EAA Sport Aviation* carried a good-looking RV-6 on the cover. This plane, which the builder obviously enjoys flying and is proud of, was built for something like \$25,000. In our area, I know of two RV-6s that cost more than \$100,000 to build.

"If I were to point the finger at any single area where new builders go over the top, it would be instrumentation. Even though I know how to build an aircraft with the most complex avionics installations, for myself, I only build day-VFR airplanes. The reason is simple: I fly for fun, and flying in bad weather is not my idea of fun. If you want instrument flying experience, rent a 172 from your local FBO. If the weather's really bad and you need to get somewhere, take a scheduled airline flight.

"Keep in mind that very few of us fly more than 100 hours a year. This includes people who have built and are now enjoying flying their own airplane. The simpler your airplane, the better pilot you will be in it even if you have limited flying hours.

"Complex airplanes take years longer to build than simplified versions of the same aircraft. Besides arguments of expense, the overwhelming reason for simplifying your building plans is that there are a limited number of hours in your week to build, and most people find this difficult to change.

"If you fully adopt and espouse an allegiance to simplicity soon, you could very well be flying this time next year. When one of the airport regulars who's been working on the same project for a decade asks you to come over and help wire or sand his plane, you can honestly respond, "Sorry, I'd like to, but it's such a nice day, I'm going flying in my plane."

William Wynne is an airframe and powerplant mechanic and president of EAA Chapter 288 in Daytona Beach, Florida.

BUILD TIME – PLANS vs PRE-FAB KITS

We are asked quite often about build time for a Cozy Mark IV, and how this compares to the build time for a pre-fab kit design. We can offer this information:

I personally have built one kit airplane (a BD-5) which I was not able to finish after 3 years, and 4 composite airplanes, each of which I built in 2 years or less. All of these were part time, while either working at 3M, or drawing up plans and

writing instruction manuals, newsletters, going to airshows, and providing builder support. I estimate the actual building time on the two Mark IVs was 2,500 hours each.

Phoenix Composites is based at Falcon Field, and they assemble 2-place Glasairs for builders. I have stopped in and talked to Dace Kirk on a number of occasions. The Glasair is quite a complicated design. The wings are put together in one piece from skins, ribs, baffles, spars, etc, and a lot of hardware, wiring, and piping gets installed. They use dedicated jigs. Dace said it takes them about 3,500 hours to put together a 2-place Glasair with skilled labor and dedicated jigs, and costs from \$130,000 on up.

One of our builders used to work for a composite shop that assembled 4-place Lancairs. He said he worked on 18. He said that it took 4,000 to 5,000 hours to assemble a 4-place Lancair, and most builders had \$400,000 to \$500,000 invested (must include engine and avionics) by the time their airplanes were completed.

One could assume that an individual builder of either a Glasair or a Lancair, without previous experience and having to build his own jigs would take much longer.

Our conclusion is that the short building time quoted for prefab kit designs is not realistic, but intended to lure builders into spending a lot of money in the hope of cutting down building time.

CANOPIES

Here are some comments from builders re canopies:

Wayne Hicks writes, "Jeff Rogers advised me that it's always a good idea to tell him if you're going to oversize the width and/or height of the turtleback. It changes the circumference required for the canopy glass, and he has to set things up differently to fabricate the canopy".

Carl Denk writes, "The Cozy Classic uses a much larger canopy than the MKIV. We drove to the Airplane Factory in Dayton, OH (3.5 hour nice drive) to compare the MKIV canopy with the Classic templates, and decided it wouldn't work. Jeff and I reviewed some alternatives, and a Waterbug (pedal watercraft) jig was agreed. I asked how long it would take, thinking weeks. It was 11 am and Jeff said to come back at 3 pm, and suggested a neat lunch place. My wife and I also toured the nearby Airforce Museum, and picked up the canopy as scheduled. How's that for service!

Michael Antares writes, I ordered a canopy from the Airplane Factory just a few months ago and have almost completed the canopy chapter. The canopy fit perfectly and I have been completely satisfied with their product AND their service."

Keith Spreuer writes, "Yeah, the Airplane Factory even replaced my canopy at 1/2 price after I told them my EX-wife 'accidently' tipped over a ladder thru it! That was after it was all installed!"

INSTRUMENTS & AVIONICS

I was talking to John Williams (Titan Aircraft) the other day and he mentioned that his expensive electric gyro horizon crapped out and when he sent it in for repairs he was told it was unrepairable. So he was thinking of investing in the new Dynon EFIS. I saw the Dynon ad in the latest Kitplanes. Solid state DG, Gyro Horizon, airspeed, altitude, ball, rate of turn, clock, VSI, G-meter, Volt-meter, timer, etc. Takes the place of 10 flight instruments, all in a 4.1 x 3.4 visual panel mounted

display. No moving parts, uses aircraft electrical power. All for \$1995.

Then for redundancy, how about the new Garmin hand-held GPSmap 196. In addition to the moving map and all the other common GPS features, it has a "panel" page (i.e. instrument panel) which displays in both dial and digital form ground speed, turn coordinator, compass with heading shown and also CDI superimposed, distance to destination, time enroute, altitude, and rate of climb. Battery operated, so independent of aircraft electrical system. All for less than the \$1049 suggested retail price.

If you really want to go light and small, there is the new Stern Tech Pulsar Engine Monitor, which in a single 6.2 x 5.5 display gives you RPM, Manifold pressure, 6 CHTs, 6 EGTs, Oil Temp and Pres, Fuel Level (2 tanks), pressure and flow, plus other features. Takes the place of a bunch of engine instruments. All for the bargain price of \$2500 or so.

Can you visualize a panel with just one display for flight instruments, and another display for all engine instruments, and a hand held for GPS nav, with redundant flight instruments.

You would still need a com (maybe nav/com) and transponder, but just think about how that would simplify your panel. Technology on the leading edge!

TRANSPONDER IDENT

In response to a question about the "ident" button on transponders, John Epplin explains, "the ident starts a timer that runs about 30 seconds. Any interrogation during that period will receive a reply with the code set in the window along with altitude (if selected) and also another pulse that is only transmitted during the ident period. The light is held on to let you know the box is in the ident mode. During the ident time, the target box on the radar screen is tagged, thus identifying all aircraft transmitting ident, which there should only be one."

CAUTION - PROP HUB EXTENSIONS

Larry Aberg writes:

5/29/03

My N180CZ continues to improve. I was doing an inspection of the engine the other day and found something I want to pass on to you. I found a crack in my Woofter prop extension (now the company is Saber Mfg.).

I have the 6" extension per the plans. It has a 3/4" crack in the barrel on both sides and upon further examination, the inside of the barrel has a hair-line crack about 35% around the inside. Also, the feel of the barrel is not round. It feels like it is warped. All this in 186 hours of running time. I'm glad I found this during inspection and not during flight.

All of the Cozy MK4s I've seen, except one, are running the 0-360 engine, so we need to put out a reminder to inspect the prop extension.

I talked with Tim at Saber Mfg yesterday and I will send him the unit for inspection. He told me he has never seen anything like this before, so it will be interesting to see what his analysis is.

After looking at a Brock unit, I still believe Saber to be the best prop extension out there. Anyways, I hope things are doing well.

Larry Aberg,
Vancouver, WA

ENGINES

DeltaHawk announced the successful first flight of its 160 hp diesel aircraft engine. "Mounted in a Velocity RG, the DH160V4 engine, weighing just over 300 lbs and burning jet fuel, powered the plane through a flawless takeoff at 12:01 pm from John H Batten Airport. Piloted by Chief Engineer, Doug Doers, the engine pushed the plane to 5500 ft and orbited the airport for 38 minutes before returning for an uneventful landing. During the flight, the aircraft achieved a maximum airspeed of 140 kts in level flight and all engine systems performed as expected. The flight is a watershed event for DeltaHawk. Intense ground and flight-testing will continue with the objective of introducing the engine to the experimental and UAV markets in early 2004. Beta test engines are currently being delivered to selected companies for airframe adaptation and flight-testing. In addition, DeltaHawk is actively developing a national Sales and Service Network to assure product support at the time of commercial introduction. The DH160V4 upright engine is the first of a product family that will eventually cover the market with engines ranging from 150 to 400 hp. For more information, see the DeltaHawk website at www.deltahawkengines.com."

Editor: We visited the web site and learned that the inverted model would be a much better fit for the Mark IV, but its availability will follow several quarters behind the upright mode.

Cozy Builder Daryl Lueck writes:

5/6/03

I was at the field and saw the first flight. DeltaHawk is located at Racine Batten field. It was quite an event. This was also the first flight for the test vehicle, a Velocity RG. Doug Doers is a chapter member and has been helpful in looking over our Cozy.

The flight went extremely well. Doug had to slow down several times so the chase plane, a v-tailed Bonanza, could catch up. They're doing some cooling adjustments now and will be flying again soon. The engine has a quieter, mellower sound than a 4 cyl Lyc or cont. I think they have a winner.

Daryl Lueck,
Racine, WI

STEALTH?

Are our airplanes really invisible to radar?

Ken Brimmer writes,

5/27/03

On a trip about 9 years ago, my transponder died and I did not know it. JAX Florida controllers said they could not see me. I later verified this with Orlando, who also could not see me. I understand that FAA radar has improved quite a bit since then.

I have heard the stories about the guy that used to make the runs into southern Florida from Columbia. Now that I think about it, I might have met the guy.

More in the same vein was something I saw on the Wings channel the other night. The Coast Guard was following a guy in either a VE or LE, but they were following the infrared signal. If I recall correctly, he came up from the Baja area to southern Michigan, where he crashed from lack of fuel. He had about 300 lbs of GIB (grass in back).

Keith Spreuer replies,

There is a long standing myth that our composite airplanes are nearly invisible to radar. Let me debunk this a bit. I worked

the Stealth business for many years. We, too, toyed with the idea of using a Long EZ for testing. After studying the structure, we found that while the skin and thinner structures do have a decreased radar signature, that big chunk of metal in the back (the engine) is a great reflector. The metal firewall is also a great reflector. The heavy spars are also good reflectors. Then there are control tubes, antennas, wire harnesses, etc. So our little glass airplane may be a little less of a target on the ATC radar, but not invisible at all compared to the really stealth aircraft.

LETTERS FROM BUILDERS (some from the net)

Dear Nat,

12/27/02

Hmmm, that's odd. No newsletter. Ummm, mailing label says #78. Uh-oh. Please find my renewal check.

I now have a hangar. This is a luxury, but you can get used to it pretty quick. There is a significant wait for desirable digs, so other builders out there may want to look into space availability early on.

Engine in all its chrome and metal flake glory is now in my possession. So is the 3-blade Performance prop. The prop is beautiful, but much more thin in profile and along the edges than I had thought that it would be. It came by mail and was quite a stir at the local post office. Our mail person was thrilled to deliver it.

Canopy is glassed in and out. Final hinge pin mounting in progress. Leading edge, OD filler from strake to wings and fairings are the last major fiberglass assembly work left to do. Electrical in planning stages. Starting to buy instruments and fabricate panel. Panel will have removeable sub-assemblies. Pictures of the BIG FLIP with enthusiastic help from the neighbors is enclosed.

Aliso Viejo, CA

Nat,

3/4/03

Just want to thank you for your continued support. I've started the nose and canard simultaneously. Wilhelmson's electric gear retract is in place and the tub now rolls around on all three wheels. The canard is cut and shear web done. I have it wrapped in plastic cling wrap and tucked up against the roof till warmer weather. Still making progress, just not a lot.

Joe Heagerty,
Riverside, CA

Nat,

3/20/03

Just thought I'd send a little note with our renewal about the progress of plans #1039. Unfortunately the weather in Western New York wasn't real conducive to airplane building this winter. We had several weeks with the high being in the low single digits, which kept my heated garage around the mid-forties, so I didn't get much done on the plane. I did, however, read the plans (both books) almost cover to cover. Now that spring is here along with warmer temperatures and the shop is ready, I should be starting the bulkheads within the next couple of weeks. I can hardly wait!

Lockport, NY

Dear Nat and Shirley

3/26/03

Thanks for the wonderful plans! I've been wanting to build the Cozy for years, and have finally gotten to a position where I can get started. I am an airline pilot flying for ACA/United Express. I'd like to thank you for all of the effort you have put into making such a useful cross country flyer. I'll keep you informed on my progress, and hope to see you at Oshkosh.

the starter – no start. We forgot to pick a fuel tank. Selected a tank, then yelled “clear” again and off she went.

Only a couple minute run, but it sure was nice to see the VM1000 show some numbers. Now to complete the finishing, if the weather ever gets above 50F. Our interior is at that 95% complete. Waiting for the avionics to be wired. Still have to get the cushions made. Interior paint is done!

Daryl & Kim Lueck
Racine, WI

Builders, 6/12/03

Thank you so much for your support in response to my first flight in my Cozy Mark IV. Remember when I said at the end of the flight that I had declining oil pressure but it had not reached critical stage? That situation uncovered a severe situation which will delay my second flight for an indefinite period.

I had bought an engine which was rebuilt by Good Aviation and sold by Robert Parker. I have now found that the FAA has an ongoing investigation into the activities of these people and the rebuild facility (which has now closed). The investigation has uncovered irregularities such as falsified logbook entries, unauthorized replacement of identification plates, installation of wrong size main bearings, use of scrap parts marked “NOT AIRWORTHY”, falsification of return-to-service tags---and on and on! This information is contained in Unapproved Parts Notification #2002-00196, March 20, 2003 which may be accessed on www.faa.gov/avr/sups/upn.cfm.

I have been in discussions with the investigator, Robert Giguere who may be reached at (405)951-4232. He has asked that any of you who may have purchased aircraft parts or an engine which was rebuilt by any of the subjects of this investigation, please contact him. It appears that all purchases so far have been made in the Oklahoma City area.

In the meantime, ALL I have to do is remove my engine, completely disassemble it and inspect the parts for airworthy condition. I am told that the FAA will assist after the engine case is opened up. The purpose of all this is to alert everyone that fraud and embezzlement is still around. Be cautious!

Lloyd A. Gimple
Albuquerque, NM
5/7/03

Builders,

I notch troweled the bottom of both strakes and the fuselage sides tonight. I asked my wife to come out and help mix epoxy and micro. I had been mixing one cup at a time, and after one cup she went back inside, got her Braun mixer and mixed up 3 cups epoxy/micro fill at a time. Made the job go so much faster. Wonder why I didn't think of that.

After I was finished with the troweling, for some reason, I had the urge to cover the bottom of the strakes with ceramic tiles (heat shields), decided I really didn't need them.

Anyone free to sand is welcome over, I think I just did the easy part.

Marcus Collins
Wauwatosa, WI

Builders, 5/6/03

I am getting ready to fly. Talked to Avemco and they insured me immediately. I have few hours in a Cozy, but a lot of other hours. I only wanted liability and they were happy to oblige. I think it is a different story if you want hull insurance. I am paying \$659 per year for one million liability and \$100,000 per seat.

Albuquerque NM
5/6/03

Builders,

When I started with Avemco (2 years ago), I had 105 total hours and 5 hours in a Cozy. They wanted me to have 5 more hours in a Cozy before they would insure me, liability only, for \$850. In 2002, my rate was \$950. This year they wanted to charge me \$1100. Falcon gave me the same liability limits for \$600. Why the disparities with some pilots and not others is quite interesting.

San Dimas, CA

Builders, 4/28/03

I tried trimming at the chewing gum stage at first. It was OK on layoffs of 2 plies or less – but anything more and it was a real pain. I then started letting it harden and then dremeling it off – usually with a little sanding drum. Now I use a Fein Sander/Saw – it is soooooo easy to trim with the Fein saw. When Jerry Schneider recommends a tool – listen.

You might also want to look into the Dritz electric scissors (another of Jerry's recommendations). It makes cutting and trimming fiberglass a breeze.

Joe Hull
Bellevue WA

Builders, 4/26/03

Something that is not widely discussed in aborting a takeoff or a short field/landing long is the importance of engine thrust, even at idle. Step one of my abort/short field procedure is “Mixture – OFF” You'd be surprised how much that reduces rollout. Guys have run off the end of runways and broken their airplanes from forgetting this.

If all you did was land long, shutting down the engine makes stopping a LOT less dicey. Not many folks think about it, but it's a simple, easy, viable procedure that makes lots and lots of situations safer. There was a time when my Long EZ simply would not slow down on final. I'd start at 80 kts, nearly a mile out, at idle, with belly board and both rudders fully deployed and be damned lucky if I wasn't at 80 or 85 kts or so over the numbers. Made for long float, very long, fast landings and uncomfortable stop. I took to shutting down the engine on short final and planting it nicely on the numbers at 70 kts. I'd restart on rollout and go on about my business. NO PROBLEM!

Jim Sower
Catskill, NY
4/22/03

Shipmate,

The problem (on the Constellation) was with a twisted shaft and it was repaired shortly after we returned to San Diego during our maintenance period. They went back to sea at 100 percent.

My plane is going well and I am pleased with the progress we are making. I have the canard finished, the nose gear is in, the “bathtub” is complete, and I have applied West System to the underside. I am nearing completion on the center spar, both spar caps done and now need to install the shoulder harness points and put the mounting hard points on and apply the final four layers of uni for the last lay up and it will be complete. I have ordered the wings from Featherlite and they should be here any day. I have an engine in the hangar which is waiting to be mounted. So everything is on course and ahead of pim as we say:) Thanks for asking. I suppose I should write something to the group to update them on our progress, but frankly I am not pleased with the treatment they have been giving you. I support you, shipmate, don't ever doubt it.

LCdr Randel Livingood
Lloyd Gimple Barstow, CA

Nat and Marc, 4/22/03

Yes, I am planning to fly my Long EZ to Oshkosh again this year. Good luck to you (Marc) in the Airventure race. I hope you win it!

I look forward to seeing you and your new plane as well as Nat and Shirley. It should be a good show with the 100th year of flight as its theme core.

We are making progress on my cozy wings now with my perfectionist friend Don Douglas helping me (see enclosed picture), so someday in the future, perhaps I too, will fly a Cozy to Oshkosh ☺ Take care.

Lee Devlin
Greely, CO

Dear Builders, 4/27/03

This is an open invitation to attend our fly-in airshow in Dixon IL (C73) on Saturday, July 26th. I am building a Cozy with a partner, and we are hoping to get a few Cozys to attend our show. We are offering some incentives. The first Cozy Mark IV on the field willing to give us a ride gets a free tank of gas. The furthest traveling Cozy willing to give us a ride gets free lodging.

The airshow is from 1:00 pm to 3:00 pm. Food all day. No admission. Plenty of tie-down space. As this is the first weekend before Oshkosh, there should be many Cozy Mark IVs enroute to Oshkosh from the south. C73 is 135 nm south of OSH, so it would be just a short trip if you left after the airshow, or stayed the night and continued on the next morning. For any questions, you can contact me at nuclear1@coiinc.com. Joey Frey

Dixon, IL

Builders, 4/24/03

The primer system that works best and also provides backup for the throttle body, in case of icing or other failure, consists of a 12v solenoid valve, a fuel distribution block, primer nozzles on all 4 cylinders sized to flow fuel at 75% power with boost pump on. The solenoid and fuel distribution block are mounted on a bracket underneath the engine. The system is used for priming in the normal way, but if the throttle body fails due to icing or fuel contamination, you can set the TB mixture at full lean, turn on the boost pump and solenoid valve, and advance the throttle (or retard it) until the engine runs smoothly. You will have a single speed poor man's fuel injection to back up your TB.

Jack Wilhelmson
Charleston, SC

Builders, 5/2/03

It is sure fun to have a Cozy. Everyone needs to keep on building.

Tuesday my family and I were at a medical meeting at our new Silent Wings Museum. After the meeting, the sky had cleared of a moderately large thunderstorm and left us with a gorgeous Lubbock sunset. My wife took the two oldest kids home and I went to the hangar with the 2 youngest (Amelia 6 and AJ 4). We preflighted and then called Carrie to tell her that we decided to fly over the house and then come back to do some full stop night landings (almost 90 days). She was halfway home already.

We were able to reach the house at the same time they arrived, even though I used ½ throttle and did some sight seeing first. Carrie went out front to put in our left over Christmas lights that spelled out a huge "F" on the roof, just for this kind of a flight (her idea). The older boys went up on the roof for a good look. It was funny having Amelia leaning over me to see out of my window with her feet on the far wall and her hands on my wall. We then turned the other way so that she and AJ could see the house better.

Friends asked about the flight the next day because they saw us at 1000 ft AFL from as much as a mile away doing our graceful 60 degree banked turns.

Back at the airport, my approaches kept being high since I had such a light load and so final was done twice at 60 mph (below my green arc) with no sensation of canard stall. Full idle, speed brake out, and some double rudder made for a 700-800 fpm descent that shallowed wonderfully at 20 ft with added power. Real greasers!

What an enjoyable evening. The drive home was non-stop talking. AJ informed me that next time, he wants to sit on the roof with me, like we did in Sun n Fun, and watch Chris fly the plane over the house with Mom in the copilot seat so that he can see them have fun. Bed time was a challenge, but with big smiles.

Lubbock, TX

Bjorn Moerman, Emirates Airline FLT OPS in Dubai, U.A.E., and his wife, Djamila in their "new" baby. They say they are really enjoying it.

"For some years I have been afflicted with the belief that flight is possible to man. My disease has increased in severity and I feel that it will cost me an increased amount of money...."

-- Wilbur Wright, 1900

Most of you have hear of Picabo (pronounced Peek-a-boo) Street, the Olympic skiing champion. Her full time job is as a nurse, working in an ICU of a large metropolitan hospital. However, she is not allowed to answer the telephone. 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

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

Co-Z Development Corp.

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