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# COZY NEWSLETTER #69

## April, 2000

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### 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) 234-6109.
2. Water tight fuel caps: Jack Wilhelmson (843) 884-5061.
3. Improved MKNG-6 and NG-6 Pivots with tapered roller bearings. Jack Wilhelmson (843) 884-5061.
4. Electric speed brake actuator kit. Wayne Lanza (561) 664-9239.
5. Switching and breaker panel. Wayne Lanza (561) 664-9239.
6. Fuel sight gages. Vance Atkinson (817) 354-8064.
7. Electric nose-lift. Steve Wright (615) 373-8764.
8. Electric pitch trim. Alex Strong (760) 254-3692.
9. Voice annunciated warning system. Richard Lewis (423) 376-1450.

10. Rebuilt flight instruments. Howard Francis (not a Cozy builder) (480) 820-0405.
  11. T-shirts, etc. Bill Walsh, [nogofsu@sprintmail.com](mailto:nogofsu@sprintmail.com). (407) 696-0942.
  12. Antennas. RST Jim Weir (530) 272-2203.
  13. Electric nose-lift. Steve Wright (615) 373-8764.
  14. Electric pitch trim. Alex Strong (760) 254-3692
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## IO-360 PERFORMANCE PROP FOR SALE

3-blade Performance prop for a 200hp IO-360. Thought it might work on my 180hp O-360, but doesn't turn up quite high enough. Barely used. \$2200 new. Asking \$1400 OBO. Larry Aberg (503) 789-7116 or [bvincze@enbc.com](mailto:bvincze@enbc.com).

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## BUILDER HINTS:

[Larry Capps](#) suggests that the material list should be changed to 300 yds of UNI tape to provide some safety factor so that a builder doesn't run out before finishing his last spar cap, if the material isn't quite as thick as expected, and he has to add an extra layer. This is a good suggestion. The bill of materials is an estimation of what you will need in each chapter. We have tried to be as accurate as possible, but you should always order a little extra, especially in the beginning, so that you don't run out of epoxy, cloth, micro, or flox before finishing a job.

The fuselage top (forward of the canopy frame and aft of the canard) is held in place along the longerons with hinge pins. It is not necessary for the hinge segment aft of the instrument panel to be aligned with the hinge segment forward of the instrument panel. If you grind a point on the leading end of the hinge pin, it can easily negotiate a slight change in direction.

If you install the rudder pedals made by Dennis Oelmann (we recommend them) you will be using "lay-down" (acrobatic) brake cylinders with separate fluid reservoirs. Dennis suggest drilling a #50 hole in the reservoir cap to vent it to relieve pressure if the fluid expands.

David Domeier purchased and installed an S-Tech altitude hold system to go along with the Navaid system. He says it is very simple but it works as well or better than some very complex systems he used to work in the "heavies". He says it just grabs whatever pressure altitude it senses when engaged and stays glued to it.

Nick Ugolini highly recommends the Navaid with the external Smart CouplerII (SCII) to get the Navaid to track. He says he has had no problems in 500 hours of use. He says when in the tracking mode, to set the aileron trim to the max (one way or the other) to preload the system and prevent hunting back and forth across the track. He says it's a great system.

Michael Link says he used the same system for lighting his instruments as on the B-52's and KC-135's that he was intimately associated with in the USAF, that is, a plastic cover, over the instrument panel, painted black, with a reverse chamfer at each instrument. Light was 'injected' with screw in bulbs from the front. At all switches & breakers the name was engraved through the paint. There was a slight glow or red that was adjustable. The result, he says, is spectacular!

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## WHAT WE HAVE BEEN DOING

We sent the last newsletter out before Christmas so we could wish you all a Merry Christmas and Happy New Year, and then we flew up to Minnesota to be with family over the holidays. Then it was back again to Arizona for a week, and then away again to St. Martin for our annual vacation. Even though technically we have been retired for 15 years, we still keep pretty busy with our hobbies, so it is good to get away on vacation whenever we can.

The year 2000 is a milestone of sorts. It will be the 28th year that we have participated in the EAA, helping builders, and the 19th year helping with our own design. We intend to continue as long as our efforts are appreciated. We think we have one of the best 4-place designs on the market-certainly the most economical.

The first quarter of the year we have a lot of visitors in Arizona, for both business and pleasure, and we get our share. We have taken a lot of builders and prospects on demo rides. Although it is routine for us, we always enjoy all of the praise and complements we get on our airplane.

We have a lot of foreign visitors. Recently, Etsuo Fuwa visited us from Japan. He is a craftsman, making jewelry and leather work, and he desperately wants to build an airplane. He stayed at our house, I took him for a ride, we became fast friends, and he bought plans. I admire him for the difficulties he will have to surmount to build and fly his own airplane in Japan.

Likewise another new builder, Valdis Boshe, from Latvia. Apparently he is a very talented electrical and electronic engineer. He bought plans and will start to build shortly. He is interested in translating our plans and instructions into Russian.

We had another visitor, Farshad Tehrani and his brother, from California, but originally from Iran. They escaped from Iran, leaving everything behind, came to this country and started up a new business making leather furniture. They bought plans, and later sent me an executive swivel chair; thanks guys!

In this country, we don't have any monopoly on talent, ingenuity, and motivation. In fact, sometimes it seems like we are spoiled.

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## **SUN 'n FUN**

Sun 'n Fun this year is from April 9th to the 15th. We will be in space A-3 this year which is west of where we used to be. Bill Walsh has again planned a get together at the Red Barn Steak House at about 6PM the first day, Sunday April 9th. He wants 100 people so he can reserve a private room. He plans to have name tags and a place for builders to display any products they are making for sale. You don't need a reservation, but he would appreciate an RSVP. Call him at (407)696-0942H or (407)583-5315W or e-mail [nogofsu@sprintmail.com](mailto:nogofsu@sprintmail.com). If you need a ride or have a ride to give, stop by our display before 4:30 PM. We advise people to leave before the end of the airshow to avoid getting stuck in traffic.

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## **ARLINGTON**

Arlington is from July 5th to the 9th. It is a very nice fly-in (when the weather cooperates). We are going to try to make it. Eric Westland usually plans some sort of get together. He will let us know. Check out the web page for Arlington 2000 at <http://www.nweaa.org/>.

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## **OSHKOSH**

Oshkosh is July 26th to August 1 this year. We usually have a Cozy dinner on Friday and then there is a homebuilders picnic on Saturday. We plan to have a forum, either Friday or Saturday. Nick Ugolini has agreed to talk about the procedure he has perfected for making 3-blade composite propellers. We would like to know what other subjects you would like to have discussed. If you need a place to stay (motels are always booked) you might try a service that books rooms in residences: 1-800-477-2920.

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## **COPPERSTATE**

There was some question about whether it would be in Mesa again this year, but we just received word that it would. That is great, because we would like to have a barbeque at our house again, and we always enjoy having builders stay with us. It is still some time away (October), so there will be more in the next newsletter.

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## **GOLDEN WEST**

This fly-in should wrap it up for the year for us. It is held at Merced, CA in the fall. We went with the Strongs last year, and several other Cozys attended. We enjoyed it and will try to make it again this year.

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## **PROPELLERS**

We basically look for several things in a propeller.

Fastest cruise at full throttle and 8,500 ft. altitude, without exceeding 2700 rated rpm. This would compare the efficiency of all props at the same power setting.

Maximum static rpm to develop as much horsepower for takeoff as possible. We consider a spread of 300 rpm between static and full throttle rpm to be ideal. Less would even be better.

Smoothness. A propeller should be balanced both statically and dynamically. Static is a function of weight and weight distribution. Dynamic requires that all blades have the same airfoil at the same stations. Generally, a 3-bladed propeller is smoother than a 2-bladed, but more expensive.

We have evaluated both the Sensenich 2-blade and the Catto 3-blade. Both were good props at reasonable prices. But both were shy of 2700 rpm at full throttle and altitude, so static was lower than desired as well. We relayed this information back to the manufacturers so they could fine tune them with either less blade area or pitch, which ever they thought would be best, and we'll test them again.

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## **EXTENSIONS**

From time to time we have heard claims about better cooling, less noise, and higher speed by increasing the length of the prop extension from 6 inches to 8 inches. We mostly discounted this, but decided to try one anyway to see if it resulted in less soot on our 3-bladed prop. So we ordered up one from our favorite supplier, Judy Sabor, and installed it. There does seem to be less soot, but we will have to reserve final judgement till we go on a longer trip. Haven't particularly noticed any other change, but we like it.

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## **FIRST FLIGHTS**

We were very flattered to learn that the leader of the famous Thunderbird team, Col. Brian Bishop, who normally flies F-16s, liked the Cozy Mark IV enough to buy one for his personal airplane. He likes sidesticks, but had to transition from his right hand to his left.

Ed Richards reports that his Cozy Mark IV, N826ER, first flew on Sunday, January 16, 2000. He lives in Florida and was checked out by Jeff Russell. He said that he had lifted off the runway a few times on the high-speed taxi tests, so he felt he could handle the airplane. He said the airplane accelerated quickly and about 80 kts he rotated and began the climb. He says, "this was really the only problem I had with my piloting skills, I was overcontrolling the pitch of the aircraft and causing the plane to 'pitch buck'. It wasn't pretty. Once I relaxed the pressure on the stick, though, life got a lot better. I climbed up to 3000 ft., leveled off and tried to get the feel of the plane. Some turns and a little slow flight and I was ready to try a landing. I lined up on final and let her down at 80 kts. A greaser! Life is good :-). The airplane handles beautifully and the view is spectacular. Thank you Nat, for developing the design and making these great plans and building instructions available. Your dedication to the design and sport aviation are greatly appreciated. Thanks Jeff, for being my mentor. Most of all, I'd like to thank my family (my wife Sue and son Chris) for putting up with my obsession for more than eight years. Chris was in first grade when I started this adventure, and he is now a high school freshman making his parents proud. I was always sort of put off by the "it flies great, keep building guys" in the flight reports, so I won't say that. Just, if you keep at it, eventually you will finish".

Eric Westland writes on the emotion of the first flight: "That's what I still can't get over. I remember being almost emotionless when watching my test pilot rotate it for the first time. I did not know how to react. Knowledgeable folks come by over the years and tell you that you are doing a fine job, but all the time you know they can't tell while it's in pieces all over your workshop if it will actually fly. It took me a few days to finally let it all sink in. Maybe it's because it takes so many years to build. The best part comes though when you are at the controls at altitude, the engine is humming and the airspeed indicator is giving impressive numbers. When you think back to all it took to get you there, you get a sense of satisfaction unlike anything else."

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## PUBLICITY

There was a very nice story, complete with pictures, in the 10/21/99 issue of the Grayson County, MO, News-Gazette entitled, "Assembling airplanes now in blood of pilot Mike Davis". It tells about how Mike Davis so enjoyed building and flying his Cozy, he volunteered to help E J and Diane Carlton build their Cozy Mark IV. We are proud of our builders.

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## AWARDS

Builders Dennis Oelmann and Jack Grandman both received \$100 checks from us for getting pictures of their Cozys published in Sport Aviation and Kitplanes magazines respectively. Please let us know if we

have missed anyone.

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## PROUD OF YOUR COZY?

Readers of Sport Aviation and Kitplanes magazines love to read about builders who are flying the same airplane they are building. We have a lot of builders who are flying, but never sent in pictures to any of the magazines. Maybe they didn't think it was worth the effort. So we decided to offer awards. We offer builders a free "Strong" electric pitch trim, or, if they have already purchased one, \$100.00, for any pictures and descriptions or articles published in Sport Aviation or Kitplanes Magazines. In addition, Kitplanes will enter your name in a drawing for a free GPS.

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## STALL RESISTANCE

We have talked about this before, but it is a very important subject and worth stressing. The Cozy Mark IV is safer than most other 4-place airplanes because of its resistance to stall. Stall spin accidents account for 25% of the fatalities in general aviation, so if an airplane does not stall, its safety record should be much better than others. If the Mark IV is built according to plans and operated within the approved c.g. range, and non-acrobatically, we have determined that it does not stall.

The concept is a simple one: Make sure the canard stalls at a lower angle of attack than the main wing. To make sure this concept applies requires attention to a number of details:

**Angle of incidence.** This is the angle of the chord-line of the airfoil with respect to the fuselage longerons. It must be correct for both the wings and the canard so that they will have the right relationship to each other.

**Vortilons.** All the vortilons on the main wing must be in place. With swept wings at high angles of attack, the air tends to flow spanwise. This degrades lift. Vortilons reduce this tendency.

**Lower winglets.** The lift at the wing tips is the most important lift in providing a nose pitch-down moment, because it is the farthest aft portion of the wing. A nose pitch-down moment is required so the nose will drop when the canard stalls. The lower winglets protect this most important lift.

**C.g. range.** To prevent a main wing stall, the canard must stall first. The angle of attack at which the canard stalls is a function of canard loading; i.e. the number of pounds per square foot that the canard is supporting. If the center of gravity of the loaded airplane is aft of the aft c.g. limit, the canard will not have enough loading to make it stall before the main wing.

**Canard span.** Having too much canard span has two undesirable effects. The first is that it reduces the



loading per square foot, so it is the same as operating at too aft a c.g. The second is that the canard deflects the air downward, and extending the canard span will put more of the main wing in the downwash from the canard and destroy some of the lift from the main wing, and increases the loading at the tips, which would have a similar effect as removing the vortilons or removing the lower winglets.

Now, it should be pretty obvious to know visually that the vortilons are in place, the lower winglets are in place, and the canard has the right span. But how can you be sure about your c.g. calculations, and the correct angle of incidence? Well, there is a way to check the combination of the two during flight testing, while you are still in the extremely safe forward portion of the flight box.

If the canard is at the correct angle of incidence with respect to the main wing, at a c.g. of 100 and at a speed of 140 knots, the trailing edge of the elevators should be reflexed upward approximately 1 degree (see Newsletter 56, page 5). This is less than 1/8 inch. You can see this from the cockpit. If the trailing edge of the elevator is down, ground your airplane, because you have either made a mistake in your c.g. calculation or the angle of incidence of your canard is wrong, and too low. With too low an angle of incidence on the canard, it generates too much lift as the angle of attack increases, and can drive the nose high enough to stall out the main wing. It would take a very skillful pilot and a lot of altitude to recover from a main wing stall.

A few builders make design changes without appreciating the affect they might have on stall resistance. The fuselage provides lift, which is destabilizing. Increasing the width of the fuselage or lenthening the nose would have a similar affect to increasing the canard span. Anyone making changes like this should test stall resistance at aft c.g. with a traveling weight such as we used during our flight testing. Making design changes without this kind of testing is a risky business. You don't get to be an old pilot taking unnecessary risks.

## FUEL TANK VENTS

A Cozy builder asked whether it would be better to locate the fuel tank vent at the rear of the tank along the centersection spar. He was probably thinking that the airplane is usually fueled when parked nose down, and then that location would be the highest point in the tank. The problem with this location is that you always have the most fuel on board for takeoff and climb, and with the vent located at the aft of the tank it would be submerged during climb, and the outside pressure always decreases during climb, so pressure inside the tank pushes fuel out of the vent during climb to altitude, and the amount can be appreciable.

Locating the vent in the center top of the tank is thought to be a better location because it eliminates or at least minimizes the amount of fuel lost during a climb with full tanks. You can have a problem with this location on the ground, though, if you fill your tanks plum full and then let your airplane sit in the hot sun. The air and fuel in your tanks expands and can push fuel out through the vent, if it is submerged. However, if the filler neck is located at about the same elevation as the vent, it is difficult to add enough fuel to submerge the vent. This notwithstanding, it is our practice never to fill our tanks completely, except when leaving on a long trip, and then only just before takeoff.



Some builders believe that it is better to put two vents in each tank, one in the center and one at the rear. We believe this would be counter productive because in a climb the center vent could pressurize the tank enough to push fuel out of the rear vent, which would be submerged. This was our logic, and it works for us.

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## **GROUNDING/BONDING**

Grounding means to connect something electrically to the ground (literally) and bonding means to connect two things together electrically. In transferring solvents, it is recommended to do both, but in fueling your Cozy, you must BOND. That is, bond the top of the fuel in your tank to the filler opening, cap, and hose nozzle. You can do this by fastening a braided wire onto the bottom of the cap as shown in Ch.21, p.8, Fig.21, and then with a wire with alligator clips on both ends, connect the braid to the fuel nozzle.

Fuel is a non-conductor. So when you pour fuel into your tank, the stream of fuel carries with it electrons, which accumulate on the surface of fuel in the tank. When enough electrons accumulate and the potential is high enough, a spark can jump from the fuel to the nozzle, with a resulting flash-fire. The bonding procedure described above will avoid a disaster like that occurring with your airplane.

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## **DUST**

Eric Westland comments on the I-net: "Dust is just a fact you will need to live with if you are building a composite airplane. There is lots of sanding and shaping that takes place over the years and it all goes somewhere, or more appropriately, some of it goes everywhere. Once you start contouring, I don't think any level of effort will keep the dust out of everything. I built and finished our plane in our basement.

During the finishing era, it looked like someone set 100 pounds of flour on 5 pounds of dynamite and then lit the fuse. It's been out of there for over a year now and you still can't go down stairs without brushing up against something that will leave a white mark on you. Having said that, I still have not actually worked at cleaning it all up. I'm having too much fun flying. You will too. I'll clean it when I sell the house. In the meantime, the Christmas decorations we store there are already 'frosted'."

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## **ENGINES**

Cozy builder Mike Skoriya reports that he has been promised the first Continental Diesel off the

production line. He says it will be 200 hp and have 2 turbochargers but no intercoolers. It will hold full power to 8 to 10,000 ft., and will be about the same size as current 180 to 200 hp engines. We have heard that it will produce full power at a lower rpm, have fewer parts, and a longer TBO than a Lycoming.

AeroSport Power in BC, Canada is a source for rebuilt Lycoming engines. (250)376-2955

Web page: [www.aerosportpower.com](http://www.aerosportpower.com).

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## OVERHAULS

Eric Westland writes:

1/31/00

Builders,

After 4 months, I finally finished overhauling my Lycoming IO-360 A1A and flew my Cozy Mark IV again.

When I first flew my plane in June, the engine already had 2100 TTSN on it. I elected to install the engine as bought since it came off a flying Mooney, hoping to get enough hours to resolve any cooling problems. That I did during the rest of the summer (when it wasn't raining) and decided to pull it after it started making an occasional popping sound. Also, it was built in 1977 and there was some uncertainty as to whether it had the old style exhaust valves, which had a tendency to break around 2000 hours. Overhauling it a few months after the first flight involved more time, but it's been an eight year project, and this way worked for me.

As I disassembled the engine, I took about 100 pictures. I'm glad I did as they helped to refresh my memory on fuzzy details during reassembly. Using lots of Zip lock bags, it all came apart. It really helped to have an engine stand that fastens to the prop flange and supports the crankshaft vertically. I made a crude one welding a steel car wheel and some pipe together.

Once it was all apart, I elected to have ECI recondition the crankcase, cylinders and steel parts. They have facilities in San Antonio, TX and Troutdale, OR, which is about 3 hours from my home by car. So in the car went the engine parts and to Troutdale I went. While it may have been easier to just ship them, I wanted to check out for myself just who would be doing the work. Once there, I was greeted by the manager, Tim, who checked in the parts, explained the options and estimated what it would cost. They have a complete shop and do everything themselves for single folks like me up to big outfits. It was most impressive.

The cylinders however had to go to San Antonio since I wanted the Cerminil process. Since I wanted my own first-run cylinders back, it took about 8 weeks to get them. I believe ECI is the only shop that has the field approval to actually separate the head from the barrel. This allows them to stress relieve the head after any welding before rejoining it to the reconditioned barrel. They will also provide you with a

new barrel for an extra \$100, but I wanted the Cerminil so I opted for that. While prices vary depending on the cylinder model, mine were \$800 each for reconditioning (Superior does not make new cylinders for angle valve Lycomings). Included in the cost were new valves, guides, seats, springs, keepers, rocker arm shafts, pistons rings and gasket kit. They came painted and ready to bolt on with a 5 year warranty on the Cerminil.

I also gave them the crankshaft, conrods, flywheel and prop extension so they could dynamically balance them all as a single unit. My engine never vibrated much anyway, but it was only \$90 and can only be done while it's apart. It feels smooth now, maybe \$100 worth.

When it came time to round up all the little parts to put it back together, I was really hit with sticker shock. For example, connecting rod bolts for my engine are \$81, gasket kits are \$200.....It just went on and on. I checked Superior and Lycoming, and obtained prices for El Reno, Sacramento Sky Ranch and local sources, but they were all real close. Then a call to a merciful fellow at Superior suggested I call A. E.R.O. Aviation (618)797-6630 near Chicago. They handle both Lycoming and Superior parts and were about 40% less than the better known suppliers. I was most pleased, although \$46 for a connecting rod bolt still seems ridiculous. I don't know if they handle Continental parts.

When it came time to bolt it all back together, I decided to do that myself as well. While I had not done this before, I had all the books and was willing to take my time and found a mechanic that would check my work. It took longer and did not save me much money to do it myself, but it was a great learning experience.

It went back on the plane just like before. ECI recommends Phillips 20W-50 for break-in so that is what I used. I used the starter to get the oil pump primed by turning over the engine with the spark plugs removed. When it came time to start it up, it jumped to life and I ran it in place for about 5 minutes at 1800 rpm - ECI's recommendation. While it cooled, we checked for leaks, and we found none. Another ground run of about 6 minutes, another check for leaks, and it was time to go flying. It's good to be back in the air.

Eric Westland  
Mukilteo, WA

## AIRPARKS

Bernard Cannac writes from France:

2/9/00  
Hi all,

We do not have the problem of reselling houses on an air park, as in Europe we are only just now starting our second air park:-(. Our waiting list is already one dozen potential buyers! But at Vannes (LFRV) it is a bit special. The runway is state owned (5000 x 150) and never used because within 50 miles are three big commercial airports, so we have succeeded in convincing our politicians to devote

this airfield to liesure:-).

We have a tower with 3 men and almost completely IFR. We are situated along the Morbihan Gulf shore along the Atlantic, which is classified among the 20 nicest bays in the world. We have started this project among a party of friend home-builders and convinced the politicians to give us the right to build our air park ourselves, and we are going to stay almost only among Long EZ and Cozy owners. As we gave life to a dying airport, we are quite well considered in the region and for the time being, well treated. Don't stop looking for a good place to live where you will surely find a nice place and avoid usual drawbacks of property developers tricks (hidden expenses that come after that menace you after having bought, etc.). If you have enough time and energy (I am just retired), do as we have done. Do your own air park yourself with a few younger pilot friends.

Benard Cannac  
France

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## LETTERS FROM BUILDERS (some from the net)

1/7/99

Dear Nat,

I have to admit to you, I've been unduly influenced by the Lubbock Cozy builders to start on my own Cozy MkIV. I first heard about the Cozy while talking with the Lockharts, but didn't take much heed, because I wanted to fly and my dream plane was a Berkut. Then I was introduced to Kevin Funk, whose Cozy was 90% complete. I've been working with him on his aircraft for the last 3 weeks and have also helped out Lollins Morrison with his as well. Kevin explained to me the advantages of the Cozy and the building techniques used, as well as allowing me to do some hands-on building and now I'm hooked. I'll be able to complete and fly a Mk IV for the same price as the bare-bones Berkut kit! The dream is now within my reach!! Enclosed is a check for a set of plans.

Terry Winnet  
Lubbock, TX

12/1/99

Nat,

I wasn't going to tell anyone about this experience except my wife, but after thinking about it over night, decided there's something to be learned and it should be shared with other canard aviators and builders.

I was distracted by a Cessna 150 on the runway during an approach yesterday and landed with the nose gear up and locked. Yes, the gear warning system was working. But the audio warning was not heard due to a noise canceling headset and I missed the red light. I also forgot a landing check list with just 3 items on it. So much for attention span...the Cessna did clear the runway in time.

Lesson learned: Install a warning device with an audio input to the intercom (or don't use a noise cancelling headset). ACS has 'em on page 417. I'll be ordering one today. Also, when distracted by ANYTHING, a red flag should go up with a self installed head tape that says, "What am I forgetting!" This is especially so when flying around alone without a wife or co-pilot to keep one out of trouble.

Damage to the airplane was almost a non event. The snubber, which was a St. Louis Blues hockey puck, is gone as is some paint, primer and fill. The snubber will be replaced with something a bit more firm and hopefully not used again. It's been said, "There are those who have and those who will" and after some 400 landings in a LEZ and the Cozy, I move from the latter to the former. Say it ain't so, but it is.

David Domeier  
Chesterfield MO

12/10/99  
Nat,

Please change my address. I am still having a great time building this plane. Your input on the mailing list is also greatly appreciated.

John Millington  
Allentown, PA

1/28/00  
Builders,

A constant speed prop sounds like a wonderful asset, but one reason I selected the Cozy was its relatively low cost. \$13K to \$15K for the airframe is an excellent deal for the performance and range offered. Obviously the bill is going to get a lot bigger after engine and avionics, but \$5K to 8K for a constant speed prop which will be just as much at risk for stone damage seems disproportionately expensive. But if you have money to spend, great! I am envious.

Peter Militch  
Laurel, MD

2/27/00  
Builders,

Well, I got my new B&C starter (after problems with the Sky Tec starter) and used the same gel cell battery and it turned the engine over much better. I then installed the new B&C gas recombinant battery and it, along with the new B&C starter spun my big ol' 360 over like the spark plugs were removed. What a difference! I am a strong advocate for Bill Bainbridge's B&C products as I now have his starter, 60 amp alternator, LR-3 voltage regulator, and his gas recombinant battery. The only thing that upsets me now is that I should have gone this way to begin with and I wouldn't have an extra brand new starter and battery to try to get rid of. I would also have an extra \$440 in my pocket! I think I will take them over to the little field where I learned to fly and donate them to the owner as he is always struggling financially to keep his airplanes maintained properly. Maybe it will help some young kid to get his pilot license. I am telling you all about this embarrassing situation only to keep someone else from making the same mistake. If you have an O-360, buy the B&C starter FIRST!!!!

Gary Dwinal  
Lisbon ME

1/25/00  
Hello Nat,

Hope everything is fine and you are enjoying winter in Arizona. It is cold and rainy here in the northwest. I just modified the location of my oil cooler trying to reduce my cruise oil temperature. I located it on the firewall. Instead of the airflow exiting out the top of the cowling, I made an air duct to exit the air in the low pressure area on the top of the engine where the cylinder cooling air exits thru the prop. I'll let you know how it works. I've also added a tuned intake manifold (2" manifolds of equal length) to increase airflow and horsepower.

Please advertise my Performance 3-blade prop in the newsletter. I was built for a 200 hp IO-360. It is in excellent condition. I would like to get \$1400 (new cost is \$2200) but will consider other offers. I can be reached at (503)789-7116 or e-mail [bvincze@enbc.com](mailto:bvincze@enbc.com). Thanks.

Larry Aberg  
Vancouver WA

2/27/00  
Builders,

I used Polyfiber Smoothprime for the first time today and just have to gush about it a while. I spent two weeks prepping the wings, strakes, winglets, rudders, ailerons, fuselage sides, nose, gear legs, and covers. I decided to mix up 1/2 gallon of Smoothprime to see how far it went. Six hours later I'm on my third coat and just can't get rid of the remaining paint! The stuff rolls on beautifully and covers a multitude of sins. 50 grit scratches simply disappear. 36 grit ones I can still see, but at least they now show up and are easy to fill. One dip of the roller gives enough paint to cover 1/3 of the wing surface. Many small imperfections disappeared but it was a fair trade off, these were exchanged for quite a few ridges, dips and bumps I hadn't seen but became quite visible and easy to zero in on. Don't waste your time going down to 320 grit on the Superfil and micro, just prime it and fix what's left.

Regarding pinholes. I'd heard and read horror stories about pinhole chasing. I painted the wings, strakes and winglets and didn't see a pinhole. Not a one. Finally, when I got to the fuselage sides (my early work done without 4mm plastic) I saw my first set of pinholes as the paint rolled over one area. Ah - that's what they look like! I saw them for, perhaps 15 seconds, and then the Smooth Prime filled them up on the first coat. There were no pinholes anywhere when I did the second coat.

Net result - my plane is now white. I think it looks great. All those pieces I joined together have suddenly become a "thing". I measure finish quality by how close you can get before it starts to look ugly. I'd put this at 10 feet - paint it with gloss and it would probably be a 20 footer right now. I've seen some 1 footers, many 30 footers and a couple of 10,000 footers at fly-ins. Given the theory of diminishing returns, my target is 2 to 3 feet. Not a show winner, perhaps, but not embarrassing either. Considering this is stage one of a many stage process, I'm VERY pleased, as you can probably tell. I highly recommend Smooth Prime.



John Slade  
W. Palm Beach FL

2/27/00  
Builders,

I'm using MGS 285 epoxy, and the Michael Engineering variable epoxy pump. I noticed some minor traces of contamination when the pump was new; the instructions said that this was a lubricant used to grease the seals and the small amounts that get into the epoxy won't cause any problems. I've been using the pump for a year now and notice the black stuff only occasionally now. The pump doesn't leak, bind or otherwise misbehave (as long as I use it frequently enough to keep it limber, anyhow), and I've never rebuilt it or had to replace any of the seals, so I wouldn't worry about the seals deteriorating.

I love my Michael Engineering pump, and I recommend it highly, but I have one word of warning about it: Be careful not to put any sideways pressure on the reservoirs, either when you're filling it or when you shut the door of your oven. They're not supported very well and they crack easily, as I found out the hard way. That resin is expensive, and there is no point wasting it on the floor of the garage.

Doug Sheperd

3/3/00  
Nat,

Got my EAA coupon. Thanks. By the way, my plane is progressing nicely and I'm having a lot of fun.

David Burkes  
Columbus MS

3/3/00  
Hi Nat,

I am the guy you spoke to at Copperstate who is a Captain/Checkairman for Midwest Express Airlines in Milwaukee, WI. I was in Phoenix today for about 45 minutes and then had to turn around and fly back to Wisconsin. I am still looking at moving out there maybe this summer. I have just completed chapter 7 and 8 and my fuselage is as smooth as glass. I put the 4 mil layer of plastic over my entire peel-ply side of my fuselage and that system works fantastic! Once again, thanks for a fabulous plane. Its been a blast to work on.

By the way, you always say that Jeb Butler is your tallest builder at 6'5", but I am taller at 6'6".

Mark Wunduke  
Racine WI

2/23/00  
Dear Nat,

I have received 3 nice welcoming mail so far, 2 from the US and one from Latvia. What a nice feeling,



and its nice to hear that my predecessors in aviation have given me a helping hand when in the future should any problems occur, in due course of building a fine airplane. Your introduction of us to the list (Cozy\_Builders@canard.com) has given me another break-through in my life. I'm not exaggerating at all, I thank my fate about it, one guy who was a mechanic for Eastern Airlines wrote to me from Atlanta, GA, and we started to talk about the what, when, and where of his own history, and found out that he was in Japan as a military man when I was born and his wife is Japanese. The other guy wrote from California, and he was a leathercrafter and is building a Long EZ. Well, I have found out that this internet is really bringing a new era in international friendship circle. As a leathercraftsman, I shall be of help to anyone if I can help in any other way.

Etsuo Fuwa  
Karuizawa Japan

2/14/00  
Builders,

We finished Chapter #8 on MKIV's 591 & 656 being built side by side (play on words?). Tonight I was adding up the hours so far thru Chapter #8. We have included the time spent building jigs and fixtures as well. It totals 914 for two planes. This seems a lot, but I have nothing to compare it to. We are very diligent in trying to obtain perfection in our work, so we don't settle for "good enough". Contouring the fuselage seemed to take forever, but both planes are perfect and identical. We would appreciate knowing how our time compares to others.

David Clifford  
Howell MI

1/5/00  
Dear Nat,

Because I have been directing most of my attention toward building a new home, I have been unable to finish my plane which is still at the engine and instrument installation stage. However, I expect to renew my push to complete the aircraft very shortly. In the meantime, may I wish you and Shirley all the best in the year 2000. Looking forward to joining the "flying" Cozy clan in the near future. I always look forward to the newsletter.

Brian McKiernan  
Brandon Manitoba

1/6/00  
Hello Nat,

I am still slowly, but steadily, making progress on Cozy IV #16, N44QT. I am working on a new landing/taxi/recognition light that I think you will like. I'll send you photos and drawings when it is totally completed. I lurk on Marc's Cozy Builders Group. I find I agree with your positions 100% of the time. I think one reason is that I have 16 years of Cozy III and MKIV newsletters. Many of the current builders may not realize that many of their proposed changes or "improvements" have been thought of and discussed in earlier newsletters. Have you considered publishing all the the past newsletters in a single document? I think it would sure help a lot of current builders. They contain an

enormous amount of building and flying experience and knowledge. Just a thought. Thanks for all your hard work.

Jim White  
Wenatchee, WA

1/11/00  
Dear Nat,

On 12/13/99, I was visiting my brother in Salina and he asked if I wanted to go along for a ride in one of his company's helicopters (Hughes 269C) to warm the oil before changing. I said sure. We went out and I flew for a bit, and on the way back in, he began a practice autorotation. The helicopter was just 5 hours out of annual, but had done two previous ones with another pilot. When he attempted to recover at about 75', the engine did not respond with power and it turned into a real autorotation ending HARD into a very wet wheat field and destroying the helicopter. We were both pretty seriously injured.

He had a broken leg in 4 places and arm in 2 places, and some cracked vertebrae. While I was spared the other breaks, I had compression fractures (unstable) of two vertebrae (L1 & L12) which required surgery and fusion along with pins, plates, screws, etc. I ended up with a 2 week stay at the KU Med Center in Kansas City, getting out right at Christmas. He got out of Wichita a couple days later. We are both recovering at our homes. In my case, I'm laid up for at least another 6 weeks, and the docs told me to plan on most likely twice that yet. I hope to be able to do a few things on the Cozy ordering parts etc so that as soon as I'm feeling up to snuff I can be ready to go.

You mentioned in the newsletter that God has truly blessed you. Well, me too! After talking to some of my rotary wing friends, they tell me that any auto you survive is a good one, and when EVERYBODY lives, it's a great one. I know we had some help with this one and thank God every day for it. So, enough of an update on my lack of progress. I appreciate everything you do in support of the Cozy. You are a rare (and appreciated) gentleman.

John Stricker  
Russell KS

1/28/00  
Dear Nat,

My decision has now been made. After almost 3 years of research, I have decided to join the ranks of COZY builders! The decision wasn't really too painful, it's just that my work has kept me on the move lately but now I'm settled, my workshop is set up and I need a meaningful project. I have worked with another MKIV builder, Brian Knapzyc, while we were on the F/A-18E/F flight test program in Patuxent River MD. He, as well as countless hours of internet surfing, has convinced me that the COZY project makes the most sense. I'm a low time pilot but intend to stay current during the build time. I'm really looking forward to both the building and flying experience.

Thanks for a great design and I really look forward to starting the new millenium with a great resolution.

Ron Hunter  
Mission Viejo CA

12/19/99

Dear Nat,

My Mark IV is proceeding slowly. The main gear is now ready to mount so perhaps it will now look a little less like an ugly boat. A year ago, I made the first bad mistake in building. We had a warm day late in the fall so I decided to do the last four ply lay up on the main gear legs. Linda started mixing the MGS 335 and I failed to notice that the balance was still set for RAE epoxy. The resin did not completely cure and did not bond to the lower plys. So in the spring I had to do the layup over. Cleaning up the sticky mess took a lot longer than doing the original lay up. At least I was able to recover the part without a big loss.

Dennis Crispin

Butler, MO

12/27/99

Hello Nat,

Its been a while since I've written. I'm going into my fourth year(2000). This past year was very little progress because I was working out of town, plus had a serious accident at work which laid me up for 4 months. But now it is back to building. I've all the major flying components built, so I'm trying to finish the outisde before going further. Lots of filling and sanding! The canard and one wing is filled and primed. The fuselage is on its back and the bottom is being filled. Take care and keep up the good work. God bless you and yours.

Bob E Smith

Bakersfield, CA

12/11/99

Hi Nat

Serial #793 is on the build. I'm now in the middle of chapter 6 and very excited about pushing forward. Everything is going according to plans. I can't tell you how long I've wanted to build my own plane, now it's finally happening My wife and four year old daughter seem to be just as excited too. At bedtime we make up stories about flying the Cozy to Disney World to see Mickey Mouse. Thank you for a great set of plans and all the support the Cozy family offers. I've attached a couple of pictures which I hope you can use in the newsletter.

Mark Logan

Sterling Hts, MI

12/9/99

Nat,

I'm writing to let you know that I will be turning 500 hours on my Cozy Mark IV (498 as of today). It has been a wonderful cross country airplane. Everywhere you go: What is it? How fast does it go? Did you build it? It's a Cozy Mark IV, fast cruise is 190 knots and I built it at home in my garage. Thank

you!!!!

Tim Jones  
Jefferson SD

12/15/99

Dear Nat,

I received newsletter #68 today. It is always interesting to hear from you and the Cozy group. I placed all my orders to Featherlite, Wicks, Brock, Airplane plastics, and the news of the 10% discount given by Wicks did not fall on deaf ears. It is snowing today in Versailles. I will be full blast in construction of my Cozy #819 by February 2000. I wish you and Shirley a Merry Christmas and Happy New Year.

Jean-Patrick Lacote  
Versailles, France

12/13/99

Builders,

I have 300 hours in my Long EZ with right hand stick and I was very concerned about test flying a friend's new Cozy from the left hand side, so I flew it from the right side for the first 10 hours. After that I transitioned to the left side and I can tell you that it was a non-event. Even after 300 hours of right hand flying, you forget the stick is in your left hand on the first landing. Nat has always said this and he is right. As a bonus, I now have my preferred right hand available to write things down. I am building the per plans left hand Cozy and would recommend you do the same.

Steve Willhoite  
Sante Fe NM

12/13/99

Hi Nat,

Last Friday the FAA modified my Airworthiness Certificate to the new -D one. So far so good, reason was to be able to switch props and I guess the timing was right. N241KD 218 hours and loving it!

Ken Reiter  
Plano TX

1/17/00

Hello everyone,

Happy New Year from France. I have been very busy finishing up the bird. I completed all the wiring and it was time to go to the airport. This was a huge task for me.

The airport where I bought a hangar lot is called Nangis and is 40 miles away from my home. This is quite a long drive when you have that big thing on a trailer at the back of the car. The whole process took three days.

On Friday the 14th, I met with Yves Pranal (another Cozy builder) at home to review our plans for the trip. I still had a hope to get the airplane out of the garage through one of the doors by tilting it. I had made a small paper mock-up of the fuselage and the garage doors. (I am one of those with a two car garage with two doors and a pole in the middle). So I haven't been able to get the fuselage out since the fuel strakes were built. And I was able to flip the fuselage over inside the garage for finishing the bottom.

So now I had a finished fuselage weighing around 700 pounds with the engine installed. I did not want to remove the engine because it would have been a lot of work. We talked around a few times with the small mock up to see whether it was reasonable to tilt it. But with the engine on, it was not. So the decision was to cut the middle pole.

So on Saturday, we started early, sustained the maindoor spar with standby steel poles at a reasonable distance from the center on one side and started cutting the pole at a height matching the strake height and thickness. By 12 AM, the block was removed and we managed to roll the fuselage out nearly straight on wheels. This was done by 1 PM. Of course, we had previously unscrewed the garage doors so they would be out of the way.

We then took my car and went to the airport to pick up the specially designed flat trailer that was lent to me for the trip. I had called a lot of friends to come and help load the bird at 4:30 PM. We were back home then with the trailer.

We then managed to load. I had to have the fuselage with the nose down (nose wheel retracted) and strakes tilted 40 degrees to minimize the wideness of the whole thing. It was still very wide because we were 3 meters (10 ft.) wide and the French regulations allow only 2.55 meters (8ft.4in.). We had the end of one strake quite high toward the center of the road and the other quite low on the side of the road. No way we could do better. I had one gear leg on foam on the wooden engine stand designed by Nat when the engine is not installed.

So the next morning (We had chosen early Sunday morning to minimize traffic and the chance to meet with police) we started driving that whole thing to Nangis. We had one car ahead of my car with warnings and one car at the back with warnings. We had very carefully recognized the road. Everything started very smoothly. But about half way, we were stopped by police!!!! Of course we were outlaws, of course it was too wide, of course he was right, he could have stuck us there, fined us, and so on and so on !!!! Well, we were lucky. The guy was a light airplane pilot. We started talking around, and we finally ended up proceeding on to the final destination with just the promise I would take him up for a flight in the bird. So now the bird is at the airport, getting close to flying. Not one scratch during the trip. Hope you will hear from me soon.

Benoit LECOQ  
SOISY/seine France

1/14/00  
Builders,

While making a sandwich for lunch yesterday, the strangest feeling came over me. I was spreading mayonaise on the sandwich, which happened to be topped with a piece of swiss cheese that contained a

lot of little holes. I had the biggest urge to use a squeegee and make the mayo really smooth and fill in all the holes. WEIRD!

Rick Maddy  
Denver, CO

1/25/00

Dear Nat and Shirley,

This evening the postman came to our door and handed me an envelope from America. I thought, I never asked anything from America, what can it be?? I opened the envelope and found WICKS on it, and it rang a bell. Thank you very much for your kindness. I want to tell you that by reading the catalog, many terminology that I was not comprehending by reading the Bill-of-Materials finally opened its real meanings. Now I know a lot by reading the catalog. Thank you again.

Etsuo Fuwa  
Karuizawa Japan

1/25/00

Dear Nat,

I was interested to read of your experience with Jim Bede and the BD-5. It is similar to my experience with the Avid Aircraft Co. I purchased a kit from Avid in the spring of 1997 and it arrived 2 months late with a 2 page backorder sheet. It took many months of continuous calling to get what I had paid for. Fortunately I was able to get it all and complete the project, but it was a great lesson in the deficiencies of kit building. I thought a company that had been in business for many years would be more stable, but they basically went out of business before I completed my project.

After finishing the Avid, I discovered that I really missed having a project in the shop. I had owned a Bonanza for 7 years prior to building the Avid, and we found that not having a cross country airplane was a problem. I read many of your newsletters in the various Cozy websites, and concluded the Mark IV is the right design for our needs. As an engineer myself, I appreciate the thorough job you have done in proving the plans. I am particularly impressed with your detailed study of the stall characteristics. The devil is in the details and I think you have covered them well. The approved supplier list is also an important plus. It appears your suppliers have been with you for some time so I assume they will be around for quite awhile longer as well.

I have never flown or ridden in a canard aircraft. If you are willing I would like to visit Mesa to meet you, have a close look at the airplane and the plans and take a test flight. Thank you.

Gary Whittaker  
Kingsport TN

*(Editor: Gary visited us, liked the Mark IV, and bought plans)*

1/26/00

Nat,



Last summer I purchased a few items from Quartermaster Supply at [www.qm-supply.com/index.html](http://www.qm-supply.com/index.html). I bought a NEW military issue nomex flight suit for \$25. I'm small. Larger sizes run up to \$45. I couldn't find anything like it elsewhere for under \$100. Derek Akers runs the site and I found him great to talk to and deal with. I also bought a nice, compact first aid kit for the plane.

Eric Westland  
Mukilteo, WA

1/13/00  
Nat,

We spent New Year's Eve at our condo about 185 miles from here with 2 other couples, one of which left some pills and personal stuff when we left on Jan 2. I decided I needed to patrol the area between here and there with the Cozy yesterday, so why not drop in and retrieve the pills for the lady.

It was a very pretty day except the winds were a bit weird. Surface wind was Northeast at 5 knots, but at 8,500' on a course of 250\* there was a significant headwind. A ground speed of 110 was most unacceptable, so I let down to 1,000' AGL and recovered 35 knots but it was quite bumpy. The Navaid autopilot coupled to the GPS course did not seem to mind the rough air. It just kept on navigating without much ado. I am most impressed with performance of this low priced autopilot. The S-Tech altitude hold also did very well in the rough air. These aids are most helpful in doing a good job of patrolling and noticing stuff that needs noticing - like good landing spots should one be needed.

Landing at the little airport was uneventful. Total time from engine start to shut down - 56 minutes. This place had a free courtesy car the last time I was there but some jerk must have screwed up the deal. The attendant said the car was no more because of an uproar. I had to take a cab at a cost of \$22 round trip. It was an old beat up Ford van, the only cab in the area. I noticed many junk cars parked at this airport, obviously owned by pilots who fly in as I did. Many of them were in better shape than the taxi.

I was looking forward to the trip back to St Louis and pleased to see 211 knots on the ground speed meter at 7,500' (242 mph for you marketing types). I had set up 66% power on fuel flow of 8.7 gph and the machine yielded 160 knots TAS at that power setting. About 35 miles out I tripped off the altitude hold, gave a couple shots of nose down Alex Strong trim, and started the descent. Speed picked up to 232 knots for a time. Tower approved a straight in approach and I was parked in the hangar with 36 minutes logged from engine start to shut down. Not too shabby for a hand built, homemade flying machine.

As I've said before, I remain very impressed with the Cozy MkIV. It is a pleasure to launch every time. Hang in there builders and keep mixin' that glue. It's worth it.

David Domeier  
Chesterfield MO



## I WANT TO BE A NAVY PILOT

I want to be a Navy pilot when I grow up because it's fun and easy to do. Pilots don't need much school, they just have to learn numbers so they can read instruments. I guess they should be able to read maps so they can find their way if they get lost. Pilots should be brave so they won't be scared if it's foggy and they can't see, or if a wing or motor falls off, they should stay calm so they'll know what to do. Pilots have to have good eyes so they can see through clouds, and they can't be afraid of lightning or thunder because they are closer to them than we are. The salary pilots make is another thing I like. They make more money than they can spend. This is because most people think airplane flying is dangerous except pilots don't because they know how easy it is. There isn't much I don't like, except girls like pilots and all the stewardesses want to marry them, so they always have to chase them away so they won't bother them. I hope I don't get airsick because if I do, I couldn't be a pilot and would have to go to work.

Edwardo Cordona, Age 10 (A Fifth Grader)

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