

# THE COZY NEWSLETTER #16 January, 1987

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**Co-Z Development Corp.**  
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It is mandatory for all Cozy builders to subscribe to this newsletter, as this is the only formal system we have for communicating plans changes and/or corrections, builder hints, changes in suppliers, and other information required by or of interest to builders. Builders will require newsletters from #4 on.

When writing to us with questions, please send along a stamped, self addressed envelope if you wish a personal reply. Allow space after each question for the answer.

If you call, you can reach us most of the time on (602) 981-6401, which is both our office and residence number. If we are away (we are sometimes), please leave your message on our answering machine, and we will return your call at our first opportunity.

The following prices are in effect:

US	OVERSEAS
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Information kit.....	\$9.00	\$10.00
Newsletter per year.....	5.00	6.00
Plans & Constr. Manual.....	230.00	260.00
Owner's Manual.....	15.00	18.00
Extra set A Drawings.....	15.00	19.00
Cozy decals, ea.....	5.00	6.00

We do not accept credit cards because of the extra expense and record-keeping involved. We do accept personal checks on US banks and money orders in US dollars. The additional cost for overseas orders reflects the higher airmail postage costs.

Our computer has a limited number of spaces for your address. If yours is an unusually long one, please supply us with the shortest acceptable abbreviation. We have programmed our computer to print on the label after your name the newsletter expiration number, to remind you when it is time to renew. The number at the top is a file number important only to us.

### EUROPEAN REPRESENTATIVES

Uli and Linda Wolter  
(Co-Z Development - Europe)  
Ahorn Str. 10A  
D-8901 Ried. West Germany  
49-8134-6892

Uli and Linda are providing builder support in Europe. They have plans and information kits in stock, and those of you in Europe can order these from them. They have been quite busy completing the new house they have built, but they tell us that the hardest part is now behind them.

### ABOUT THE PLANS

When you receive your plans, please do the following:

- Sign both copies of the license agreement (Chap.1,p.4) and send both to us. We will assign a serial number (required for licensing), sign one of the copies and return it to you for your records.
- Check the number of pages in each chapter against the number of pages listed under "Table of Contents". If any are missing, write to us for copies.
- Mark in all of the changes and/or corrections published to date in newsletters #4 on.

There may be some things you don't understand on the first reading, particularly if you haven't started work yet. Don't immediately grab the phone. Usually when your construction reaches that point, the instructions will become clear, if not on the first reading, at least on the second.

Some of you have cut up your large A size drawings, and can no longer refer back to them. We had additional copies printed and can sell you an extra set as listed above.

Thank you for the compliments we continue to receive on the plans. It makes our efforts seem worthwhile.

## THE VOYAGER SUCCEEDS

All of you, we are sure, followed the progress of the Voyager, as did we, each day during its flight around the world, and offered prayers for Dick and Jeana's safe return. What an incredible feat! It took the genius of a Burt Rutan to realize that an around-the-world flight without refueling was possible, and to design an aircraft that could do it. It took the contributions of materials, money, and work of many to make it possible. It took the dedication and ingenuity of Dick and Jeana and others to build the aircraft, and it took the courage, skill, and determination of Dick and Jeana to make the trip a success. Our congratulations to all who helped make the Voyager successful!

We can take some satisfaction in knowing that the Voyager was a canard configuration, that it was composite construction, that it was built with similar technique to what we are using, and that it was an "experimental" homebuilt. We can also be proud of the Rutan heritage in the Cozy design. What a contribution this man has made to aviation, and he is not done yet!

The one theme Burt used to preach to builders most consistently was that the key to performance in an airplane is lightness, and he has proved his point exquisitely in the Voyager.

## WHAT WE HAVE BEEN DOING

Since publishing the last newsletter, our top priority has been work on the Mark IV. Sure, we devote a certain amount of time each day to answering the mail and talking to builders on the phone, and there are a certain number of personal chores which must be attended to, but apart from these things we have been spending pretty much full time on the Mark IV. We have accomplished a lot, but there is still so much more to be done.

We took the fuselage through chapter 9, and then put it aside to build the centersection spar, and then the wings, winglets, and ailerons, and canard and elevators. True, we skipped a few small things along the way, but we are almost through with Section I, except for the strakes which we intend to put off as long as possible. We are presently finishing up the nose and nose gear.

All fall we were looking forward to a little Christmas vacation up north, visiting our children, grandchildren and friends. We arranged for a house sitter to look after things in our absence, and on December 22nd we caught the big bird for the Twin Cities. It's a good thing we decided to fly commercial, because the first night, in a strange house, in total darkness, I fell down an open stairwell, landing on my head on the basement floor. I sustained multiple bruises and one very badly broken left wrist. So in the middle of the night I was taken to the hospital to have x-rays taken and my left wrist set in a cast. Needless to say, my daughter and son-in-law, in whose new house we were staying, felt very badly, and I felt very stupid, which feeling Shirley helped to reinforce. But like everything in life, you can't undo what has already happened. This episode put somewhat of a damper on our holiday visiting and celebrating, but we made the best of a bad situation, and we returned to

Mesa on the 31st with my arm in a cast. The prognosis on my left wrist is that it will be in a cast for 8 weeks, and then take another few weeks of therapy to regain use. We don't know at this point whether there will be any permanent disability. My greatest concern is how to continue progress on the Mark IV so we can fly it to Oshkosh next summer. A neighbor and Cozy builder, Jim Turk, has graciously offered to help me weekends and evenings for a couple of weeks while I try to arrange for some longer term help. This has been a pretty serious setback which we will do our darnedest to overcome.

## QUALITY

We like to put in a little pitch once in awhile on the subject of quality. You are the manufacturer of your aircraft. As the manufacturer, you have total responsibility for quality. You can either accept poor quality, or you can insist on good quality.

Quality isn't a measure of goodness, in the sense of putting extra things in your airplane, like extra epoxy, extra layers of glass, or a lot of extra bells and whistles. Rather, quality is a measure of how well you execute the basic requirements. If lightness is one of the basic requirements (most important in airplanes), then a heavy airplane is an example of poor quality, just the same as a lumpy one. The difference is that everyone can see the lumpy one, even if it performs well; but a heavy one with suffer in performance, and even the builder may not know what he has lost.

The interesting thing about quality, which Americans had to learn from the Japanese, is that quality is free. That is, anything less than good quality is more expensive. Poor quality is more expensive in terms of additional materials used, parts rejected, doing things over, product failures in the field, etc. The least expensive way to manufacture any product is, right the first time, exactly according to plans and specifications.

What you are getting when you buy a set of Cozy plans is a design which has evolved and been optimized over several generations of designs, and a construction procedure which has been very highly refined, which results in a product (if faithfully followed) which has been prototyped and well proven. If you decide to make changes, you should realize that it is going to cost you more money and more time, and probably will cost you something in performance. Be a tough manufacturing manager and quality control manager and ask whether the change will really result in better quality--chances are it will not and ought to be rejected forthwith.

## ADDRESS CORRECTION

After preaching about doing things right the first time, we have to admit we goofed and misspelled Lon Cooper's company and got his phone number wrong. Lon is the Cozy builder who makes our beautiful trophies for Oshkosh each year. One of his many talents is modeling, and he has made a very accurate 1/72 model of the Cozy, and made tooling so he can reproduce the models in the form of kits which you have to assemble. This was a work of love which he undertook on his own with no chance that he will ever be compensated for his time and expense. He is willing to make kits for Cozy builders for \$35.00 ea. We think it is well worth the money, because the model is really priceless. It would have made an excellent Christmas gift, had we not goofed. Anyway, Lon's company is:

ADALON DESIGN  
25506 Crenshaw Blvd.  
Torrance, CA 90505  
(213) 534-2110

## BUILDER HINTS

1. Shear curtains, such as those sold pre-packaged in all discount department stores, make excellent peel ply. We like them because the material is thin, conforms to layups well, can be cut to the required shape, and doesn't require much additional epoxy to wet out.
2. Lower winglets. Postpone glassing the outside of the lower winglets until after they are installed on the wings. This will give you more freedom in aligning them with the upper winglet, and eliminate one taped seam. Align the lower winglet so the rudder hinge line is straight.
3. Spar caps. Make sure you remove the cross threads from the 3 in. wide roving tape. We have mentioned this once before. First lay the tape down in the trough and partially wet it out. Then locate the single polyester thread along one edge which locks in the cross threads; snip it in the middle and pull it out from each end. Then the cross threads can be pulled out from the other edge. Removing the cross threads will give you a much better layup.
4. Bonding to aluminum. When you sand an aluminum surface to get a good mechanical bond, the freshly exposed aluminum oxidizes immediately, reducing bond strength. You can get around this by wet sanding the aluminum with epoxy (rather than water) immediately before bonding and greatly improve bond strength.
5. Jig boring wings to centerspar. The plans call for using a 5/8 in. spot facing tool. This is time-consuming and develops a lot of heat. A good quality 5/8 in. hole saw may be substituted. It doesn't bore quite as clean a hole but it is satisfactory and about twice as fast.
6. Jig boring wings to centerspar. The plans say that a slight out-of-parallel of the hard points may be corrected by dressing with a hard sanding block and 36 grit paper. You should anticipate having to do this and prepare for it by putting 1 extra layer of BID over each hard point.
7. If you end up with insufficient clearance in the wing attach holes for your socket wrench, it is acceptable to substitute 1/2 in. NAS socket head bolts, along with the special washers they require. The NAS bolts are actually 20% stronger, but have to be specially ordered from Wicks.
8. There has been considerable speculation as to whether one would know if one had an engine compartment fire in a pusher. We think there would be a number of indications, but we can't be sure, and who would want to test it?

We ran across a neat solution (we think). J.P. Instruments markets a multi-probe engine temperature scanner. You can install as many probes as you want, up to 16. We have ordered one with 10 probes; 4 CHT, 4 EGT, 1 oil temperature, and 1 engine compartment temperature. The instrument provides a digital readout, is very sensitive, and automatically scans. We believe that exit cooling air temperature would rise rapidly in the event of fire and would provide the earliest possible warning.

## CLARIFICATION OF CHANGES TO LONG EZ CONTROL SYSTEM AFT OF FIREWALL

(Reprinted from CP #50)

"As any plans owner knows, the aileron control system aft of the firewall consists of aluminum pushrods and several thin aluminum brackets. The intent of the plans change is to assure that an EZ pilot will retain, at least, roll and pitch control in the event of a serious engine compartment fire. Obviously, pitch control would not be affected by an engine fire, but it might be possible that an aluminum pushrod or bracket would melt and rob the pilot of lateral (roll) control in the event of a serious but otherwise survivable engine compartment fire. For this reason we have carefully evaluated the control system for fire survivability. We have decided only to preserve the lateral (roll) control system and let the directional system (brakes and rudders) go. Our reasoning is that in such a serious situation, the most important thing is for the pilot to retain sufficient control to be able to execute an immediate emergency landing. Pitch and roll control are all that are necessary for this. Stopping, once on the ground, if the brakes fail, can be accomplished by collapsing the nose gear.

"Toward this end, we are recommending in the strongest possible terms, the direct replacement of all aluminum pushrods aft of the firewall with 1/2 in. O.D. x .028 in. wall 4130N steel tubing. The CS-1 aluminum threaded inserts should be replaced by steel inserts (part ICS-50). These inserts slip inside the steel tubes and should be secured in place with 4 (four) stainless steel pop rivets, such as Cherry #CCP-42. The existing dash 3 rod ends will thread into the CS-50 inserts. In addition, the four CS-127 alum. brackets in the wing roots must be replaced by steel parts fabricated from .032 4130N steel. Ken Brock will have these parts available by mid-November. They will be cadmium plated per RAF's specifications."

Co-Z endorses these changes by RAF.

### PLANS CORRECTIONS/CHANGES

1. Chap. 10,p.3,Fig.24 change 1.7 in. x 4 in. to 1.5 in x 4 in.
2. Chap. 10,p.7,Fig.60 change p.10-11 to p.10-8.
3. Chap. 11, p.3,Fig.16 and p.5,Fig.28 change AN3-10A to AN3-14A
4. Chap. 14,p.4, Step 10 Change dimension of access hole in centersection spar from 5 x 14 to 4-1/2 x 14 and center the hole 1/2 in. above the center of the centersection spar. This will eliminate an interference with the seat back.
5. Chap 16.,p.1,Sched.B for CS-125-L, CS-126, CS-126L, and CS-129 pushrods replace 1/2 in. O.D. x .035 2024T3 alum. tube with 1/2 in. O.D. x .028 4130N steel tubing. Also replace CS-1 alum. inserts with CS-50 steel inserts and fasten inserts in steel tubing with 4 ea. Cherry #CCP-42 stainless pop rivets.
6. Chap. 19,p.8,para.5 change 3/8 in. of foam to 5/16 in.
7. Chap. 19,p.14,sections I-I, H-H & J-J mount ballast rod A-11 1/16 in. farther forward than shown.
8. Chap. 19,p.15 & 16 Replace CS-127 alum. brackets with brackets made from .032 4130N steel

### FOR SALE

1. One set of Cozy (or Long EZ) wings built by Custom Composite Components with all hardware and ready for final contouring and painting. Photos available on request. Contact Tom Wright, (841) 893-5866.
2. One 100 channel CC 312 Nav/Comm radio with IN 514B indicator, tray, harness, and external antennas (if needed). In working condition when removed. No reasonable offer refused. Contact Nat Puffer (602) 981-6401.

## SUPPLIERS

Featherlite has announced that they are now in production with their cowling and turtleback molds. Cowlings are \$288.00 per set and turtlebacks are \$238.00. Delivery should be excellent.

## THE NEW YEAR

We wish all of you the greatest success in the new year, particularly in building and flying. We think Cozy builders are the greatest people in the world!

## LETTERS

Sept. 29

Dear Nat,

I picked up these plans at Oshkosh. I hope to start construction next spring. I am currently building a house and workshop on Skyacres Apt. in Dutchess County N.Y. As soon as it's finished, I plan to start my Cozy.

I attended your seminar which I found interesting, but the 15 minute conversation my wife (who thought I should build something that looks like a "real" airplane) and I had with Shirley was the clincher! After Shirley had explained how nice her Cozy was, my wife was converted to a Cozy fan! I plan a stock Cozy with the standard engine and no modifications--I had thought a starter would be nice but I've been propping our chapter's Aeronca & Sonerai and I don't mind it at all so I'll save the weight and the money.

I'll drop you a note as soon as I begin construction.

Thanks,

Tim Koehler

Oct. 18

Dear Nat,

Enclosed are a few pictures showing the present status of Cozy serial #170. I received the serial number in December '85 and then spent the next 6 months getting my shop organized. My shop has about the same features you described for yours, plus a built-in vacuum cleaner system with a long hose. Also, I don't have the nice hot curing temperatures outside, which I regret.

I started actual layup work on July 1, 1986. I'm still working, as a Nuclear engineer for Westinghouse, but plan to retire in the spring of '89. I want very much to have Cozy #170 done by that time so we can travel to St. Paul where I have a son living.

I concur with others that your plans are excellent. As you may remember I called you about a little

problem in the meaning of the word "level" with respect to the landing gear pads in newsletter #14. I discovered you meant to get them in the same plane, which I did by wrapping a piece of window glass in waxed paper and carefully weighting it down on the curing pads.  
Hope to see you at Oshkosh in '89 with Cozy #170.

Sincerely  
Dave Williams

Oct. 22  
Hi Friends,  
We really enjoyed the Oct. newsletter. I'm sure it takes a lot of time to put it all together. We would like to pay for 2 years subscription and also need the Owners Manual. Enclosed Is \$25. We are putting the finishing touches on the canard, after fitting it to the fuselage, and can't wait to start the next chapter. Hopefully we can join you In Oshkosh with our "Cozy" in August of '88.

Helen & Walt Suminski

Oct. 21,1986  
Dear Nat & Shirley,  
We've certainly put our Cozy to great use since we started flying it last March. Enclosed is a list of airports we've flown into this past season. On our big trip up to Oshkosh and then on to the east coast we tried to plan our trip around airports that have 80 octane gas. Mostly we succeeded but at times it was difficult. We couldn't even find 80 octane in Indiana and Texas. Flying to Kerrville TX we were forced to burn 100 octane almost exclusively. Merle did an excellent job of leaning the engine out. Our favorite stop was TSTI airport, Waco, TX. This was the Sesquicentennial Celebration Airshow for the state of Texas. The Goodyear blimp, Thunderbirds, and the Concorde were just a few of the attractions there. Unfortunately, due to bad planning on the part of the organizers (not EAAers) only three homebuilts showed up on EAA day. The higher ups allowed us to stay overnight at TSTI so we were the only homebuilt there for the majority of the fly-in. Bob & Marge Yarmey flew down in their beautiful Long EZ on Saturday to keep us company and provided a wonderful contrast to the Cozy design. We weren't shy about letting people sit in the plane. After all, there were only 50,000 people there that Saturday.  
We've installed the Narco 820 Loran C in the Cozy. It really takes all the fun out of dead reckoning and pilotage! The antenna is in the left winglet and the ground plane is in the top and bottom of the left wing. We were able to use the Loran on our flight to Kerrville and back. It is a wonderful back-up to navigation.  
We've also installed wheel pants made by Sport Flight. They increased our speed by 10 mph. They have a slick, strong design that really adds a rakish look to the airplane.  
Enclosed is a check for next years newsletter. Keep up the good work!

Yours in safe flying,  
Lucie & Merle Musson

GALLERY



NG-6 with heavy duty bushings and grease fitting installed.

A few of the Cozy builders at Oshkosh '86 Courtesy of Lucie & Merle Musson.

The Rostrup boys ready for their first ride.

Wil Chorley's beautiful instrument panel.

Home of Co-Z Development & Shirley & Nat Puffer  
2046 N. 63rd Pl., Mesa, AZ 85205

David A. Williams showing off his assembled fuselage.

Rune Rostrup logging a little solo time. (Sola, Norway)

Wil Chorley's fuselage ready for glassing.