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COZY NEWSLETTER #66

JULY, 1999

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TRADEMARK

"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, if the changes are significant, you have a new, untested design, and shouldn't register or insure your airplane as a Cozy or a Cozy Mark IV.

APPROVED SUPPLIERS

We have added AeroCad to our list of authorized suppliers, based on our inspection and approval of some of their parts to be advertised and sold as Cozy parts. Here is our record of parts we have approved from both Featherlite and AeroCad:

PART	FEATHERLITE	AEROCAD
Nose cone	x	x
Nose top & bottom	-	x
Turtleback	x	x
Lyc 0-360 cowlings	x	-
Lyc IO-360 cowlings	-	x
Wing pre-cut cores	x	-
Wing kit	-	x
Winglet pre-cut cores	x	x
Canard pre-cut cores	x	-
Canard kit	-	x
Strake skins	-	x
Strake kit	x	-
Nose gear strut	x	x
Luggage pods	x	-
2-blade propellers	x	-
Main landing gear strut	x	-
Wheel pants	x	-

The Featherlite cowlings are the same as ours (We have a Lycoming 0-360). AeroCad's cowlings have two extra blisters on the bottom to accommodate the tuned intake manifolds on the IO-360. We recommend the smaller cowlings for the smaller Lycomings, and AeroCad cowlings for the IO-360. Call or write for prices.

BUILDER SUPPLIED OPTIONS

We can recommend the following builder supplied 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 (834) 884-5061
 3. Improved MKNG-6 and NG-6 Pivots with tapered roller bearings. Jack Wilhelmson (834) 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) (602) 820-0405.
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WHAT WE HAVE BEEN DOING

We made a commitment to visit AeroCad at Ft. Pierce FL prior to Sun 'n Fun, on April 5th. The weather in the southern U.S. in the spring is rather unpredictable, and it seemed worse this year (a la Ninya year), so we decided to make back-up reservations on American Airlines. We got our Cozy N14CZ all ready for the trip (new data base for our GPS, and a new battery for our ELT, new charts, full oil and fuel, spare tires, tie-downs, cover, etc.) and then started monitoring the weather a few days prior to departure. The morning we planned to leave, there was rain and snow in Phoenix and several fronts along the Gulf Coast, so we reluctantly decided to go commercial. But guess what? The weather was so bad in Dallas that American cancelled 3 of their flights from Phoenix to their hub in Dallas. After waiting 5 hours at the airport, American put us on Delta to Orlando. Monday morning, bright and early, we drove down to Ft Pierce. AeroCad had a nice hangar at the airport, neat and spotless as could be. The front half was for airplane parking, Jeff's AeroCanard and someone else's Berkuit. The back half was divided into work spaces for making parts, and a balcony overhead provided space for storage of foam, smaller molds, and parts. We were favorably impressed with their operation. Jeff and Greg explained how they molded spars. We approved a number of their parts based on their specifications and our visual inspection, and agreed on changes to their wing kits, centersection spar, and canard kits which would bring them into conformance with our plans and specs. We have not approved their dihedral canard, their main landing gear struts, or their fuselage tub because they do not conform to our plans and specs. It was a good meeting. Back in Lakeland, we had pre-arranged with David and Vicky Higgins and Jack and Donna Wilhelmson to park their airplanes in our exhibit spot. David's Mark IV had been freshly repainted after the tornado damage had been repaired, and was probably a better example of a plans-built Mark IV than ours, and David was very eager to show it to everyone who stopped by, as was Vicky (while she was there) and Donna and Jack also. Steve Wright provided tent and chairs (thank you) and Wayne Lanza provided a table (thank you). Vance and Lynn were there most of the time, and many other builders stopped by during the course of the week. We always had a bunch of builders around (including Marc Zeitlin), and it seemed like a good time was had by all. Thank you again, everyone who helped! We didn't get an accurate count of the Cozys, because they kept coming and going. To name a few:

1. The Higgins
2. The Wilhelmsons

3. The Scidas
4. The Aldingers
5. The Atkinsons

There was a very good turn out for the banquet on Sunday evening at the Red Barn. Bill Walsh said he counted 75, but then more arrived after that. We asked several people to speak, but it really was too noisy for any kind of a program. We gave a 500 hour award to David Higgins. Cozy builder Richard Lewis demonstrated to us the engine monitoring system with voice annunciated warning that he designed and is offering to builders. It was very neat. If any of the systems being monitored, like oil temp or pressure, CHT or EGTs, electrical amps or voltage exceed pre-determined limits, a voice alerts you to the problem. The weather was very good for most of the week, except for the last day, Saturday, when it rained. There was a large grass fire south of the airport that threatened the airport on Thursday, and they canceled the air show that day. We really enjoyed seeing old friends again and making new ones.

PROPELLERS

Sensenich, is a very old name in certified wood propellers, and they are interested in supplying propellers to Cozy builders. They were working with Carl Denk, who flies a Cosy Classic (Uli Wolter's version of the 3-place Cozy). The Cosy Classic is wider than our 3-place Cozy, and is contoured differently, so the results might not apply precisely to our 3-place, but should be close. Sensenich approached us to evaluate one of their props on our Mark IV. They suggested a 70 inch diameter 2-blade with an 87 in. pitch. We had been using a 64 in. dia. 3-blade Performance prop with a 76 inch pitch, and liked the idea of comparing it to a larger diameter 2-blade, which held the promise of being more efficient. But first we checked ground clearance, and confirmed that we would have 12 inches of clearance with a 70 inch diameter. They had delays in providing the test prop, and we had delays in evaluating it, but we finally installed it in May. When we ran it up on the ground, it only produced 2150 rpm. Our previous experience with propellers with such a low static rpm was that they extended the takeoff run, so we were not very anxious to test flight it. However, after talking to Sensenich and Carl, we were persuaded to give it a try. We were surprised at the results. Apparently, with no forward velocity, the prop was stalling out; i.e. the drag increased out of proportion to the lift (thrust), and limited the rpm. As soon as we got rolling, the rpm increased to 2350 and the acceleration was very good. The evaluation consisted of determining the TAS at 2000, 2200, 2400, 2600, and full throttle rpm at 4000, 6000, 8000, 10000, and 12000 ft. altitude, and comparing it with similar data for my old Performance 3-blade, and my new one. We flew the Sensenich without a spinner, and the Performance props with spinners. We found that the Sensenich without a spinner was almost as good as our new Performance with a spinner, so then we made a spinner and airflow guide for the Sensenich and retested it. We found that the spinner (10-1/4 in. dia.) increased the speed for the Sensenich prop by an average of 2.7 mph (over 20 data points) at the same rpms and altitudes, and it increased the full throttle rpm at 8000 ft. altitude by 50 to 60 rpm, and the top speed at that altitude by 8 mph to 218 mph TAS. This was slightly better than our new Performance 3-bladed prop. We don't know whether this is due to the larger diameter, fewer blades, different airfoils, or whatever. Our conclusions from our comparative evaluation of the Sensenich 2-blade vs the Performance 3-blade are:

1. The Sensenich is, is slightly more efficient, can be "clocked" in 3 different positions to optimize missing the exhaust gases, and because it is much less expensive, provides good value for the money.
2. The Performance runs smoother, has more ground clearance, but is more expensive and can't be "clocked" to miss the exhaust.

When we discussed these results with Steve Boser, at Sensenich, he asked if we would be willing to evaluate the same prop, but with 2 inches less diameter, and a new prop 70 x 85. We agreed and will report the results when available. Steve told me that they make propellers for experimental airplanes the same way that they make their certified props for certified airplanes. I told Steve that the FAA requires us to fly off 40 hours with an uncertified prop, but only 25 hours with a certified prop, and asked him to check out the possibility of certifying props for the Cozy Mark IV. Incidentally, some propeller manufacturers measure pitch using the bottom surface as a reference, especially if the bottom surface is flat. Other manufacturers (like Sensenich), who use airfoils that are not flat on the bottom, use the chord line as a reference. This could account for a wide divergence of pitch specs between propellers of different manufacture, i.e. 76 vs 87.

PROP FLANGE SIZE VS HORSEPOWER

(By Steve Boser, Sensenich, with some paraphrasing.) It is important to ensure that the drive-torque capacity of a crankshaft flange/propeller hub is adequate. Since only one of the four strokes of a four stroke engine makes a positive contribution to rated engine torque, the contribution of the other three strokes is negative. Therefore, the instantaneous peak torque is greater than the rated engine torque. The ratio of instantaneous peak torque to rated torque depends upon the number of engine cylinders, the type of prop extension, and other factors. Most flanges designed to drive wood propellers have two distinct torque-transmission systems. The flat surface of the flange transmits torque to the propeller hub by static friction. The propeller could also be considered driven by the drive-bushings in the flange. But the two systems are not additive, so the system which transmits the greatest torque will govern. If the propeller is driven by static friction, the drive bushings will not feel any load, but if the drive bushings experience a fluctuating torque load, some movement of the hub against the flange must occur, and scorching of the hub boss will result. The friction force between the face of the flange and the propeller hub is determined by the compression force perpendicular to these surfaces multiplied by a coefficient of friction between the two materials in contact. If the compression force and coefficient of friction are known, then the maximum allowable peak torque can be calculated as a function of flange diameter. The maximum allowable peak torque which could be transmitted by the drive bushings can also be calculated. It is the product of the allowable bearing stress for the drive bushings against the side of the holes in the prop hub, the total drive bushing bearing area, and the drive bushing radius from the flange center. Calculations for both torque transmission systems reveal that the drive bushings at best can transmit only one quarter as much torque as static friction. This is why maintaining proper bolt torque compression on the wooden propeller hub is critical, since the drive bushings would only be short-term backup. The peak torque to be transmitted depends upon whether a prop hub extension is used. Any extension which moves the propeller farther away from the crankshaft flange will reduce the torsional rigidity of the system and lower the resonance frequency. Spool extensions are "softer", which can cause the propeller to lag behind and then race ahead of nominal engine RPM. This lag/lead may appear as

increased peak torque at the propeller / engine interface. Thus, a propeller mounted on a spool extension requires a larger drive torque capacity (greater diameter flange) than a direct installation on the same engine. Installations of wood propellers with satisfactory service histories are as follows:

1. For the 0-320 160 hp Lycoming engine, the 6" dia. engine flange is satisfactory, and spool extensions with 6" dia. flanges are satisfactory up to 4" in length. At 6" in length, the 6" dia. flange is marginal. A 6-1/2" dia. flange is better.
2. For the 0-360 200 hp Lycoming, the 6" dia. engine flange is unsatisfactory for a wood propeller and a 6" dia. extension flange is also unsatisfactory. A 7" dia. flange is satisfactory for a spool extension up to 6" long.

VOICE ANNUNCIATED WARNING SYSTEM

5/19/99

Dear Nat, Enclosed please find a write-up of the voice annunciated warning system I demonstrated to you and other builders at Sun-n-Fun and talked about at the Cozy banquet. You asked whether it was necessary to run all new wiring from the engine compartment if you already had existing wiring. I have just installed my system in an aircraft with existing wiring. I had to modify my modules so they would not interfere with the existing engine instruments, but it was a big plus because I did not have to install new sending units. All I needed was voltage levels at high and low readings. It was easy to adjust my system. **MY COZY TALKS TO ME** Have you ever had these things happen to you or heard of such things happening? 1) I was flying along when suddenly my radio and all navigation went out. It turned out my alternator had quit working and the battery went down. 2) My engine suddenly seized up from lack of oil pressure. If I had only known this sooner, I could have made a safe landing and saved my engine. 3) My engine started running really rough. I tried everything I could think of to clear the problem when I noticed the CHTs or oil temperature was way too high. I found later a bird's nest in the cowl that I failed to find on my preflight. 4) Bang??? Oh, ####*, I forgot to put down the landing gear. I thought this would never happen to me, but here I sit. 5) or the engine quits for one of the most stupid reasons on earth, out of fuel. Pilot error? You bet. All of these problems could have been prevented by being more observant and monitoring instruments more closely. But if you stare at the instrument panel too much and don't pay attention to what's going on outside, you're probably equally doomed. Even though there is no substitute for good engine instruments, you just can't stare at them all the time. Scanning quickly is best, but when we are just having fun, we might ignore the instruments all together. Wouldn't it be nice to have someone, or something watching over our engine and aircraft every second? Well here it is. I have designed a voice annunciated alarm system and I am offering it in kit form or assembled and tested. Only basic soldering skills are needed to assemble. You will find the unit very simple to build and you can have it working in just a couple of hours. The system is based around a popular voice chip, which has superb voice reproduction. It's all electronic, no tapes, and can store up to eight messages at a maximum of 10 seconds each. Most typical messages will only be from 3 to 5 seconds duration. As an example: Warning! Low oil pressure! Warning! Low battery voltage. Warning! High cylinder temperature. Landing gear down and locked. Warning! Landing gear up. Warning! Low fuel pressure. Etc. These messages are easily recorded by the user and can be re-recorded if a mistake is made. Messages can be recorded over 100,000 times. The unit comes in a die cast metal box measuring 4.7 x 3.7 x 1.3" and weighs 9.6 oz. All wiring to the unit is made through a 15 pin "D" connector and

can operate from 10.5 to 30 volts. Idle current is only about 80 ma. The system's audio output can drive an 8 ohm speaker, headsets, or audio panel. I use mine to drive my audio panel using the dme input, since I didn't need it for dme. Any other unused input can also be used. There is a volume adjustment on the circuit board to adjust for the proper audio level. The unit comes with a built in microphone to record the messages. The unit's power should be wired through the nav switch, to avoid voltage spikes when cranking your engine. Once energized, the unit starts sensing each of the input lines for a ground. If it finds a ground on any line, the corresponding message will be broadcast. If more than one, it will say each message. The messages will repeat until the problem is solved or the 5 min. mute button is pushed. You can arrange the grounding circuit, or I can provide sensor modules and/or sending units. In a kit form, my unit sells for \$280; assembled and tested, \$340, shipping included. Senders & modules range from \$5 to \$20. Voltage levels of existing instrumentation may operate the modules without interference, to avoid additional wiring, but I will need information from you. I will offer a 2 year guarantee. I will accept checks or money orders. If you have questions, call me at (423) 376-1450 after 7PM EST. Richard Lewis, 367 Pleasant Hill Rd., Philadelphia, TN 37846. ***Editor:** Rick demonstrated this unit to us at Sun 'n Fun, and it was really neat. If you want to make sure to heed the warning, have your wife record the warning messages. That sure will get your attention!*

FUEL MANAGEMENT

The original Varieze relied on the transparency of fiberglass (when it has mirror-smooth surfaces) to see right into the fuel tank and observe the level of fuel. Then Vance came along with the clear plastic sight gages, which was a big improvement and which we recommend. Then there are builders who prefer to also have remote fuel guages on the instrument panel, and there are those who also would like to have low level alarms. We just have Vance's sight gauges. We carry quite a bit of luggage, but pack it so we can see the sight gauges. We have learned that we usually burn about 8 gal/hr leaned out in cruise, and when we are going on a long trip, we anticipate we will have to switch tanks after 2.5 hours, try to always do it over an airport, and we plan our fuel stops at 5 hours or less. We mark our route in 10 minute intervals, so we are always aware of elapsed time. We never run a tank dry on purpose, although it has happened twice in the last 7 years. The prop windmills, and the engine starts again as soon as we switch tanks. When we are stretching out a fuel stop as far as we can, we have run until the level disappeared in the guage before switching, but the engine has never stopped. On local flights, we usually know how long we will be flying, and as long as we have enough fuel for that plus reserve, do not fill up. We have never felt the need for either a remote gauge, or an alarm, or a fuel flow meter. We are not keen on gadgetry and maintenance, and like to keep our systems as simple as possible. In other words, KISS! Quoting David Domeier (retired TWA captain), "If there's anything primal in aviation, it's seeing your fuel!". Rego Burger writes: "My instructor always taught me to taxi on one tank and run-up on the other. This exercise sounds silly but has two valuable features. 1) Checking for blockage in each tank prior to take off and 2) Checking that the fuel selector valve is working properly, i.e. not sticking. I feel this check is vital and if John Denver had been used to this technique he may have picked up the difficulty in switching tanks (with a torque tube) and done something about it. My instructor fails us on flight tests if we don't do this, grounds us for a day, and once the sulking is over, we tend to get it right on the re-test. If this isn't standard practice in the US, please suggest it to our fellow Cozy pilots." Rego Burger,
RSA

NEW COMPACT ELECTRIC NOSELIFT

Cozy builder/pilot/inventor Jack Wilhelmson didn't have room to install one of Steve Wright's nose lifts because his radio stack was in the center of his instrument panel, so he decided to design a more compact unit that would fit entirely forward of F-22, would be lighter, and just a "drop in" installation. It still uses the ball screw mechanism, but he had to machine a lot of special parts to make it more compact and lighter, so it will be more expensive than Steve's. He has been flying it for about a year now with no problems and would like to have one or two others evaluate it for him as well. If interested, you can reach him on (843) 884-5061.

VANCE'S COLUMN

Builders, For you folks getting ready to put on your wheel pants here is some advice. Mine are 12 years old and are the original Herb Sanders type (teardrop and very efficient) and are tightly fitted around the wheel. That is the crux of the problem. I have about one finger width all around the tire, and when the COZY is eating grass or, parked on its nose, you can slide a piece of cardboard between the pant and the dirt. Pretty close. This was the arrangement years ago when every knot counted. Now I'm not so sure it's worth it. In 12 years, I have trashed one or the other with runway debris 3 times. The last was on the way to Sun 'n Fun while landing at Destin FL. Fortunately, I was able to duct tape it together (it usually trashes only the bottom two inches or so) to see me through the weeks flying that lay ahead. What happens is that the tire is spun up, and if a small rock or branch of a tree or shrub gets run over, it's likely to get spun up into the small clearances around the tire. OR, if you let the air pressure get low, the side walls will bulge (at impact) and do damage, or if you do an astronaut shuttle landing, the tire really goes flat for a second, the sidewalls will bulge even more causing bigger damage. I haven't done any trials on how much airspeed is lost by raising the pant and giving more clearance. But I suspect not much more than a knot or two. So if you're a low rider like me, be prepared to do a little repair during your cruising. Some of the builders have asked me why my wheel pants are split into front and back instead of the newer installation with the support all coming from a semi circle on the inside like most are doing now. Both my hangar partners (Cozy 3 and a Cozy 4) have this later mod and is much easier to take on and off. The total work to mount these is about the same, so the savings are in the field when you have to repair a tire or tube. Incidentally, after buying the shells it takes about 40 hours of work to build, align, install, finish, and paint these beauties. But worth every knot. On a slightly different subject, I've noticed several of my sight gauges in various projects and some of the builders put a wee bit too much flox on the surfaces of the plastic and when putting the two together, some brown ugly flox squashed into the clear bubble sight area. To this end you can pop the bubble off and put a new one on with minimum work. I'll send you a new bubble for 8 bucks including postage. You are going to be looking at that sight gauge for a long time so it might as well look good. To that end I've had a builder use 5-minute epoxy when bonding the two pieces of plastic together. And I've had another builder use Gougeon Brother epoxy or West System as some call it, with successful results. I have some samples glued up from several years ago with safe-t-poxy and RAE. When I first started making these jewels and

I have just now glued up two more with 5 min and West systems. Looks good so far, and it eliminates the brown stain from oozing into the clear tube. More later. Last quarter I reported on a homebuilt fuel flow system designed by a Defiant builder. It is a kit you build for \$335 which includes a floscan transducer. This is a small lightweight unit, which digitally reads out in total gallons used, and current fuel flow. Sadly, this unit did not work out for me as the ambient light is too much for the unit, making it impossible to read in direct sunlight and even when using a shaded hand over the display, barely readable. The unit was not very accurate in a steady state fuel flow situation, as it would vary the read out by 3 and 4 tenths of a gallon. I have written the designer but have not heard back from him yet. The kit is by TalonWorks Inc. in Fayetteville AR. Have fun flying.....Vance Atkinson Cozy N43CZ 1200TT.

FIREWALL MATERIALS

Steve Wright, of electric nose lift fame, with the help of a friend, conducted an evaluation of firewall materials. He used 1/4 inch birch plywood covered on both sides with 2 plies of BID. His reference sample had fiberfrax (he didn't say how thick) and aluminum. A second had fiberfrax and stainless steel, and a third had 5.7 oz. carbon BID cloth wet out with 3 coats of 477 epoxy. The 477 is an intumescent material (expands up to 1-1/2 to 2 inches in thickness when heated) which was evaluated and recommended by RAF several years ago (call 1-800-877-3473 for technical information). Each sample was heated with a propane torch. He reported the following results: With the first sample, the aluminum burned through in 30 seconds, and the back side of the plywood began to smoke after 60 seconds. With the second sample the stainless did not melt, but after 5 minutes, the back side of the plywood became hot to the touch. The third sample (carbon and 477) seemed to be as good as or better than the second sample (stainless). The carbon BID prevented burn through, and the back side was not as hot after 5 minutes. Steve reported that the third sample was considerably lighter than the stainless one. His only concern about using this construction on his airplane was that the intumescent material (477), after expanding, might not be strong enough to withstand exposure to high-velocity, turbulent air. He plans to test this concern.

OIL COOLER LOCATION

The preferred location for the oil cooler is at the top of the firewall so there is airflow past the accessory case in flight and also after parking. When we installed the B & C 90 deg. spin on oil filter assembly, we didn't think there was enough room remaining for the oil cooler, so we moved ours to the right side lower cowl at the butt end of the wing. David Domeier writes: "For those interested in an upper cowl oil cooler exit position, the 13 vane oil cooler from Wicks fits above the B & C 90 deg spin on oil filter. Don't use the plans flange, but mount the cooler flat up to the cowl top with a 2" angle attach to the firewall and a small brace to the aft lower cooler flange. There is still about a 2" clearance to remove the filter." Thank you, David.

PROJECT FOR SALE

U-Finish & Fly! Structurally complete Cozy Mark IV project for sale. Includes mid-time Lycoming O-360 engine with mount, 3-blade performance prop, lightweight starter & alternator, battery, strobes, oil cooler, flight instruments, Ellison throttle body, plans. All for \$32,000 firm. Gary Buscombe (760) 723-5381.

ACCIDENTS

It has been reported that a Long EZ crashed in MD and the builder/pilot, Nick Saliba, is in very serious condition. The purpose in mentioning this is that the cause of the accident at this time is thought to have been the loss of the canopy, which reportedly was found 4 miles away from the crash scene. Having a canopy come open in flight is a serious in-flight emergency. It has caused deaths (not in a Cozy), but it doesn't have to if you remember the adage to "fly the airplane". As has been mentioned before, there is a substantial negative pressure area over the top of the canopy, and if it is not latched, and the safety catch does not catch it, it can open violently. The Varieze had a cable and the Long EZ had a linkage to restrain the canopy so it would not open far enough to hit the strake, but if it came open violently enough in flight, it could break the restraining mechanism and hinges, and depart the airplane. In the Mark IV we use a gas cylinder as a restraining mechanism. This has an advantage that may not be appreciated. The gas cylinder not only limits the travel of the canopy, but it also limits the speed of travel. In other words, no matter how hard the negative pressure pulls on the canopy, the gas cylinder limits the speed at which it opens, and slows it down before it reaches the limit of travel. As a result, nothing breaks or is damaged, and the canopy is not ripped loose. This was put to the test in our plans model N14CZ by our test pilot, Jim Patton. On his initial solo flight, Jim was distracted before take off, and neglected to lock the canopy. Shortly after he rotated, the canopy lifted, but the safety catch caught it. The air was turbulent, and jiggled the canopy enough to spring the safety catch loose, and the canopy opened all the way. The canopy stabilized in the open position, and the Mark IV was controllable, although Jim later commented that he wasn't sure how stable it would have been in yaw. Jim lost his glasses and headset (into the back seat), but he flew the airplane, and came back to the airport and landed. Vance Atkinson also had a canopy come open in flight in his 3-place, with his wife and daughter on board. With help, he was able to close it in flight and continue on without landing. It is not likely that you can close a canopy in flight without help, so first and foremost, you must fly the airplane! We hope it will give you some peace of mind to know that if you do neglect to lock the canopy, and if the safety catch does not catch it, the canopy will not be ripped away, and the airplane is flyable and controllable with the canopy wide open. Incidentally, we have to continually check our safety catch, because we have to let a lot of people climb into our airplane and close the canopy, and some of them pull hard enough on the safety catch to bend it out of position.

WANT A FREE STRONG PITCH TRIM OR A FREE HANDHELD GPS?

Readers of Sport Aviation and Kitplanes magazines love to read about what other builders are building and flying. 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 increase the ante. When we mentioned this to Alex Strong, he suggested 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. Let us know when you submit (so we can watch for it to be published) and let us know what you wish to receive.

Publicity Addresses

NOTE: SPECIAL KITPLANE DRAWING FOR A HANDHELD GPS from submissions received by them before June 4, 1999. Send a typed, double spaced description of your project and details on your finished aircraft and a sharp photo or slide, and your daytime phone number and e-mail address, and permission to publish your address if builders wish to contact you. Submissions received after June 4 will be eligible for the 2000 prize.

AWARDS

1. Bruce and Debbie Elkind (Hawthorne, CA) published an article and picture of their Cozy Mark IV in April '99 Kitplanes.
 2. Bob Misterka (Grafton, MA) published an article and picture of his Cozy III in May '99 Kitplanes
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FIRST FLIGHTS

It is getting very difficult to keep track of first flights. For example, builder Brian Freitag posted on the net that a friend of his just moved to Tracy California, that he has been flying a Cozy Mark IV, and was wondering if there was anyone close by who was building whom he could visit. I didn't know who this might be, and asked Brian. He said it was Jerry Kennel. Well, Jerry Kennel stopped taking newsletters 3 years ago, and his last address of record was McHenry, IL. When builders stop taking the newsletter, I assume they aren't building, but that assumption obviously isn't always correct. Our friend, Jim Wickstrom, has been flying his Cozy III dual out of Falcon Field, Mesa, with a friend, but now is up in Washington for the summer. Our friend, Eric Westland, in Mulkiel, WA, is in the taxi test phase, and may even be flying by now. Richard LaCourse, in Worland, WY, has been taxi testing for several weeks and may be flying by now. Rick Cahill writes, Hi again Nat, Sorry I dropped out of sight for so long (*he*

hasn't taken newsletters for 2-1/2 years), but I have been diligent in working out what little problems I've had with my Cozy. I am doing some refinishing with Polyfiber on the bottom of the wing, and should be back in the air shortly. I have a good friend who is helping and should be done quickly. I promise I will give you a report when I get her back in the air. I have 13 hours on her now and hope to be at the BIG O this year. Thanks for a great bird, Nat She is everything and then some in comparison to the 150 I have flown for over 10 years no. Rick Cahill
Columbus, OH

[PLANS CORRECTIONS/CLARIFICATION](#)

BUILDER HINTS

1. John Fritz made this suggestion: In tight corners it is hard to roughen up any shiny glass, flox, or micro with conventional sandpaper. I use a carbide studded grout removal tool that has carbide deposited on the edge of a steel blade approx. 1" long attached to a handle with a slight "S" bent arm. It is available at various hardware stores in the bathroom or tile and grout section. It has lasted a long time and it only cost a couple of bucks.
 2. Rick Cahill says that if you are thinking about painting your airplane using Poly Fiber water based polyurethane, he learned about some changes while talking with tech support. They are now advising to use the same amount of crosslinker for all coats. They will ship you additional crosslinker if you need it to finish. This will provide better adhesion and a tougher skin. You can get a free manual on composite finishing by calling them on (800) 362-3490. They are very helpful.
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ENGINES

Cliff Cady writes: "AeroSportPower also sells 0-320s. I have been flying one from them, an 0-320 D2A in my E-Racer. It has been running very well and I am happy with it. I paid \$12,500 for it with factory new cylinders. It came with a light wt Lamar starter and alternator. I had to pay \$350 for shipping to FL and a \$75 customs brokerage fee. It took almost 5 months to receive so order early! They will take a core on trade if someone has one." Cliff Cady

ARLINGTON

The Arlington fly-in is schedule for July 8th to the 11th. There are quite a few Cozy builders and fans in the NW, so we hope more of the people from California will come up. Eric Westland writes: "Vicky and I would once again like to host a dinner for Cozy owners, builders and fans during the fly-in on Friday, July 9th. We have been late in letting you know as we have been working hard to get our Mark IV in the air prior to the fly-in. It isn't airborne yet, but we are getting close. Giles Sydnor and Mara Liston, local Cozy builders who are also getting close, have graciously offered to help us with the dinner so that will be a huge help. In the past, we've had it at our home, but now that we have our plane in a hangar at Arlington, we would like to move it to the airport. This way, folks won't have to travel and we will have a front row seat for the airshow. As in the past, we would ask for a donation of 5 bucks or so and we'll take care of the rest. Everyone of all ages is welcome. We would appreciate RSVPs to help us plan the food. Call us at (425) 513-0941 or e-mail us at ewestland@altavista.net to let us know you are coming."

***Editor:** We aren't sure whether we will make Arlington this year. So far this year the weather in the northwest has been worse than usual. We will decide when we see what the weather looks like as the date approaches.*

OSHKOSH

Doug Koster spoke to his friend Alan Shackleton, an EAA boardmember, about some of the complaints from Oshkosh last year, about having to guard their airplanes from the crowds. As a result, this year the EAA is providing a special parking area for canard airplanes, somewhat removed from airshow center. It is south of the P-1 taxiway in the neighborhood of the old fly market. We hope this solves the problem people complained about. The EAA has announced that the fly-in will be restricted to EAA members, but we suspect this just means they can charge more by requiring people to pay for a membership along with their tickets. We will again be exhibiting our airplane in the same place as last year, just south of exhibition building A. Our Cozy builders Forum is scheduled for Friday, July 30, Tent 6, 1:00 - 2:15pm. Gary Hunter, Cozy builder and epoxy expert from Shell Oil Co. has agreed to be a guest speaker. Think of some good questions for him. Kim and Daryl Lueck have confirmed that there will be a Cozy banquet same time, same place as last year. That is, 6PM Friday evening at the Ramada Inn, along Highway 41 service road north of the airport. There will not be a canard hot dog roast in the campgrounds this year, so we hope those folks will join with us at the Ramada. We expect that Kim and Daryl Lueck have arranged a good program. Any Cozy builder/pilots with either 500 or 1000 hours (in type) let us know, and we will bring awards for you. Don't miss it!

INTERNET CHATTER

Cozy_builders@canard.com is quite a popular chat group. Typically, someone will ask a question or bring up a discussion subject and then a whole lot of builders volunteer their experience or opinions.

Often there is controversy. Sometimes incorrect information is published. Hopefully, builders will be able to separate the wheat from the chaff. [Marc Zeitlin](#) catalogs everything (even newsletters) in the "archives" for future reference.

LETTERS FROM BUILDERS

3/23/99

Dear Nat, Just so you know...since finding and deciding on the Cozy, I have been bowing reverently towards Mesa, AZ, everyday. Are you sure you weren't in the Air Force? Us ex Air Force folks have a hard time bowing appropriately to our Naval brothers...:-). Bob Hassel

Plano, TX 4/9/99

Dear Nat and Shirley, Back from two months of very hard time in a private clinic, I couldn't help writing to you about how good it was to read newsletter 65. I was back in the aviation family with two letters of French friends in it, Gerald Maurel and Benoit Lecoq! Something has occurred in our Paris Cozy builders group even better than what happened when I built my Long EZ 18 years ago. Last year it took me 9 months to convince politicians to start an air park along the Golf of Morbihan, on the Atlantic, on the public empty airfield of Vannes (concrete runway one mile x 50 meters + IFR). The politicians gave their approval in December with one condition: the air park had to be started not by only one, but by a group of pilots on a field of 23 acres. It took only one week in January to find the pilots and create the association called Mont Air Park. I guess you already know who will be in this air park, our Paris group plus two nice UK pilots. When all the Mont air park party will fly their homebuilts, you will find 7 Cozys permanently located on 23 acres on our own airfield. Do you know of a greater density of Cozys anywhere else in the world? I join Benoit Lecoq in inviting you to come to France next year after Oskosh 2000. We probably will celebrate the inauguration of Mont Air Park at the same time. The whole French Cozy builders party is hoping to welcome you. When Dick Rutan came to France 18 years ago, all the Long EZ builders they met at home finished their canards and are still flying them today. My stomach muscles became so weak after surgery, the physicians forbade me to make any effort lifting my Long EZ nose. My Cozy builder friends helped me to find a fast solution so I could go back to flying solo soon in my Long. But I will stick to Steve Wright's noselift for my Cozy Mark IV as I have time to mount it. Many thanks for your support and the friendship your plans are spreading among men all over the world. Bernard Cannac

Cozy MKIV 552

80% complete 4/22/99

Dear Nat, I have been busy getting the last few things installed on the Cozy for inspection. I have been taxi testing the last few weeks and all seems ok. I have installed Alex Strong's elevator trim, so I may have to do a little more taxi testing to get the feel of it. I've installed an O-320 H Lyc, the same engine as in the 172. This engine has a different location for the mechanical fuel pump. The pump is located by the prop, which means the fuel has to be pumped up to the mechanical fuel pump. The electric fuel pump we use seems to do more than adequately for this location. The engine cost me \$3,500. It was the 2nd runout, rebuilt with chrome cylinders by Mattituc. TT this rebuild is 1800 hours. I have a Featherlite prop, which has thick rather than thin laminates. It also has a urethane leading edge. The engine turns it around 2400 static and performance down the runway is brisk. I also have the electric noselift, which works well and reduces workload. I hope to fly my Cozy by the beginning of May '99. Richard LaCourse

Worland, WY 5/15/99

Dear Nat, I want to thank you for this plane. This thing is slowly taking over my life like the BLOB. But, in an extremely good way. I am starting to build all kinds of stuff with this composite construction method, too. I think I am addicted. I am going at a pretty slow rate due to some, soon to be done with, financial debts. I am almost paid in full on my life of credit card abuse and will be able to step up the pace in a few more months. I have built and flown R/C aircraft for the past 20 years, and ended up loving the building side more than the flying side. Your instruction book leaves almost no question about whether you "got it right". In short, the instructions are better than any R/C plane I ever built. Congratulations. This baby is awesome. I am having such a good time between building and planning. The mailing list on the internet is a daily "must read". Although things can get pretty bumpy on there, I guess that the "well above average" intellect present on the list sometimes has its less-than-positive sides. But I, for one, have learned an incredible amount of useful information from so many different sources that aren't available anywhere else in existence. Between your incredible plans and the help of other veteran builders, and even the other not-so-veteran builders, all I have to do is read, and 99% of the questions I have are answered. If it isn't obvious yet, I want to thank you for this experience. John Millington

Hellertown, PA 5/15/99

Dear Nat, I was going to wait until after Oshkosh, but decided to purchase plans now, so I can study them and speak to some owners at Oshkosh. As you know, there's not a heck of a lot of choice for plans built aircraft in this category, but I'm so impressed by the community of Cozy builders and your support of them that I'd be building a Cozy regardless. I've built a pair of kayaks and been an EAA member since I was 16 (I'm 29 now), so I know I'll enjoy the building process. My decision was greatly aided by your web site, Marc's "unofficial" site, as well as the online archive of newsletters and the newsgroup archive (I've read everything). Going back through 13 years of Sport Aviation, it's kind of hard to miss the number of Cozys completed. Steve Hagan

Downers Grove, IL 6/6/99

Greetings all builders, I wanted to write and crow a little bit about what I did on a Sunday morning. Usually I would spend that time in Church somewhere, but today was special. I spent the weekend with my father-in-law, Alex Strong and his lovely bride, Norma, at their home in Yermo, CA. It was a beautiful weekend spent finishing up the last part of Chap. 7 and we actually did it PER PLANS! As you may have guessed, I am very excited about building the Mark IV, or at least I thought I was until today. Today Alex took me to the airport to solo in his Cozy III. What a dream, thrill, treat, and inspiration! I was not that excited when I soloed in a C-172! The weather cooperated and gave us a great clear day with little wind and after spending about a half hour with Alex in the left seat, we landed and switched places. I flew a touch-n-go and then a full stop. Then it was my turn to go solo. I put on a calm face, but inside I was pretty excited. I managed to taxi to the active runway (26) at Dagget and take off. After three touch and gos I came in for a full stop. It was so exciting I won't soon forget it! Thanks Alex for letting me fly your baby. Of course this was also a first for Alex. He had never seen his plane from that perspective. He described his feelings as something like when he watched his daughter ride away on her bicycle when she still thought he had a hold of the seat. It was a great event and really has given me inspiration to redouble my efforts and work smarter and harder at getting my Mark IV in the air. For the rest of you who don't have access to a Cozy, take it from me that it's going to be worth all the effort! Randel Livingood

La Mesa, CA 3/21/99

Nat, WOW! A reply in less than 24 hrs. I'm very impressed. The Cozy IV sounds perfect for my needs. I have an information pack I got from a flying buddy, and I will be ordering plans in the next few weeks. I look forward to building and flying your design. I'm aware that some builders modify the design. Rest assured, upon completion you won't be able to tell my Cozy IV apart from yours, except for a couple different stripes, of course. We need people such as yourself to keep our airplanes safe. Keep up the great job! Rckymtnfly@aol.com 3/16/99

Dear Co-Z, I have spent the last six months investigating all the different canard style aircraft that are available on the homebuilt market. After careful consideration of all the information accumulated, I have come to the conclusion that the Cozy MK IV is the safest and best overall value of any aircraft available today, bar none. I was very impressed with the extent of your testing program and your dedication to safety. I think more designers should take this approach. Enclosed is money for plans. I'm very much looking forward to building and flying your wonderful derivative of Burt Rutan's design. I thank you both. Bryon Crook

Rancho Cordova, CA 10/29/98

Nat, I am sending money for plans. I have spent considerable time looking and feel confident to have chosen the best design. One of the main attractions besides the actual Cozy is the builder support. I must admit that one thing I have been concerned with is the fact that it will take a minimum of 2+ years to build the Cozy, and since you are already retired, I hope you will still be active to continue the support. However, I have found an incredible amount of information on the internet, and there seems to be countless current builders to confer with. This is an additional "plus" to your program. Thank you for the opportunity to take part in a magical project. Rod Ogilvie
Destin, FL

Husband to wife: "Dear, I think I have better taste than you!"

Wife: "Oh."

Husband: "Want me to prove it?"

Wife: "Yeah."

Husband: "Just compare whom you married to whom I married!"

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