

AWARDS

At Vance's suggestion (he sure thinks up a lot of ideas), we had some very nice plaques made by Cozy builder/artist Lon Cooper to honor those builders who have passed the milestones 500 hrs. and 1000 hrs. on their Cozys. These are really attractive, and truly a work of art, suitable for mounting on the headrest of your airplane, or in your trophy case, or on the wall of your office. 500 hrs. gets you silver, and 1000 hrs. gold. We would like to award these at Cozy dinners at one of the fly-ins. Let us know ahead of time if you qualify.

FIRST FLIGHTS

The following message was recorded on our answering machine March 8, 1998. "Hello Nat, This is Tony Rothwell, calling from Australia. My Cozy Mark IV, VHCOZ flew on March 7, 1998. It flew very nicely! Will write to you with more later. Thank you for a marvelous airplane!"

We know that Jim Wickstrom, Larry Aberg, and several other Cozys are almost ready to fly. But very often we don't hear about first flights until the builder is well into his 40 hour fly-off period. Please let us know so we can share your success with other builders.

STORM DAMAGE

Cozy Mark IV builder David Higgins, who lives in Pembroke Pines, FL, built his Mark IV in 22 months, and has been flying now for several years, had his Mark IV damaged in a tornado a month or so ago. He had disassembled his airplane in preparation to repainting it. He was working in his large hangar along with a number of other builders, when they became aware of a gathering storm. They decided to retreat to their homes, and about 1/2 hour later a tornado struck the airport. David said the tornado blew out both hangar doors, and one of his wings was picked up and blown end over end about 500 yards. Other debris fell on his fuselage. He said he had to build a new wing and make repairs to the fuselage, but he hoped to be flying again by Sun 'n Fun. He said he considered himself to be very lucky he hadn't stayed in the hangar.

When you hear something like this, it makes your heart very heavy, and you just have to admire someone who can accept it so cheerfully.

SUN 'N FUN

Sun 'n Fun is from April 19th to the 25th this year. We plan to be there, the Lord willing, and if El Nino doesn't get in our way. We reserved our regular exhibition spot across from the FAA building again this year, and reserved our place to stay down at Mulberry. We invited Chris Scida to park his airplane behind ours in our exhibition spot. We haven't seen it yet, but Vance says it is very nice. We invited Steve Wright to display his electric nose lift with us again. He provided a tent for us last year, and we hope he does again this year. We invited Alex Strong to exhibit his electric pitch trim, and Wayne Lanza any of his goodies, like his switch panel and landing brake actuator.

We invited the Cozy Builders Discussion Group (on the Internet) to meet at our airplane at 1:00 PM Sunday April 25th. We haven't reserved a forum this year, but would be willing to reserve 1:00 PM each day at our airplane for group meetings to discuss topics and answer questions.

Bill Walsh has reserved the entire side room at the Red Barn Steak House for a Cozy Banquet Sunday, April 25th and would like to pack the room so he doesn't have to let strangers in. If any of you have passed the 500 hour or 1000 hour marks on your Cozys, please let us know ahead of time so we can bring awards along and present them at the dinner. Bill will be making up some new T-shirts (if I send him some new pictures) so bring along some extra spending money. By the way, Lakeland is the strawberry capitol of the world, and we always buy a flat of strawberries on the way to the banquet to share with friends. Those needing rides can meet those offering rides at our airplane between 4:00 and 4:30 PM Sunday. It is important to leave before the end of the airshow, otherwise you will be stuck in traffic. Bill Walsh will supply maps—last year there were a few who received bum directions and never got there.

ARLINGTON '98

We hope to attend again this year, but will keep a sharp eye on the weather. It was bad enough last year.

OSHKOSH '98

We are planning to exhibit there again this year in the same exhibit spot as last year, that is at the South end of the North exhibition building. We have signed up for a forum on the first Friday afternoon, and expect that there will also be a Cozy banquet, same as last year.

EPOXY RESINS

Wicks has been out of stock for some time on the slow catalyst for the original RAE epoxy system, because one of the ingredients was no longer available. It has now been reformulated, and should be in stock at Wicks by the end of March. The resin is 4425A, the fast hardener is 9376B and the slow hardener is 9377B. This epoxy system uses a 100:25 ratio by volume.

In the meantime, there has been a very interesting development. A German company, Martin G. Scheufler, has been making a series of epoxy resin systems for use in the manufacture of sailplanes and airplanes in Europe for many years. They vary in properties, the most important being cure temperature and heat resistance, which is related to cure temperature. Some are room temperature cured, and others required oven curing. Two of them, L 335 and L 285, cure at room temperatures and are ideally suited for the wet layups we make, and have been approved by the German government for aircraft use. Uli Wolter has been using the L285, and recommending it to builders for many years. We have tested both the L335 and the L285. There is something very unique about these resin systems. They have both fast and slow catalysts which can be mixed together in any proportion to give you whatever pot life you want. In the case of L335, the fast catalyst gives a 20 minute pot life, and the slow gives a 6 hour pot life. I tried them both. The properties, after cure, are essentially the same. The catalysts are blue, but after mixing and wetting out, the layup is almost clear. The ratio by weight is 100:38 for L335 and 100:40 for L285, or 100:45 and 100:50 respectively by volume. The ratio of L335 is the same as for Safe t Pox (in case you have a metering pump set up for Safe t Pox). The resins are

quite fluid and wet out very fast, but will not run in a vertical layup (the word for that is thixotropic). The resin is odorless, not affected by humidity, and has excellent peel strength (unlike 2427). The systems are said to be non-allergenic (low toxicity). The price, on a per gallon basis, will be competitive with the RAE system. The L 285 is slightly more expensive and has a higher glass transition temperature; otherwise, the properties are quite similar. Wicks and Aircraft Spruce will stock L235 for sure, and maybe also L285.

POST CURING OF EPOXY LAYUPS

All epoxy systems have a minimum and a maximum curing temperature. At the minimum curing temperature, for example, room temperature, an epoxy system achieves a good degree of curing, that is, over 80%, and produces a hard, shiny, tack free surface, with good properties, but the properties, including glass transition temperature, are not maximized. For both L335 and L285, the properties achieved from room temperature cures are quite acceptable for aircraft use. The glass transition temperature of L335 after a room temperature cure, would be about 130 deg. F (the glass transition temperature is the temperature at which the epoxy begins to soften and become rubbery). To obtain 100% of the available properties and maximum glass transition temperature requires either post curing or curing at the maximum curing temperature. For L335, the maximum curing temperature or post curing temperature would be about 160 deg. F and results in a glass transition temperature of about 185 deg. F. But to achieve maximum cure and glass transition temperature, the layup would have to be held at the maximum curing temperature for about 16 hours. For L285 the maximum curing or post curing temperature would be about 170 deg. F and result in a maximum glass transition temperature of about 240 deg. F. Again, it would have to be held at the high temperature for about 16 hours.

So is it necessary to post cure your airplane? Actually, no. As either parts of your airplane or the entire airplane sit at temperatures above 70 deg. F, some post curing occurs. Even if your airplane sits outside in the sun, and the ambient temperature reaches 100 deg. F, it will do so gradually, and the post curing will proceed gradually so that glass transition temperature will always be considerably higher than ambient. The wings will not sag. Remember, you are going to paint your airplane white, and the surface temperature (only the top surface in the sun) will only get about 10 degrees higher than ambient. So on a 100 degree day, some post curing will already have occurred, so the glass transition temperature will already be higher than 130 deg. F and approaching the maximum of 185 deg. Now there is a possible exception to this rule. If you are going to paint your airplane black, or some other dark color, a fully post-cured L335 might not have a high enough glass transition temperature (185 deg. F might not be high enough). So, if you intend to paint your airplane black or some other dark color, you probably better use an epoxy like L285, and do some post curing before you park it out in the sun on a hot summer day. Remember, with an epoxy like L335, the glass transition temperature will always be higher than ambient and the epoxy will not soften unless or until the surface temperature reaches the maximum glass transition temperature, which in the case of L335 is about 185 deg. F. If you paint your airplane white, at least on the top, the surface

should never reach this temperature even outside in Saudi Arabia in the summer. Even if you are not going to paint your airplane a dark color, but are willing to spend a little extra money on the best epoxy available, consider using L285. That would be our choice. If you do not understand, or have further questions, please contact us.

PILOTAGE

A couple of years ago, Dr. Charles Larson had a fatal accident in his Cozy Mark IV. He hooked the landing gear on a power line which was 37 ft. high, and 1300 ft before the approach end of the runway, with trees on both sides. The NTSB (and all the witnesses, of which there were many) concluded that this was an obvious case of pilot error. He had a reputation for flying low and "dragging in" his approach. The survivors, however, are suing Florida Power. They are claiming that 'you can't land a Cozy Mark IV on a 4,000 ft. runway unless you are only 37 ft. high 1,300 ft. before the beginning of the runway. This is ridiculous, and gives us reason to review good pilotage in making an approach to a landing. Every student pilot is taught (we hope) that he should always maintain enough altitude on final so that if the engine failed, he could touch down about 1/3rd of the distance down the runway. In other words, he could coast to a point 1/3rd of the way down the runway. In the case of a 4,000 ft. runway, this would be 1,300 ft. after the approach end. Now if you check the Cozy Owners Manual you will see that the clean, power-out glide ratio of the Cozy (both 3 and 4-place) is 23 miles from 8,000 ft. This calculates to a ratio of 15 to 1 or a power off glide angle of 3 deg. 50 min. Now, if Mr. Larson had been following this rule for minimum altitude on final, he would have been 172 ft when passing over the power line. This is the minimum recommended altitude on final! He was at least 137 ft. below the minimum recommended altitude. But, you say, what if you want to touch down on the numbers? Well, that is what the landing brake is for, to steepen your angle of approach. Have you noticed how much you slow down when you lower the nosewheel and deploy the landing brake? You then have to lower the nose and steepen the angle to maintain speed. This helps you to lose the excess altitude you need for safety, and allows you to approach above the minimum altitude on final and still hit the numbers. The worst time for an engine failure is on final, and if you maintain excess altitude, you can always reach the runway. There should never be a reason for an airplane to crash short of the runway, even if the engine stops dead. Even if you come in much too high, like 800 ft. when you are only 1,300 ft away, you can always deploy both rudders in addition to the landing brake and come down as fast as a Cessna (sort of like a brick)! In our marvelous system of justice, however, contingency fee lawyers hope for a jury that doesn't understand airplanes and someone with deep pockets that they can blame accidents on.

ENGINES

Dick Rutan (who, if you remember, just finished flying around the world with Mike Melvill in their Long Ezs powered by O-360 Lycoming engines) was visiting a builder who was building a Velocity, and planning to install an automobile engine. Dick said, "You should never install an untested engine in an untested airplane!" The builder said, "The Velocity is a