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Cover Girl

Stewart Systems' three-day workshop convinces this Piper pilot she has the right stuff to cover an airplane

By MYRNA CG MIBUS
For General Aviation News

I've heard horror stories about painting airplanes — the smell, the chemicals, the difficulty of getting a nice finish. Still, there's something special about tube and fabric airplanes and I wanted to know how to cover and paint.

Maybe, someday, I'll learn how, I thought. But with two small children, fabric work wasn't at the top of my list of things to do.

Then, five years ago, I met Doug and Dan Stewart. Brothers, inventors, and genuine nice guys, the Stewarts' award-winning airplanes are testaments to their 35 years of combined experience in aircraft restoration. I discovered that their planes were covered many years ago, not months as they appeared, with a waterborne process that was easy to use and safe for the environment.

According to Doug, about 10 years ago he heard about a waterborne process called Aircraft Finishing Systems (AFS). Unsure about the products, he tested fabric samples for over a year. Impressed with the results, he and Dan started covering their planes with AFS, became distributors and later purchased the company, changing its name to Stewart Systems. They streamlined and perfected production, tested and perfected application techniques and created an instructional DVD so that even a beginner can use the system and get good results. To top it off, they obtained an STC so Stewart Systems could be used on certified aircraft.

But best of all for me Stewart Systems offers three-day workshops to teach people to cover and paint airplanes using their products.

I decided it was finally time for me to learn how to cover and paint an airplane, so I headed west to Stewart Systems' location on the Cashmere-Dryden Airport in Cashmere, Wash., for a working vacation I'd never forget.

Photos courtesy Stewart Systems

THE HEAT IS ON: *Myrna Mibus uses a calibrated iron to shrink and tauten the fabric on a covered panel. Learning this skill was a central part of the first day of a three-day workshop put on by Stewart Systems to teach people to cover and paint airplanes using their products.*

DAY ONE

Our instructor is Jason Gerard, a restorer who has a passion for classic airplanes and knowledge with tube and fabric 'way beyond his 30-some years. He's worked with just about every fabric and paint system on the market and now uses Stewart Systems almost exclusively in his restoration shop.

"You'll each get a tail surface to cover and paint," Gerard tells the class as he shows us the elevator-size metal frames the Stewart brothers welded to represent sort of a worst-case scenario when it comes to angles and covering airplanes.

"If you can cover this," Dan tells us, "you can cover anything."

From experienced builder to novice, we're all excited to start and as soon as Gerard is done giving us a demonstration on the "blanket" method of covering, we get to work.

I expect gluing to be messy, but the bright blue, nearly odorless EkoBond glue is easy to work with. We paint it on the tubing, let it dry until tacky, position our fabric under the surface, "tack" it to the tubing with the heat of our fingers, then run over it with a mini-iron set to 250°F.

Straight edges are fairly easy to work with but the corners are difficult. As Gerard demonstrates how to shrink the fabric with the iron around the corners, Doug tells the

class, "with our system you work at your speed, not at the speed of the glue. You let the glue and the iron do the work for you."

If we make mistakes, we simply pull the fabric loose and start over.

Panels covered, fabric fastened in place and trimmed, Gerard demonstrates how to shrink the fabric. We do three shrinks: the first at 250°, the second at 300° and third and final at 350°, to fully tauten the fabric.

It's nearly the end of the day, but Gerard tells us we have one more thing to learn — rib stitching. He shows us how to do the modified seine knot. The knot is difficult to learn with its many steps, so I quickly dub it the "insane" knot.

One advantage of the Stewart System, Dan tells us, is that it is STC'd to allow the use of the Beechcraft Staggerwing Knot, which is easier to learn but until the Stewart Systems' STC has not been legal to use on certified aircraft. We practice both knots, finish stitching and head out for a well-deserved dinner at the local pub and a good night's sleep.

DAY TWO

It's time to learn about perimeter tapes, inspection rings and patches. We use the techniques we learned the day before to put on the perimeter tapes. Again, the corners are challenging but easier than the day before.

Gerard then briefs us on how to use EkoBond as a contact cement, to fasten our rings and patches to the surface and carefully secure them with our iron, careful not to shrink the patches themselves.

Then we prime our panels with EkoFill, Stewart Systems's gray-colored primer, filler, UV block and fire barrier. Like their other products, EkoFill is low odor and cleans up with water.

But first we need to clean our panels. We spritz EkoClean, Stewart Systems' heavy duty, water-soluble degreaser and cleaner, on our panels, wipe them with a lint-free cloth, then wipe again with another cloth dampened in water.

Panels clean, we prepare the EkoFill to paint. EkoFill has a high solid content, so Gerard shows us how to stir it to mix the solids, careful not to shake the paint or whip it so it foams or bubbles. After mixing, he pours the paint through a standard paint filter, then demonstrates how to apply EkoFill with a foam paint brush. Working quickly and brushing in one direction, he applies a light coat to the panel. A wet look to the paint, he tells us, indicates that we are painting it on too thick. Bubbles happen, but he shows us how to work the bubbles out while we paint.

We then paint another light coat 90° from the first. Our panels now are an even shade of gray. We let them dry and close shop for the day.

DAY THREE

Today is the day we spray paint! After dry sanding our panels with 320 grit open coat sandpaper to get rid of any imperfections, we carry them to workbenches lined up outside the paint booth.

Gerard checks us out on spray gun usage. We're using a gravity feed high volume low pressure gun and he briefs us on everything from filling the reservoir, to how to pull the trigger, to the angle we should hold the gun and the speed we move it over the surface for the best finish.

Somewhat overwhelmed, I put on my charcoal respirator and join the rest of the class gathered around Gerard in the paint booth. The first coat, he tells us as he demonstrates, should go on light and not look wet. The EkoFill should be dry to the touch before we spray subsequent coats.

All too soon it is my turn to paint and I try to spray without the trigger fully pressed. Then I manage to drag the air hose through my fresh paint, but Gerard catches my error right away and assures me the drag mark will disappear on my second coat.

GETTING IT JUST RIGHT: *Heat bonding the fabric to the structure using EkoBond and a mini-iron eliminates the need to use clamps.*

THE FINAL TOUCHES: *Mibus applies the last touches of EkoBond glue with a brush before adding tapes and rib stitching.*

A STITCH IN TIME: *Mibus practices rib stitching using the modified seine knot — dubbed the "insane" knot — and the Beechcraft Staggerwing knot.*

ON TO THE NEXT STEP: *Mibus with her covered, taped and stitched panel ready to brush on the first coat of EkoFill.*

A LITTLE ELBOW GREASE: *Next step is to dry sand imperfections out of the brush-on EkoFill finish to prepare the surface for spray painting.*

TIME TO SPRAY: *Mibus applies a coat of EkoFill in the paint booth with a gravity feed, high-volume, low-pressure spray gun.*

The paint dries quickly and, sure enough, the drag mark disappears when I shoot my second coat. By the fourth and final coat of EkoFill, I'm feeling pretty comfortable wielding the paint gun, almost always press the trigger at the right time, and manage to keep the hose out of my fresh paint.

After lunch, it's time to spray EkoPoly, Stewart Systems' catalyzed top coat. EkoPoly, Gerard tells us as he readies the paint gun, comes in a wide range of standard colors and the Stewarts will custom mix as well. Gerard mixes the EkoPoly, EkoPoly Catalyst and distilled water and tests the viscosity for application. EkoPoly's "pot life" at 75° to 85°, he tells us, is about 45 minutes to an hour after adding the catalyst.

Most people new to EkoPoly paint it on too thick, but light coats are essential to a good finish. Gerard demonstrates how to shoot the paint and tells us that in most cases, four coats, (two cross coats) will do the job. Since you don't wait for the paint to dry fully between coats, Dan tells us, "you can paint a whole wing in under an hour."

I'm skeptical that I can get results anywhere near as nice as Gerard's or the experienced painters in our class. Yet, after four trips to the paint booth, my paint job looks really nice.

AFTER THE WORKSHOP

It's Monday morning and time to go home. I look at my panel, so carefully covered and painted, so lovely in my eyes that it rivals the many quilts I've made and the paintings on my walls at home.

"You can take it home if you want," Marjie Stewart tells me.

"I can?"

"Yes, you can even hang it on your hangar wall," she adds, as she packs a box of Stewart Systems products to ship to a customer.

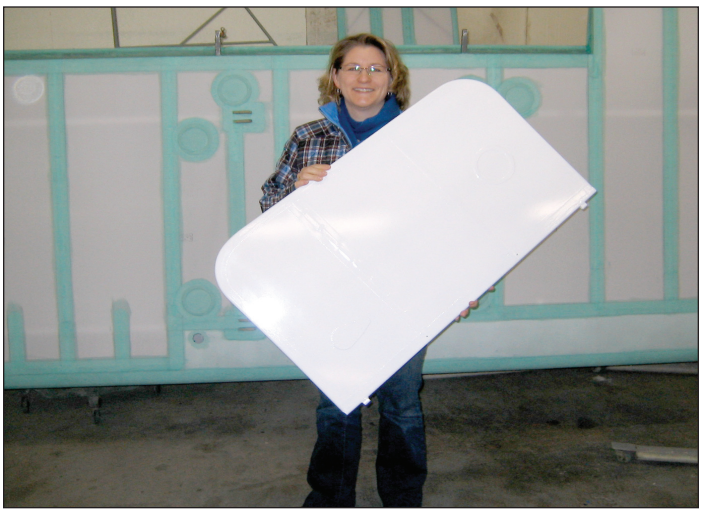
"Won't it crack?" I ask as Dan cuts my fabric off the frame.

"No, this stuff is flexible." He hands me my fabric. "It'll be just fine."

Even with many layers of EkoFill and EkoPoly, my fabric is surprisingly flexible and rolls easily. I tuck it in my suitcase, toss my bags into Doug's Pacer, climb up and settle in as we head out over the mountains for my first leg home.

My fabric panel hasn't made it to my hangar wall. Instead, it's draped over a quilt rack in my office, testament to the fact that when I decide to cover an airplane, I now have the skills to do it.

For more information: 888-EKO-POLY or StewartSystems.aero.



FINALLY FINISHED: *Mibus with her finished panel after a final coat of EkoPoly. It hasn't made it to her hangar wall just yet. Instead, it occupies a place of honor in her office, testament to the fact that when she decides to cover a plane, she's got the skills to do it right.*