

STAN BUDDENBOHM ON GLIDERS

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(Editor's Note: For more than 20 years Stan Buddenbohm has been an innovator and top designer of indoor and outdoor javelin launch gliders, discus launch and tip launch gliders, as well as FAI and AMA tow line gliders. Here he shares with us some of his observations on hand launch and tip launch glider flying in a "Question and Answer" format.)

Question: Stan, you've been involved in FF glider flying of all types for well over 20 years. What are your observations about the state of the art at this time?

Answer: It seems amazing to me that FF gliders are still evolving. Doesn't it seem that by now we would have it all worked out? Perhaps we are just spinning our wheels though; after all, we still don't "dead air" max. Sometimes, though, I think about building my 2-minute-plus indoor catapult glider for outdoor. What stops me is that I don't think it would work in any turbulence.

So what is evolving lately? Of course tip launch gliders, but that is already old hat in a way. I mean that it really has completely replaced javelin. I don't think we have worked out the best compromises for it yet, but I'm not sure how much difference it will make when we do. Personally, I keep coming back to my "Dyno-Mite" design, which is smaller than where we started. I try something else then say, "I can't really say the new one is better than the "Dyno-Mite." But I have seen some new steps in the evolutionary process that hold promise that were being flown at the 2009 Southwest Regionals at Eloy in January of this year. There were two new TLGs and one new catapult.

Question: What specifically caught your eye and interest with these new gliders?

Answer: Well, the first TLG that I'll try to remember and describe was flown by Mark Covington, I Wink. By the way, I believe his throwing has improved even since the Nats. He had a maximum-span glider with a large chord and much dihedral. He used what I call the "Colorado thumb-on-top" throw. Smallish stab. He actually threw a larger glider almost as high or maybe even as high as Tim Batiuk and my humble self. Unfortunately, some crazy guy retrieving on a four-wheeler ripped across the field at full bore and ran over it before we had a chance to see what it could really do.

The second path in evolution was a foam-wing glider by Ken Bauer. The glider was perhaps a 32-inch span. I'm not sure, but it seemed to have about the same area as our 36-inch span models. The wing had straight, tapered tips, because it was hotwired. For my FIAs that I used to build out of foam, I have done similar construction, so I was able to grill Ken. He used a blue foam that has a very high compression strength. It is used in construction flooring and weighs 2 pounds per cubic foot. This compression supported spars and skins without needing to add something full depth. He added .010 by .25 carbon strips to the main panels, top and bottom, I think, and no spars at the tips. Since he did not need it in the tips, I doubt he needed it in the mains. Ken's skins were vacuum-bagged carbon paper/matte. This wing was several

times stiffer than a balsa one and weighed 40 grams. The airfoil was similar to the Japanese indoor record holder, but thicker and with more undercamber.

Incredibly, when Ken threw the plane, the right wing fluttered! Of course, he couldn't tell as he was following through in his launch, but Tim Batiuk observed the same thing I did. Since we had both seen it, Ken asked me to throw the plane so he could watch it in launch. I threw it twice at what I would say was about 70 percent power. Apparently, it did not flutter when I threw it, and it seemed to get higher. My best guess is that the flutter was a function of Ken's launch technique, which is still being refined. I believe that part of the flutter problem may also be due to the airfoil, which must be exhibiting large pitching problems, causing the wing to want to wash out at high speed. Anyway, it had a good glide. It's hard to say if it's better than current wood wing TLGs, but I suspect it is. The entire model weighed 80 grams.

Question: Other than the construction differences, where there any other features that pointed toward the future?

Answer: Yes, there were. In fact, the other feature of the plane that may prove to be more important than the construction material was that Ken had put a radio OT in it. I know that Joe Mekina was probably the first person to do that at the Nats last year, using off-the-shelf parts. Ken's, however, was specially designed and very elegant. Ken has been making the systems for a while for FAI flyers, and they are still pretty expensive. All up cost for a ROT is more than \$300, so it may be a while before they become common in hand launch gliders. However, if you already have a complete unit for one of your larger FAI ships, a second receiver for a hand launch glider should cost half of that. It worked perfectly, and the advantages are obvious. The parts carried in the model only weigh 8 grams.

Ralph Ray has one that he is using for a Nostalgia Gas model and is busy adapting it for a "Mumbo Jumbo" TLG. He has worked out a clever installation. It turns out that all you need is widen my original fuselage pod about 1/32 inch and then add more side plates. Ralph should have his ready shortly. One thing that I am not sure people have considered is that with ROT you may only need one glider the rest of your life! As a small kit manufacturer, I'm not sure whether that's good or bad!

Question: Are you personally working on anything that we'll be seeing on the flying field in the near future?

Answer: I think so. A third evolution is a new catapult fuselage/hook system that I've developed. The new system was on the first, second, fourth and fifth place finishers at the Southwest Regionals, so I think it has proven itself pretty well in a very short time. Essentially, the new style fuselage has a wire hook placed clear at the front instead of a ply hook CA'd under the fuselage under the leading edge of the wing. This means a longer rubber stretch using more of the 9-inch loop and greater altitude. The flyer can now hold the plane in a launch position under the wing without fear of knocking the tail feathers off during launch. The new design is lighter and has a more forward CG, requiring very little additional nose weight. The lighter weight also allows the plane to have a little larger wingspan and still be launched to a good height. Now that I think about it, maybe glider evolution isn't so surprising. I know I haven't tried everything I want to try yet in my own designs.