Co-Pilot for Sailplane Flying

Vic Tyber writes: I have been flying RC sailplanes for about 18 yrs and recently installed the 2.2 version Co-Pilot in my 20 yr old 100 inch Graupner ASW 22 sailplane. I also fly DC10's for a living and use a similar autopilot as much as I can. I only have about 5 flights so far with the Co-Pilot but see many advantages for both beginners and expert sailplane flyers. Winch launches and thermalling are enhanced by using Co-Pilot control of rudder and elevator. I am very satisfied and look forward to learning more sailplane uses of the Co-Pilot and to more innovative products from FMA.

The original Graupner ASW 22 had no ailerons but relied on a fair amount of wing dihedral and rudder for turn control. For quicker roll control Graupner (through Hobby Lobby I believe) offered optional wings with ailerons that were connected to one servo located inside the fuse. I removed the bell-cranks and control rods inside the wing panels and installed a servo to each aileron. The stock dihedral remains and rudder still will turn the sailplane. However rather than limit aileron control to a Y connection I chose 2 channels for spoilerons to limit dive speeds and to make approaches > and landings slower and safer. My left transmitter stick operates rudder and bottom stick raises both ailerons up for spoilerons. Right stick operates elevator and spoilerons and rudder is mixed in with a toggle switch to turn rudder mix on or off. Because there is so much aileron throw aileron rolls even with rudder mixed are fairly fast and are similar to larger sailplanes with full trailing edge ailerons.

I used an extra channel (rotary knob) on my transmitter to dial in the minimum Co-Pilot sensitivity and mounted the sensor with Velcro on top of the fuse just aft of the canopy. The flat cable runs under the canopy. I used the beginner set up and set the computer for maximum sensitivity. I did have to switch my Airtronic pins over to match the female connections and I used Goop to secure the red button top on. The instruction manual is very good and I have yet to try out the 2.2 version "expert" feature.

The ASW 22 is set up with 45 degrees of rudder throw and some winch launches can veer to either side quickly. However with Co-Pilot connected to rudder and set on minimum sensitivity I saw a reduction of the usual veering to either side. I had anticipated the elevator causing a shallower launch angle but I saw very little and I was able to increase up elevator with a little back stick. As a precaution to stalling on the tow, I was careful to use little to no elevator on tow.

After release from the tow my ailerons worked as usual for an aileron roll but when I centered the stick the rudder would gradually level the wings. I dialed in maximum sensitivity and then backed off to about 50%. This made corrections in about 5 seconds which looked about right when I rolled or dove down at approximately 45 degrees. On the third launch I put my transmitter flat on the ground and let the old 100" Graupner ASW 22 thermal around for about 1 or 2 minutes. I've been competing in thermal duration contests since 1984 and the Co-Pilot makes as good or better thermal turns than me!

Sometimes it's hard to see the sailplanes wings reacting to thermal lift but I believe the Co-Pilot senses bank away from the thermal lift and then commands rudder to yaw the ASW 22 towards the center of lift. For thermal duration contests I'll remove Co-Pilot infrared sensor from its Velcro mount on top of the fuse as it is obviously an unfair advantage. I hope to let other club members try out my sailplane and will email or phone you with comments.

Vic Tyber
Pelican Soaring Association
West Pasco Florida