APCO NRG PRO

Jeremy Penone flies a slalom wing for experienced pilots who want high-powered excitement. Photos: Noëllie Macario

▲BANKING ON IT
The glider is aimed at competition slalom pilots and experts. This shot clearly shows the tip-steering system in play.

▶DETAILS
The riser set and the PK system, also called the one-action acceleration system

Unsheathed Vectran and Kevlar lines at the top

The trimmers, clearly marked with yellow and red lines

Flexon battens keep the glider inflated on the ground ready for launch

What's in the box? A classic-style rucksack, risers protected in their own special bag, a windsock and the owner's manual on DVD. We're off to a good start.

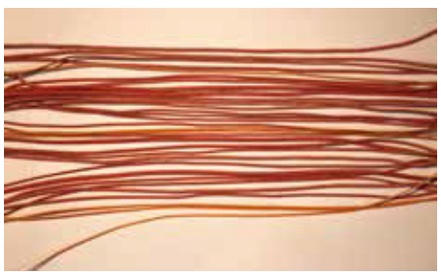
The NRG Pro from Apco is a slalom wing for experienced paramotor pilots only – that's pilots who are already into slalom flying and know how to manage energy (the clue is in the name). The company list it as a competition wing, and do not recommend it for free flying.

I tested a 16.5m2 with a total in-flight weight of 113kg. Getting the glider out on the field the first thing I noticed was the build quality, which looks very good. The glider is made from Zero Porosity Gelvenor ripstop nylon. The quality of stitching and the cut of the wing look faultless, and are a tribute to Apco's experience. The Israeli company are known for their build quality and attention to detail.

The lower lines are heavy-duty Superamide and feel nice and solid; higher up unsheathed Vectran and Kevlar competition lines reduce drag and optimise efficiency. The A and B lines are doubled for extra security. Flexon Battens maintain the shape of the leading edge and aid inflation.

Risers

The risers are not the narrowest, but are nonetheless nice to use and clearly laid out. The 'One action acceleration system' is instantly noticeable on the risers. This is a paramotor-specific innovation that allows pilots to operate both the speed system



and the trimmers at the same time simply by using one swift action on the speed bar. Originally invented by Estonian paramotor pilot Paap Kolar it is known on other wings and in the sport more widely as the PK System. Whatever it's called, the system is a great asset to slalom wings. It has a Teflon sliding system and just by looking at it I find myself looking forward to seeing see how well it performs in flight.

In order to engage the PK System you need to set the glider up before you fly by detaching the Brummel hooks on the rear risers and moving the trimmers to the neutral position. Without it activated, the wing is much like any other and speed is regulated with the trimmers and speed bar. But with the PK the glider can be activated to give an extra speed kick or to make tighter turns.

Inflation and launch

The first thing I notice on inflating the wing is that the lines are relatively short: 5.78 metres. With the trimmers closed and in nil-wind conditions, the Flexon batons keep the leading edge inflated on the ground. A pull on the risers gives the wing energy but it seems to stick and it's difficult to pull it all the way up – it tends to fall back again. However, if you open up the trimmers to the third red mark and try again, the wing rises well all the way up and stays there, so this seems to be the right setting to adopt.

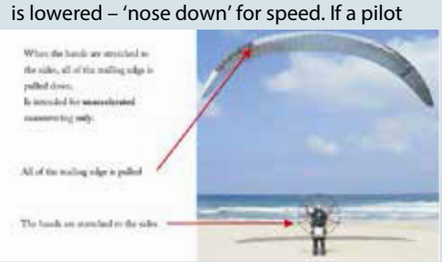
As with most slalom wings, the NRG Pro's risers have a few peculiarities compared to those of non-slalom wings, things like the PK system and the 2D tip-steering. Despite this, the risers can easily be worked out by experienced pilots. In your pre-flights, remember to check the PK system is functioning correctly and that the trimmers are adjusted symmetrically.

The required take-off run is relatively short for a wing of this size. In competition I usually fly 20m2 wings and I was expecting to need a good strong take-off run. To my surprise, after 45 metres I found myself airborne despite a lack of wind. When I started six years ago, I needed twice that much space to launch with a 28m2 wing! The evolution in wing profiles today means we can fly much smaller wings and still get better fuel economy out of the motor. This evolution is really apparent in the NRG Pro.

2D-STEERING

The glider has what Apco call a "Two dimensional brake configuration". This combines the glider's main steering with the tip steering system. Although it takes "a little while" to get used to the system according to Apco, it allows multiple options for steering the glider and is "very intuitive".

Tip steering was developed in paramotor wings because using the brakes when flying at full speed is not recommended or safe. With the trimmers off and speedbar on the angle of attack is lowered – 'nose down' for speed. If a pilot

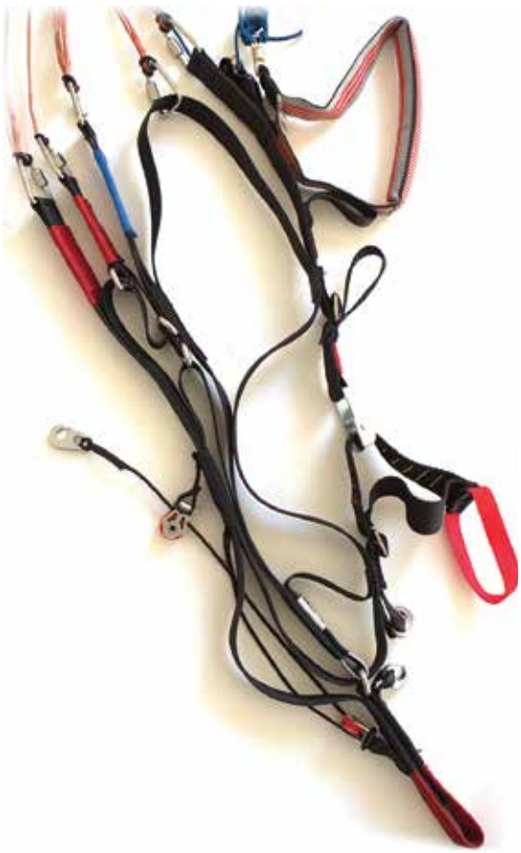


applies the brakes while flying at full speed they are fighting against those nose down forces – the stability of the profile is compromised and makes full frontal collapses more likely. At high speed that is never going to be good, especially when low and banked up while flying a pylon course. Tip steering then allows pilots to control the direction of their glider safely and effectively while at full speed by working the trailing edge at the tips of the glider.

These photos combine the extreme positions of Apco's 2D steering system. In the top one the pilot has his hands stretched out to the side. This pulls down the whole trailing edge. This is for flying the glider at trim speed – unaccellarated.

In the lower photo the hands are pulled to the side and only the tips are pulled down. This is designed primarily for flying at speed.

The whole range of speed is available in between these two positions.



A TWO-IN-ONE FOR COMPETITION

In slalom competition, the top few places are sometimes separated by hundredths of a second. Nowadays pilots often use PK systems to give them an advantage: sometimes these are ready-fitted to the glider, like with the NRG Pro, and sometimes pilots retro-fit them. Simple and efficient, the systems enable the wing to be de-trimmed using one simple action: pushing on a bar relaxes the D lines and at the same time pulls on the As to accelerate it. This causes an instantaneous change in the angle of attack and an immediate increase in speed. In a slalom competition, speed is important. A two-in-one system means you can get a maximum speed straight out of the turn to get to the next pylon in the shortest time possible, while retaining energy out of the turn. As soon as the bar pressure is relaxed, the wing loses speed and climbs, and the pilot can use this energy to round the next pylon. On the NRG Pro, the system is very smooth and efficient, thanks to the slippery Teflon-coated straps.

Slalom flying

In flight, this wing is light on the brakes and has very good roll precision, making for super-easy turns. Its small surface area and short lines accentuate this. The wing is screaming out to be played with, so let's play! I got some altitude and set about performing some manoeuvres, all of which were easy and a joy to perform.

Now let's try the wing out for its intended purpose: slalom. I first tried flying manoeuvres near the ground without the speed bar and with the trimmers closed, then a second time with the trimmers open.

Doing figure-eights around two pylons 80m apart I didn't encounter any problems. The wing had a good speed, and no ballooning tendency. Putting it into a turn is simple and fluid. You have to be careful not to over-brake during the turn, as the brake pressure is very light and you can be tempted to brake more and more.

The spin point is quite far down on the brake travel, but it can be reached surprisingly quickly. Don't forget the wing is very small so allow it some speed to glide.

When the trimmers are open the wings feels much faster, and turns are more radical with a good glide on exiting the turn. You can use the full range of the trimmers with the PK system inactive, from the first red line to the last yellow marker, and can use the main brakes and the tip steering system.

With the trimmers open you can use the whole of the brake system without risk of collapses, a real advantage for pilots who don't want to use the speedbar near to the ground. This means you can practise slalom close to the ground as the profile remains usable with the brakes and the tip steering system.

With the PK system activated, it's a different story. When you push on the speedbar, the NRG Pro dives, and you need all of your motor's power to maintain speed. The PK is very light and easy to bring back to a neutral position, so it's very useable for tightening turns around the pylons. Make sure you use the tip steering system to initiate the turn (2D piloting). As with

all wings in this category, you cannot use the main brakes with a de-trimmed and accelerated wing, as you run the risk of collapses. You must use the tip steering to turn if the PK system is activated.

A good guideline for using the trimmers with the PK system is not to go past the blue line. In slalom mode, with the PK activated, I found the wing behaves very well up to the blue line. Above that (yellow area) the wingtips are prone to small collapses.

The trimmers on this wing are sensitive, and de-trimming the wing by just a few centimetres really changes its behaviour, making it more rigid and more stable. In addition the brakes get slightly heavier and the handling becomes more precise. The wing has a big speed range. Trimmers closed it reaches 41km/h, but trimmers open it will go to more than 56km/h: a big speed difference, which reiterates that it is a performance wing and can not be flown by just anyone.

Conclusion: a brilliant toy

Apco have made us a great toy with an exemplary finish in beautiful prime colours. The NRG Pro needs to be handled by an experienced pilot, who can fly precisely and use the 2D tip steering to be able to use the speedbar without risks. This wing wants to play, either slaloming around pylons or for higher altitude freestyle fun. It's a high performance wing in terms of speed, handling and turning ability (it's possibly a bit too eager to get into tight turns for our tastes!).

The PK system is well thought out and easy to use thanks to the Teflon and for the fact that it's very easy to engage or disengage to switch from PK to 'classic' mode. The NRG Pro keeps its promises and has great competition potential, with quick launch and good stability.

After just three flights I felt as comfortable on this wing as if I had been on it for three months. My times around a known slalom course were competitive, and in the right hands I think this wing will do well in the high-level competitions. I have a feeling this little wing with its big character will establish the Israeli manufacturer in the field of high-level slalom competition. XC

◄◄CAPTION TITLE

"This wing is screaming out to be played with, so lets play!" The wing is light on the brakes with very good roll precision.

◄RISER SET

Clearly not for beginners. Brakes, speed system, trimmers and PK system.

MANUFACTURER'S SPECIFICATIONS

What Apco say: "The ultimate answer to the fast growing, challenging segment of purpose-built wings designed for professional slalom racing."

Sizes (m^2): 16.5, 17.5, 18.5

Take-off weight (kg) : 70-105, 90-125, 105-140

Cells*: 50, 52, 54

Aspect Ratio: 5.55, 5.77, 5.99

Weight (kg): 4.18-4.72

Certification: DGAC certification pending.

www.apcoaviation.com

**Apco add or remove cells to increase the size of the wing*