Gentlemen...start your engines!

All photos: Jaco wolmarans

With the huge increase in paramotoring popularity, wing designers are giving it gas! Virtually every manufacturer now sports a purpose-made motor wing in its line-up. Keith Pickersgill and Jaco Wolmarans test eight of the best

Not long ago, paramotors were regarded by many pilots as one of the best ways to take the fun out of paragliding. Take the convenience, silence, portabilitiy and purity of a paraglider, then hang a noisy, heavy engine on your back. True, a skilled pilot could launch from flat ground and in nil wind, but launching the beast was fraught with danger and the motor made your paraglider handle like a pig once airborne.

Now skip to the present: with today's paramotor wings requiring almost no effort to launch, and with motors that weigh next to nothing, paramotoring has become far more accessible to the average pilot. Add to this the sheer convenience to the time-strapped paraglider pilot, and you'll understand the explosion in PPG popularity.

Modern paramotor wings rarely display the hang-back characteristics of ordinary slope-launched paragliding wings, they're designed to handle impeccably even in the lightest of winds and are often almost immune to the effect of a turning propellor - the three criteria that set a good PPG wing apart from a wing designed solely for free flight.

With this in mind, we designed a side-by-side comparison to test some of the hottest wings on offer.

THE METHOD

We threw some extremes at the test wings, using two completely different motors - one a belt-driven motor generating a fair amount of torque effect, the other a gearbox-fitted Top80 with hugely reduced torque effect.

To eliminate all possible variables, we did all speed, glide and climb tests using the same pilot and motor on the same day and in the smooth coastal air of Cape Town's Table View beachfront.

The test pilot would radio measurements through, land, clip into the next wing, and repeat the process - all within five minutes of each other to try and eliminate changes in atmospheric conditions. We measured speeds at level flight, noting the rpm required to maintain level flight as a measure of fuel efficiency.

Apart from the aerial tests, we tried the wings in a series of ground tests selected to emulate how the wings would respond in the hands of the typical, lesser-experienced pilot.

Lastly, using the torque-prone motor with carabiners and all adjustments deliberately set to neutral gave us a good idea of how tiring the wing would be if flown uncompensated.

Comments on individual wings

>WINDTECH KINETIK

JW: Agile and snappy

The Kinetik greatly retains energy in wingovers, but needs a deft hand to co-ordinate wingover exits and turbulence. It sports a high trim speed, but strangely enough a short speed-bar travel. It hangs back slightly during pull-up, even with the trim dropped. If you're an experienced pilot, like your acrobatics and can handle the G's, this cruiser is for you.

KP: Enthusiastic performance

The Kinetic requires deft and firm handling and is aimed at the experienced pilot who will understand the acceleration and deceleration capability of its trimmers. Its ground-handling in variable winds could be technical, but an experienced PPG pilot will have no problems.

>MACPARA MUSE

JW: Fun, ease and simplicity

The Muse has an almost flawless launch, staying directly overhead even at a walking pace. Although very sensitive to offset trimmers, its response to torque effect was surprisingly small in level flight. Although not the fastest, its docile character makes for effortless XC flying and makes it an excellent first motor wing.

KP: Forgiving and predictable

The Muse is ideally suited to the rank novice, even those with zero paragliding experience. It's amazingly forgiving, easy to handle in all conditions, predictable to a fault (it might seem a little too damped for more experienced pilots), and is possibly one of the most comforting wings to launch and fly. Overall it makes an excellent school training wing.

>PAP RACING WING

JW: No-nonsense racer

Although the PAP seems to turn slightly flatter, it's still very willing and it's certainly possible to throw it around if the mood takes you. It's very quick, climbs fast, and zips along merrily at high speeds. Pull-ups in lighter conditions required slightly more coaxing to come directly overhead than the Apco and Muse and it seemed very stable at speed.

KP: Sporty, solid, thoroughbred

The PAP is a wing that wants to go places at full speed, delivering surprisingly solid stability. It has the handling of a thoroughbred but with the confidence-inspiring comfort of an intermediate. Ideally suited to the gifted student pilot upgrading from a school wing under the guidance of his instructor, or the experienced pilot wanting to go places. →

>ITV TOMAHAWK

JW: The all-rounder

The Tomahawk has a huge useable speed range at trim. It is prone to torque effect, but special offset attachment points negate this completely and the light speed bar and great agility make for excellent in-flight comfort. This wing will satisfy most long-haulers, speed freaks, fun flyers and will more than hold its own in competitions.

KP: High-speed comfort

The Tomahawk is a seriously sporty wing for the experienced pilot. If you can handle the conditions, this wing will too. Comfort, solid handling and predictability are its hallmarks, and unless some serious innovations come along, the Tomahawk will remain hard to beat. The Tomahawk is best suited to a pilot who is confident in his own capabilities.

>APCO THRUST

JW: Energy-saving long-hauler

The Thrust may feel slightly heavy, but it launches beautifully, has a superb climb rate and has a good turn of speed. The firm brake pressure had me doing some wide, flat turns, but I've also seen some big wingovers performed on it. It's slightly prone to torque effect, but nothing you can't fix with the trimmers. The Thrust's high energy retention, good glide and climb rate will probably make it a fuel-efficient long-hauler.

KP: The quiet workhorse

My first impression of the thrust was of a fairly unremarkable wing until I realised it just gets on with the task, whatever you throw at it, with no complaints, no surprises and with nothing unexpected happening. This may be partly down to the the special intakes which are covered with one-way valves to help prevent deflations, even when pushed hard the Thrust simply got on with the job with no collapses. Suitable Thrust buyers would range from beginners to experienced pilots looking for a solid, dependable wing.

>DUDEK ACTION

JW: The distance gobbler

The Action is hyped to be fast and is quick at trim, but not so much at the top end. It launches fine, even when you ignore the complicated trim setting sequence suggested by the manufacturer. Of all the wings tested, it was most susceptible to torque effect on a direct drive paramotor. Even so, it feels like a no-nonsense competition wing and proved remarkably solid at high speeds.

KP: Hard core speedster

If you want to relax and cover a lot of ground, this is your wing. The penalty for this is more technical ground-handling due to its more robust build, which impedes pull-ups. Its stability at high speed is exceptional as claimed. The Action is likely to prove ideal for experienced pilots living in hard-core terrain, particularly if they frequently fly in strong winds. Some novices, however, are likely to battle with launches comapared with some of the competiton.

>POWERPLAY STING 140

JW: Best selling all-rounder

The Sting's got everything tidily in place: it features a good pull-up and is complete predictability in flight, even when exiting abruptly from steep turns. As a distance wing, it also excels, requiring little effort to fly thanks to being only mildly susceptible to torque effect and very happy with hands-off flying. It has just the right amount of agility to be a fun wing, yet also has more than enough stability to race with.

KP: Dependable and comforting

Aimed at the novice to intermediate pilot, the Sting is one of the easier wings to launch in light winds, yet is also very forgiving in strong and gusty winds. It's a comforting wing to throw around over your local field, or to take cross country on long cruising flights. Quite simply, a wing you can depend on in all conditions,yet lively enough to really throw around when you feel exuberant.

>FIREBIRD Z1

JW: Solid beginner

Although not a dedicated motor wing the Z1 did admirably well in the review. Seated firmly in the fun category, it is a willing climber, very agile and exits messy spirals with grace. It's not a wing for pilots into long-haul adventures, but more for those interested in mucking around near launch. For flying little precision tasks it will prove immensely enjoyable.

KP: Newcomer's friend

The Z1 has a relatively low aspect ratio and deep profile making it an extremely docile wing with no nasty surprises. With straightforward ground-handling and in-flight characteristics it's perfect for a lazy cruise down the beach. The Z1 would make an excellent school training wing although it would, however, benefit from the addition of trim tabs. Every instructor should have one for those students of a more nervous disposition.

A ROSE BY ANOTHER NAME?

The ITV Tomahawk was originally developed as a paraglider for soaring rather than powered flight, but was immediately recognised by PPG pilots as an ideal sporty powered wing and has gained some popularity among performance-orientated PPG pilots as a result.

Spanish paramotor manufacturers, PAP, also recognised the potential of the Tomahawk, so entered into collaboration with ITV to tweak and tune the Tomahawk specifically for powered flight, further enhancing its powered characteristics. The result is sold by PAP as their Racing wing though it is manufactured by ITV to PAP's revised specifications.

Among the tweaks are lines that average about 25cm shorter, and a more pronounced wash-in (the wingtips have a greater Angle of Attack), reducing deflations at high speed while sacrificing L/D ratio which is in keeping with developing powered characteristics.

SUMMARY

The inclusion of the Firebird Z1 and to a lesser extent the MacPara Muse in our test emphasises the huge difference between wings designed for free flight and those dedicated to motor flight. The Z1 and the Muse felt decidedly different to the rest of the field - very agile, more fun, but not as fast as the rest.

This places them in the "first motor wing" category, where the Muse got the thumbs-up from both of us. The rest of the contenders are faster and more performance-oriented, requiring more experience and skill at high speeds. Choosing between them boils down to either the amount of agility you prefer, or what degree of high-speed stability you demand.

We were hard pressed to pick a favourite. The tight finish between the gliders on test is indicative of the level of competition amongst designers out there - all of which counts in your favour in the form of greater choice. In the end one's choice is hugely influenced by harness set-ups and flying style preferences, and should always be read as such.

That said, we both preferred the Tomahawk and PAP (virtually identical wings) due to their all-round ability, high speed range and stability at speed. They were certainly not the fastest, nor necessarily the best climbing or launching wings, but given our paramotor and harness setups, these were the two wings that got hauled out of their bags for "just one more go" most often! XC

PARAMOTOR WINGS COMPARISON AIRSPEEDS (kph)

BRAND	TRIM SPEED/RPM	FAST TRIMMERS ONLY/RPM	SPEEDBAR ONLY/RPM	SPEED/ENGINE-OFF GLIDE	SPEEDBAR & TRIM	PROJECTED AREA	RATING	WEIGHT RANGE
Windtech Kinetik 27	39/8450	45/8650	46/8650	37/1.6m/s	49/8600	24.3	DHV1/2	85-145
MacPara Muse 28	36/8350	39/8400	42/8400	37/1.2m/s	45/8500	24.78	DHV1	85-110
PAP Racing M	38/8100	45/8450	45/8400	39/1.3m/s	51/8500	25.1	CEN Std	85-105
ITV Tomahawk2 28	38/8100	44/8200	45/8400	39/1.4	51/8500	25.1	CEN Std	85-105
Dudek Action	40/8200	44/8500	50/8800	45/1.8m/s	55/9700	24.63	Afnor Std	75-110
Powerplay Sting	37/7800	43/8000	45/8150	38/1.25m/s	51/8500	25.1	DHV1/2	80-105
APCO Thrust	37/8150	44/8250	44/8300	38/1.4m/s	51/8400	25.2	Afnor Std	80-100
Firebird Z1	35/8150	no trim	44/8400	36/1.8m/s	no trim	26.1	DHV1	80-100