

free.aero



WORLDWIDE PARAGLIDING AND PARAMOTORING MAGAZINE. FOR FREE.



#techno 2024

Photo: Jérôme Maupoint/Neo



A surprising view of a Zoom XA blending perfectly into the takeoff. Zoom is the recent brand managed by Hannes Papesh and Alex Höllwarth. Photo: Alex Höllwarth

SAINT-HILAIRE, STUBAI, ZILLERTAL: THE CYCLE OF THE SEASONS

Free flight expos have become prime showcases for discovering innovations of both current and upcoming seasons. Despite leaks—whether orchestrated or accidental—shared on social media about the latest designs from manufacturers, these events remain essential for official announcements and the presentation of the latest wings and harnesses.

In September, the Coupe Icare in Saint-Hilaire, taking place this year from September 17th to 22nd is the world's largest gathering of its kind (www.coupe-icacre.org). Although many new products are revealed here, not all of them are physically displayed. Manufacturers often prefer to fine-tune their models over the winter.

As early as March, in Stubai, the first models—or at least prototypes—take flight (www.parafly.at/stubaicup), unveiling the year's innovations. (March 14th -16th, 2025)

Later, during the Pentecost weekend (June 7-9, 2025), the more intimate gathering in Zillertal, Flying High (flying-high.at), offers an opportunity to see these innovations in action, especially those that could not be showcased in Stubai due to weather conditions.

Some trends and innovations, although not displayed at these expos and test events, still make their way to regular flying sites. Take, for example, the new wave of hybrid wings between kite and paragliding, represented in recent years by models like the Moustache, the Mullet, or the brand-new wings from Little Cloud, which we also discuss in this issue.

Sascha Burkhardt

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COUPE ICARE 2024

The trade fare opens its doors on Thursday.

As always for the last decade, our journalists will be on-site.

With 230 exhibitors spread over 5,100 m² of covered space, the Icare Show is the must-attend event to discover the latest innovations for the upcoming season.

This year, visitors will have the chance to discover numerous "submarine" style harnesses, some of which are exceptionally lightweight, offered by brands such as Neo and Supair.

Of course, we will be there to present the most promising products, especially for our readers who cannot attend the event. It will also be a great opportunity to meet you in person...

See you soon!

P.S.: New this year, you can now purchase your entry tickets online.

<https://coupe-icare.org/>





The best costumes of the Icarnaval will be on display on Saturday, weather permitting.



MARDI	MERCREDI	JEUDI	VENDREDI	SAMEDI	DIMANCHE
ICARE TEST					
ICARE DU CINEMA & CONFERENCES					
				ICARE EXPO	
				ICARE FOLIES	
				ESPACE CAFETERIA	
				ICARE MÔMES	
				ICARE BALLONS	
				SALON SPORTS & OUTDOOR	
				ICARE SHOW & ICARNAVAL	
				FINESSE COMPETITION	

■ A St Hilaire
■ A Lumbin





Notably at the south launch site, flights will be available for all pilots during designated time slots, and upon registration.



Horaires d'ouverture des décors du Plateau des Petites Roches

		D1	D2	D3	D4
		Déco Nord	Déco Est*	Déco Sud	Dent de Crolles
Mardi	9h-16h	OUVERT			
	Après 16h	OUVERT	OUVERT**	OUVERT	
Mercredi	9h-14h	OUVERT			
	14h-16h	OUVERT D1 ou D2*		OUVERT	
Jeudi	16h-18h30	FERMÉ			
	Après 18h30	OUVERT			
Vendredi	9h-18h30	FERMÉ			
	Après 18h30	OUVERT	FERMÉ	OUVERT	
Samedi	9h-18h30	FERMÉ			
	Après 18h30	OUVERT			
Dimanche	9h-18h30	FERMÉ			
	Après 18h30	OUVERT			

* D2 ouvert si D1 fermé - **dernière navette remontée Icare Test : 17h

Le décollage de La Sapinière est fermé durant toute la manifestation.
Les deltistes sont invités à décoller de D3

Ces horaires sont indicatifs et modifiables par la direction des vols selon les conditions météo.

EN/LTF B



HIKO



Progress with *total confidence*

The new Hiko is the perfect compromise between passive safety and performance to commence your first long distance flights. It is an intermediate glider (mid EN B), situated between the Hook and Ikuma, expanding our range of paragliders. Its intuitive handling and advanced technologies will allow you to fly with confidence and explore new horizons.

Sizes

20 / 22 / 24 / 26 / 28 / 30



Clay



Lavande



Motmot



River



EN/LTF B



HIKO P



Evolve with *lightness*

From 2.99 kg

The Hiko P is an intermediate and ultra-light EN B wing – an all-rounder for a wide range of pilots. It will accompany you in the transition from paragliding training to your first XC flights. Thanks to the combination of the lightest materials, the IKS 1000 connection system and a weight-optimised internal structure, it is also the ideal glider for hike and fly. It offers great confidence building and excellent performance, to start new adventures and improve your skills.

Sizes

20 / 22 / 24 / 26 / 28



Flamingo



Citrik



Tekno



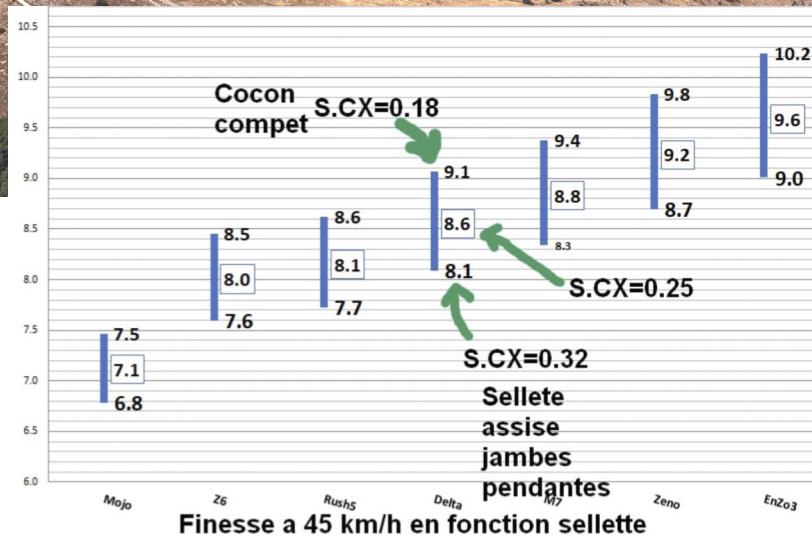
HARNESSES AND PROTECTORS

In 2024, this may be the field evolving the most...

Photo: Jérôme Maupoint/GIN
Graphique: Valettin Burkhardt



Photo: PW CA



The performance advantages of the new fully-enclosed harnesses, pioneered by Ozone's Submarine, are undeniable. In the World Cup, they are almost all you see.

Fred Pieri from Ozone calculated that with a Submarine on a Zeno, you gain 1.1 points compared to a "sitting position" harness.

Many other manufacturers have entered this market, including smaller ones like Nearbirds with their ATACMS (shown on the right).



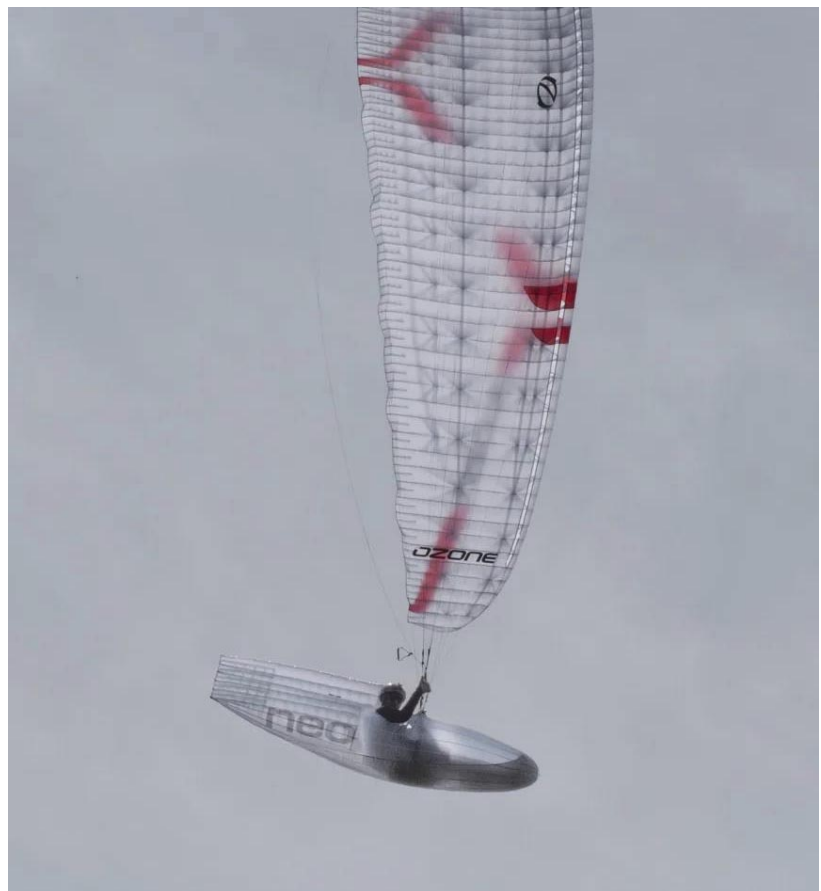
Photo: Stefan Ungemach



It's no surprise that the same types of harnesses are now being offered in ultra-light versions. At the Coupe Icare, they are undoubtedly the focus of attention, such as the Alp by Supair (pictured above) or the Neo Moon Light (right). These harnesses were briefly seen during the 2024 X-Pyr.

This seems to be a technology of the future, even for hike & fly, as well as competitions like the X-Alps.

But...



...but there are certain drawbacks, noticed by many competition pilots, and also by Ferdinand Vogel, meet director of the X-Alps.

It starts with the setup: during take off, certain difficulties are clearly noticeable. For example, these long "tails" pose a risk as the pilot could get their feet caught in them. On a snow-covered take off, like in the X-Alps, this is a real danger.

As a result, in the X-Alps 2025, all harnesses of this type will be banned.

The new rule for 2025: "Harnesses must not exceed a length of 70% of the body length in the front and back combined. e.g. 180cm tall athlete: Maximum of 126 cm length in front of the tip of the feet measured at the foremost position of the foot plate in the direction of flight and after the harness measured at the back bottom neck to the rearmost point of the fairing.

It must be possible to get the feet in and out of the harness from the normal flying position within two seconds and without using the hands."

This last point alone excludes many overly complex pod harnesses.

Some issues with these harnesses when airborne may also lead to regulations in classic competitions.

Example: if a pilot stalls to clear a cravat, they could get tangled in the long fairing during the backfly, further losing visibility of the situation. This was confirmed by, among others, former national coach Estéban Bourroufies.

However, this will likely not deter ambitious hike & fly pilots outside of competition from opting for this type of harness, as they are compatible with hikes (due to reduced weight and volume in newer models).

This topic remains relevant, of course, in our magazine as well...

Photos: PWCA 2024



ADVENTURE AWAITS!

The Yeti 6 is all about discovery. Whether you're a recent pilot just discovering the joys of flight or a more experienced adventurer on a trip to a new playground, the Yeti 6 has you covered.

The Yeti 6 is suitable for all levels of pilot, depending on the chosen wing loading. It is most suited for hike 'n fly and at lower wing loadings, schooling and even thermal flying. At high wing loadings, the Yeti 6 becomes a bundle of dynamic fun.

4 Sizes | 50-110 kg | EN A



Yeti⁶

www.gingliders.com



PROTECTORS: THINGS ARE MOVING

In the protector segment, many innovations have been developed over the past three years...

Unintentional test of a Koroyd protector: after a low-altitude incident with a violent parachutal landing in a Gin Genie X-Lite. The result: a broken wrist, but no bruising on the buttocks or back, likely thanks to the Koroyd elements that deformed as expected, preventing the bones or spinal discs from taking the impact...

Koroyd was one of the first protector systems to break away from the typical "foam" vs. "airbag" divide.

Foam is probably the most universal system. Apart from its large packing volume, it has few drawbacks. Airbags, on the other hand, take up little space but are not always functional in the first minutes after take off, especially if they inflate using relative wind through an opening under the harness.

Manufacturers like Woody Valley have started incorporating Nitinol springs, creating an air volume immediately upon take off. Other systems are inflated by mouth before the harness is set up; we've extensively covered this technique in our reviews of the Grasshopper and Sock, for example.

One disadvantage of airbags is the risk of rebound after the first impact. The pilot can also roll laterally more easily than with foam and thus impact on the side.

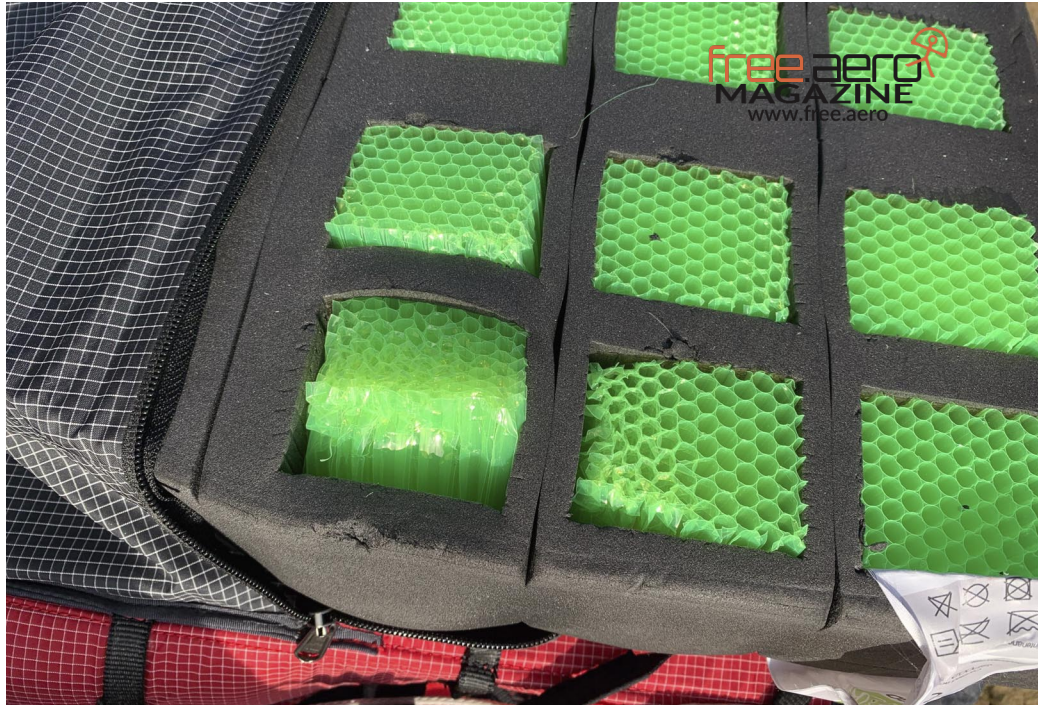
Koroyd, being lightweight and effective even at low thickness, was considered an almost ideal alternative.

At the editorial office, we had a very positive personal experience with this system, though this remains anecdotal evidence of its effectiveness. The Koroyd deformed as expected (see photo top right); we only had to replace the broken elements. This is one of the principles of Koroyd: its tubes "consume" after an impact.

This is also a point of criticism: in case of a double impact, the protection may no longer be sufficient. However, after the controversy, the DHV conducted a test and confirmed its compliance without reservations.

Another point of criticism: Koroyd would transmit a higher initial G-force spike at the beginning of the shock before it starts absorbing.

The system we discovered at the Zillertal trade show, integrated into the Nova Artus harness, resembles the Koroyd system but is made of aluminum alloy! We'll discuss it further soon...



Koroyd damaged: that's the goal.

The Airbag of the Sock (with a faulty element) we have tested.

The spring in the Woody Valley Wani

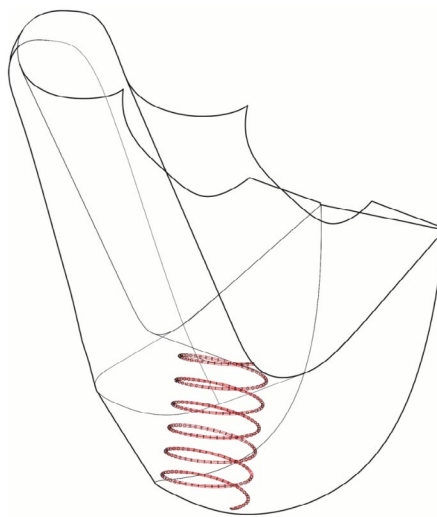
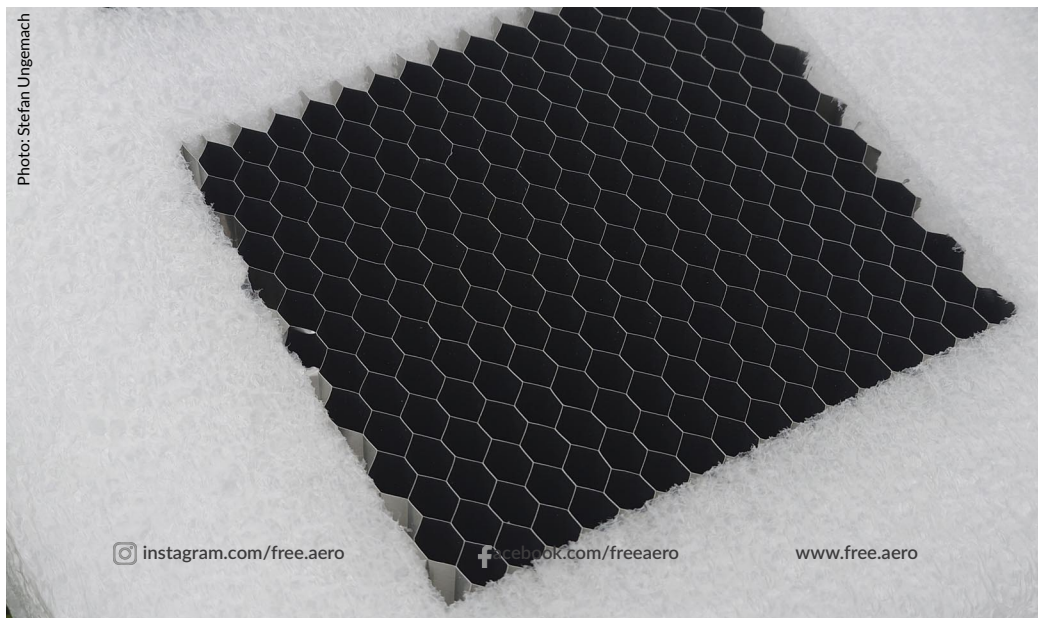


Photo: Stefan Ungemach



ZOOM
PARAGLIDERS



The protector of the Little Cloud Grasshopper is inflated using its bag.



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XA
Beginner
EN A



The Breeze from Skywalk is equipped with Permair inflatable protection. Our review of this very interesting harness will be featured in one of the upcoming issues.



X2C LT
Lightweight XC
2-LINER EN C



The Genie Race, presented at the 2023 Coupe Icare, is equipped with a Koroyd protector.



X2C
Sportclass XC
2-LINER EN C



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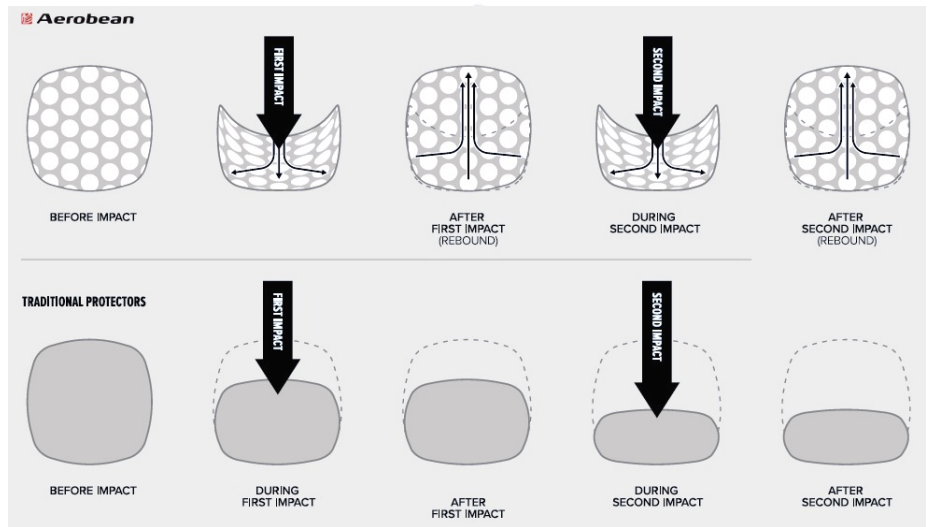
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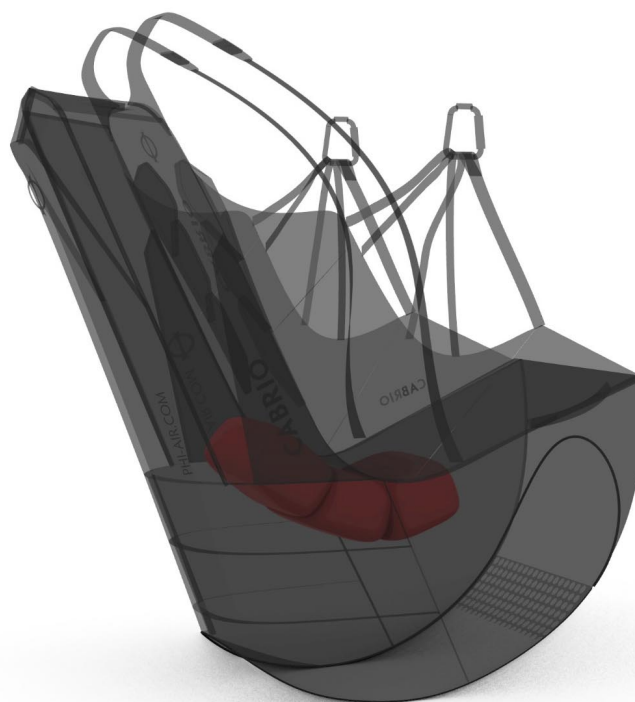
In the meantime, GIN has started producing protectors with "aerobeans": expanded polypropylene balls. These are very light and offer many advantages according to GIN:

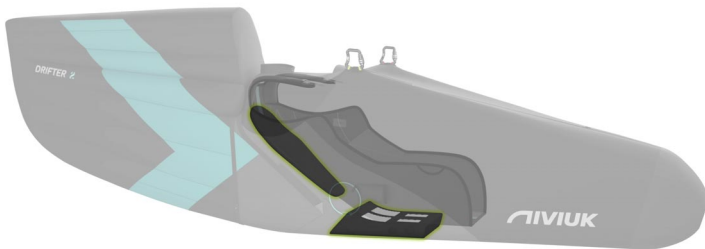
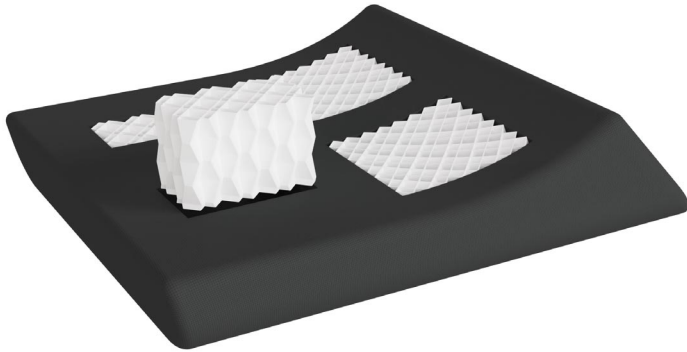
- Low weight, comparable to an airbag
- Robustness of foam
- Better absorption in the event of an impact on a sharp rock, thanks to better force distribution (interaction between the balls)
- In case of a rebound, or double impact, the absorption would be as effective during the second as during the first impact.



In its new range of harnesses presented at the Coupe Icare 2024, Phi by Hannes Papesh and its harness designer Yevhenii Zakharchenko combine a spring airbag with an Aérobean-type protection, placed directly under the seat (red part in the image).

Hannes Papesh from Phi: now also offering harnesses with sophisticated protectors.





At the beginning of 2024, Niviuk responded to the Koroyd system with the Orikami. At first glance, it resembles the Koroyd, but there are significant differences. This system, for now only available on the Drifter, does not need to be replaced after a crash; the elements return to their original position.

This would also reduce the load spike the pilot experiences at the beginning of the impact compared to other systems.

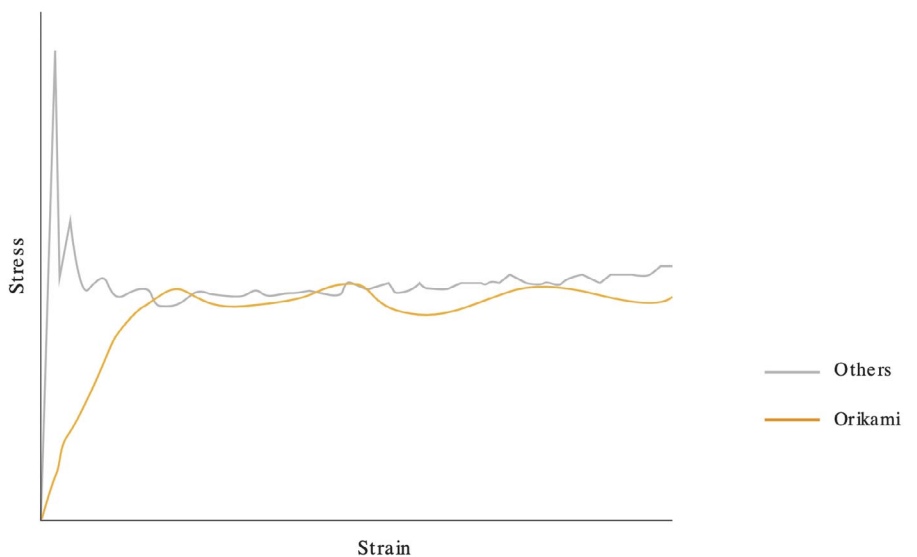




Photo: Independence

Photo: Valentin Burkhardt; Pilote Sascha Burkhardt



Stefan Kurre and Markus Gründhammer presented the U96 harness with inflatable protection in 2023. We are currently testing it (the review will appear in the next issue). It is a very well-designed harness, offering a good balance between semi-tight and comfort.



EN/LTF B

NEW GLIDER

TAKOO 6

Wings for two

The new Takoo 6 dual wing is even easier to use, offering an efficient and enjoyable flying experience. The manoeuvrability and efficiency of the controls have been improved, allowing for smoother, more precise turning than ever before. It is an easy, intuitive and durable glider, making it ideal for endless professional and recreational tandem flying.



Drop

Shaggy

Cinnamon

Cinder

NEW COLOURED LOWER SURFACE!



Sizes

38 / 41 / 44

SHERLOCK & WATSON 2

A professional *partner*

Pilot and passenger united by the same passion: flying. Now it's easier than ever with our new tandem harnesses: the Sherlock for the professional pilot and the Watson 2 for the passenger. Ergonomic and very comfortable, they are the perfect solution for both of you to enjoy a magnificent flight. Elementary, my dear pilot!



Sherlock



Watson 2



PIVIUK



Photo: Niviuk

NIVIUK ARROW P

This harness, designed for cross-country and hike and fly, is one of the lightest pod harnesses on the market, with a claimed weight of only 1.67 kg for size M.

free.aero was able to test one of the first models shortly after its release in 2023.

Design brief: combine practicality, ease of use, and compactness, while maintaining remarkable stability, comfort, and ergonomics.

It is equipped with a foam protector but recently, it has also become available with an inflatable protector (see below).

Our findings, among others: surprising comfort, well-balanced maneuverability, and a sleek, crease-free aesthetic.

On the following pages, we will show you the details...

Well thought out design: the pilot can almost completely "disappear" into the pod. Ideal aerodynamics despite the light-weight construction.

The fairing is quickly inflated, seen here shortly after take off. There is no shoulder adjustment, but interchangeable straps are used.



Photo: Valentin Burkhardt / Pilote Sascha Burkhardt

The Arrow P is equipped with an instrument holder that, unlike the Stay Up 2, for example, is not worn around the neck but integrated into the chest strap. It features a large cockpit and a very accessible pocket, ideal for storing an external battery, for example.

Photo : Sascha Burkhardt



A smooth, crease-free fabric fit...

Photo : Niviuk



The Arrow P has rather large pockets, making it a harness that's very well suited for vol biv.



A comfortable and quite sophisticated harness. One might wonder how this harness can remain so light.





The nose of the pod includes a small storage compartment.



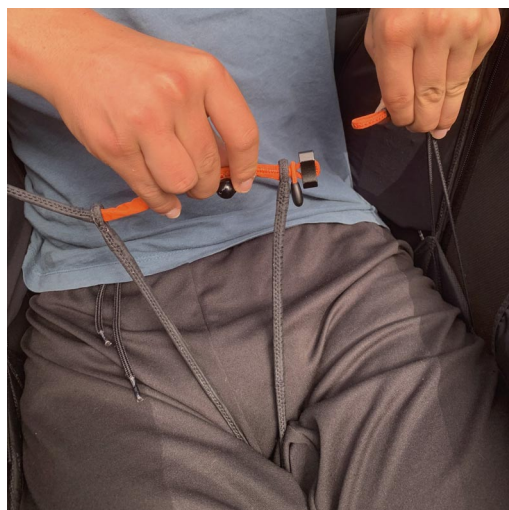
The adjustment system is intuitive and easy to use. The white ball holds a lark's foot knot and serves to lock the adjustment in place.



The frame is sophisticated despite its light weight.



The front closure (Lyros Dyneema 4mm) is adjustable thanks to the black ball in the center.



Only one side opens; the pilot must step through the leg loops. Then, you need to pass the orange strap around the black fastener.



Finally, you need to secure everything by connecting the safety strap around. This is an essential component.

The shoulder straps are quite rigid, which is helpful when the pilot is putting on the harness.



The elastic part of the pod is made from light Lycra fabric, which is very resistant and durable, especially compared to the ultralight harnesses that were released 4 or 5 years ago.

Bottom right: The D70 fabric used for the pod has a very durable appearance while remaining extremely lightweight.

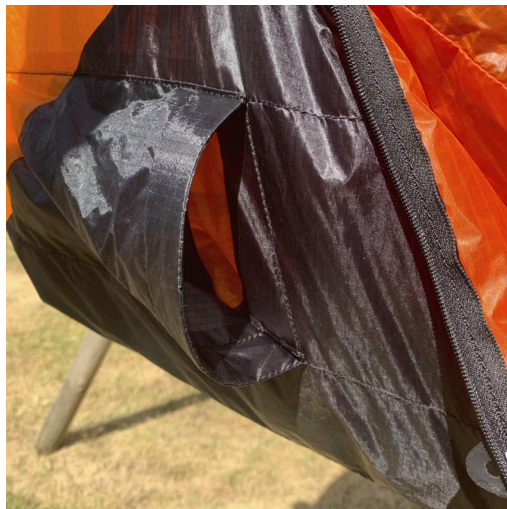




The reserve parachute is secured with a lark's foot knot, and the Y-bridle is attached behind the shoulders.



The location of the reserve parachute. Installation is easy and numbered in sequence.



A semi-rigid air intake. The inflation of the fairing is quite rapid after takeoff.



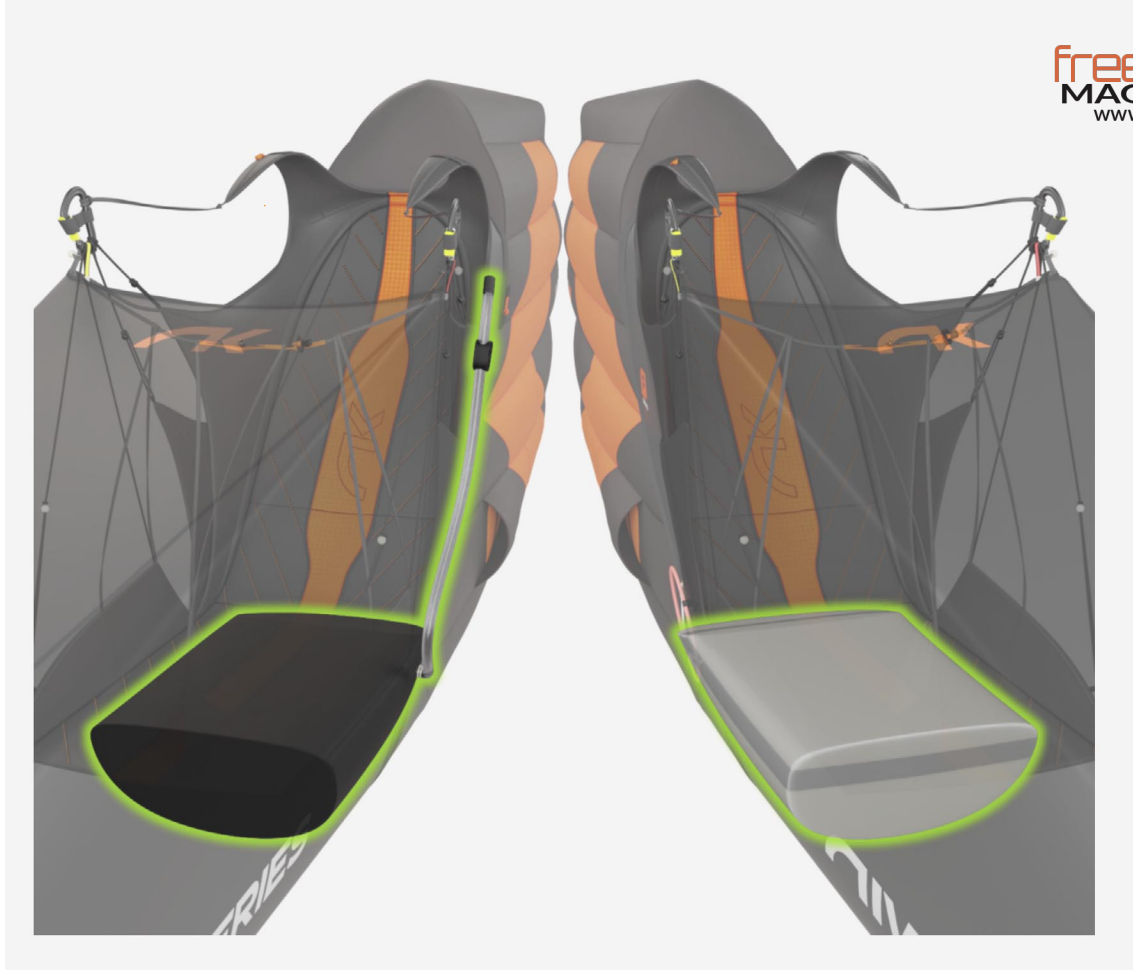
A Velcro strap keeps the reserve parachute deployment handle close to the harness.



Attachment of the riser with a lark's foot knot.



Certified up to 120 daN (approximately 120 kg). Not all lightweight harnesses offer this range.



APAIR PROTECTOR (INFLATABLE) MANUFACTURER'S SPECIFICATIONS	
INFLATED HEIGHT	14 cm
COMPRESSED HEIGHT	1.5 cm
WIDTH	32 cm
LENGTH	44 cm
WEIGHT	240 g
INTERNAL MATERIALS	Plastic
EXTERNAL MATERIALS	D70

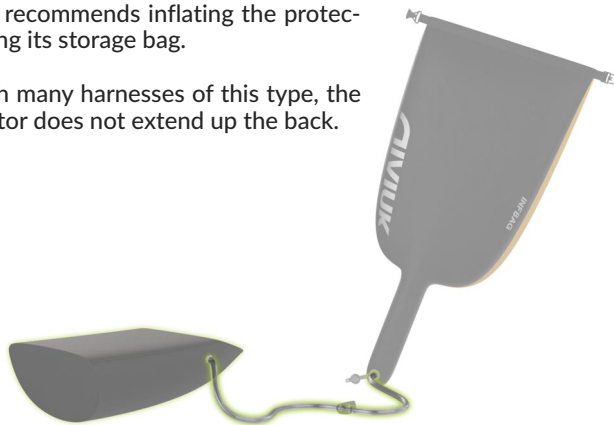
PROTECTOR (FOAM) MANUFACTURER'S SPECIFICATIONS	
INFLATED HEIGHT	14 cm
COMPRESSED HEIGHT	10 cm
WIDTH	32 cm
LENGTH	44 cm
WEIGHT	320 g
INTERNAL MATERIALS	Combination of foams
EXTERNAL MATERIALS	Dokdo 32g

Initially, during our test, the Arrow P was designed with a 14 cm thick foam protector weighing 320 g.

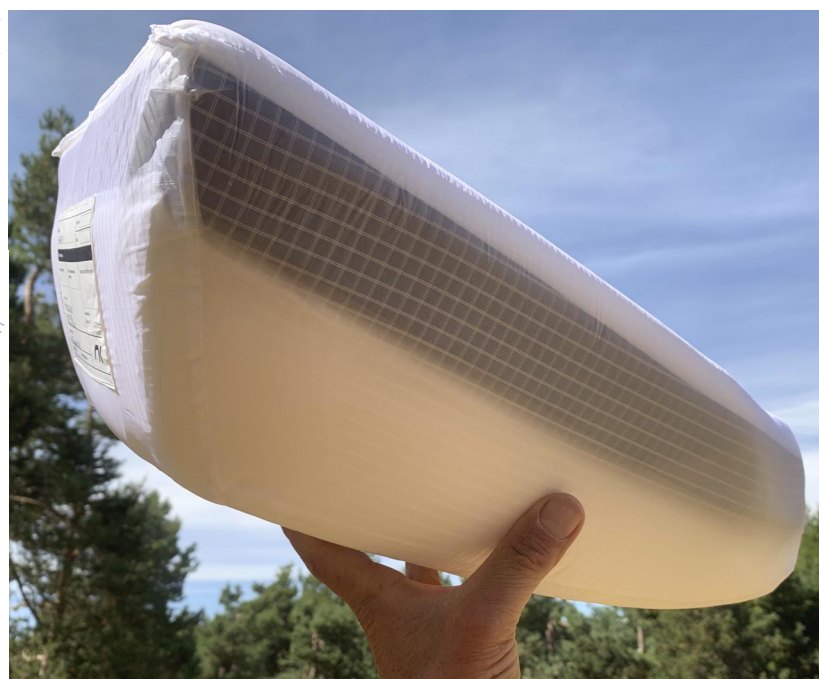
Now, it is possible to order an Apair inflatable protector weighing 240 g, which is a lighter and more compact alternative while maintaining safety.

Niviuk recommends inflating the protector using its storage bag.

As with many harnesses of this type, the protector does not extend up the back.



The protector fitted on our test harness.



In summary, this harness is a great success. Despite its light weight, it provides excellent comfort and maneuverability, offering both stability and responsiveness. This makes it accessible to a wide range of pilots seeking a hike and fly harness. 🧘



Meticulous craftsmanship down to the smallest detail.



Vulnerable areas have been reinforced, such as the speed-bar eyelet. Despite its light weight, the harness is equipped with a zip to remove the pod if needed.



Photo : Valentin Burkhardt / Pilote Sascha Burkhardt

Unlike some other harnesses of this type, the pilot retains full head movement during ground handling.



The pod is expandable, so it doesn't drag on the ground during take off. However, it is still relatively easy to get into.



ARROW P MANUFACTURER'S SPECIFICATIONS			
MANUFACTURER : NIVIUK			
Web : https://niviuk.com/en/arrow-p			
RELEASE YEAR	2023	2023	2023
SIZE	S	M	L
PILOT SIZE (CM)	160-172	170-182	178-195
MAXIMUM LOAD	120	120	120
PROTECTOR CERTIFICATION	EN/LTF	EN/LTF	EN/LTF
WEIGHT (INFLATABLE PROTECTOR)	1.61	1.63	1.78
WEIGHT (FOAM PROTECTOR)	1.69	1.71	1.87



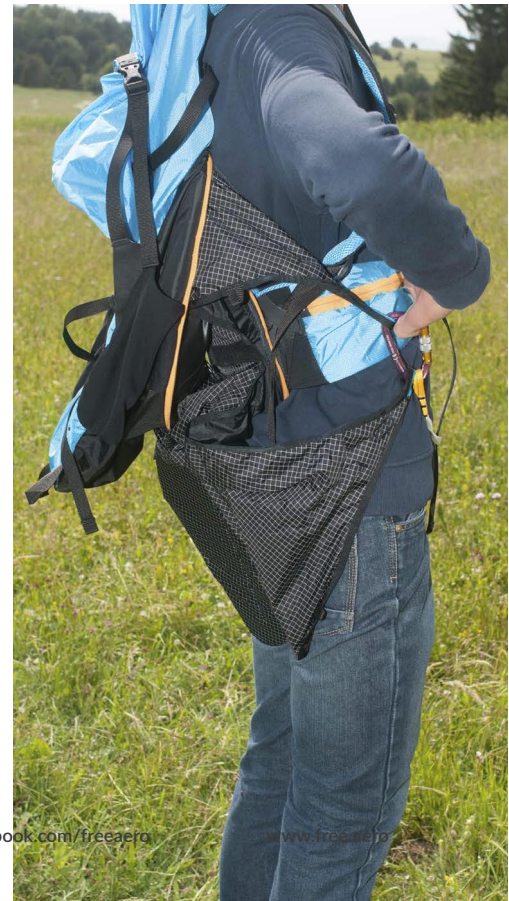
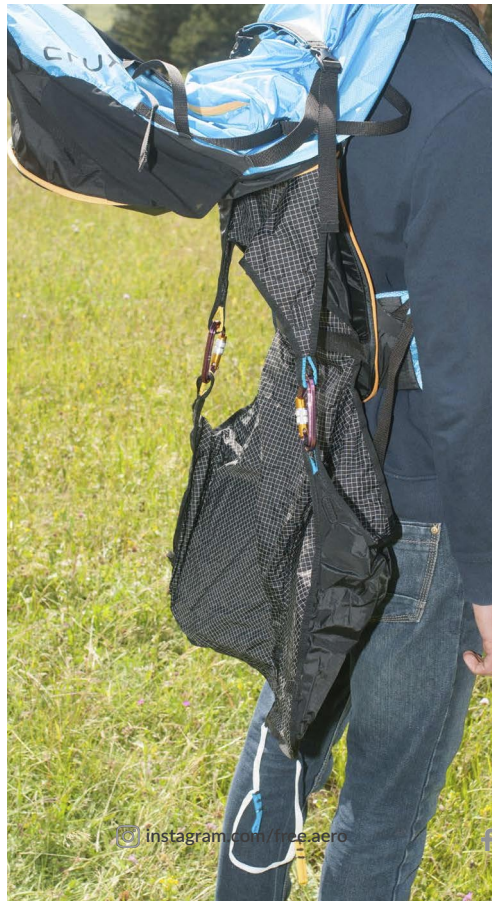
World of XC paragliding



REVERSIBLE - YES BUT NO

The Crux from Sky Country, tested in Free Aero in 2017, was already a "reversible" harness where the carrying straps are the same as the harness straps. Since then, other manufacturers have adopted similar systems...

The Crux, tested 7 years ago, remains our favorite harness of this type: extremely simple, light, and compact. However, the in-flight comfort is obviously that of a very light string harness. Another downside: there is an optional airbag, but it must be detached before packing.



Simple and light: the Crux in our 2017 test. With a few simple steps, it switches from a backpack to a harness. It's even possible to do so while keeping it on your back.

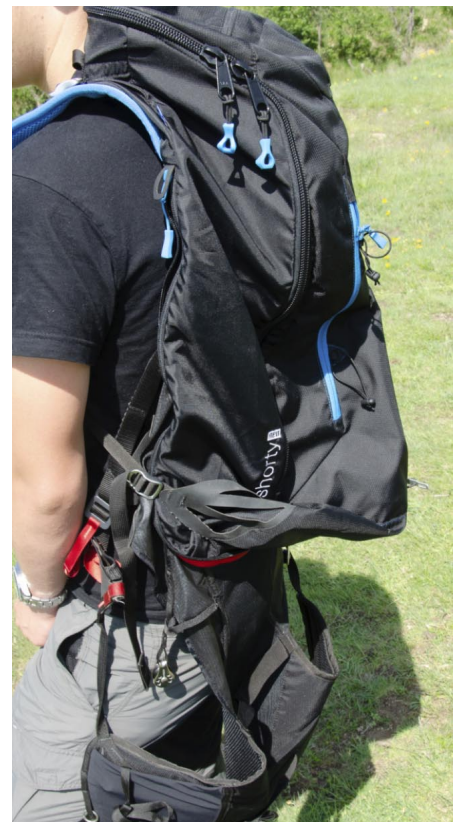


There was also the Scorpio Alpage, as well as the Shorty from Neo, though more complex at first glance. We have tested all of these products.

At Coupe Icare 2024, Neo will present its String Pack 2.0.

The 2017 Crux

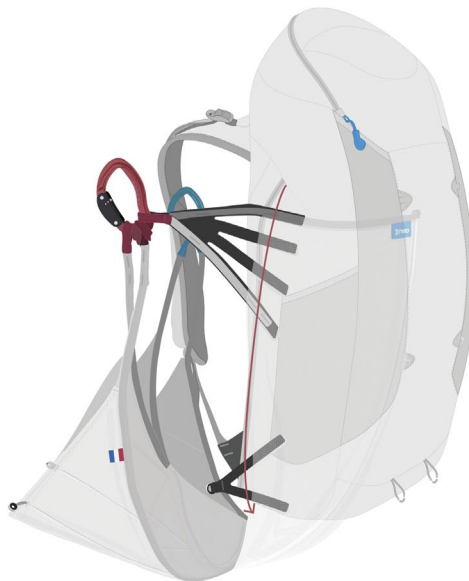
The Shorty from Neo





The new String Pack 2.0 from Neo, based on the String 3 and the undeniable experience of the manufacturer (the first String Pack was released 10 years ago...), also allows the thigh loops to be stored on the back without reversing the harness. More details in the next issue.

Brand new at Coupe Icare 2024, the Neo String Pack 2.0 can optionally be equipped with inflatable Permair protection from Skywalk.



EN/LTF C

ARTIK 7 P

Sporting *performance*



From 3.07 kg

The Artik 7 P is an enjoyable and ultra-light sports class glider designed for long distance flights, which impresses with its high performance. This hybrid 3/2-liner with a moderate aspect ratio of 6.2, is totally stable, with a passive safety that will surprise you. Thanks to its versatility, you can take off or land anywhere on a mountain. It's the perfect combination of performance and accessibility to satisfy your hike & fly ambitions.

Sizes

20 / 22 / 23 / 24 / 26 / 28



Neon



Earth



Mint



ARROW P

Beyond *your limits*

From 1.61 kg

Sizes

S / M / L

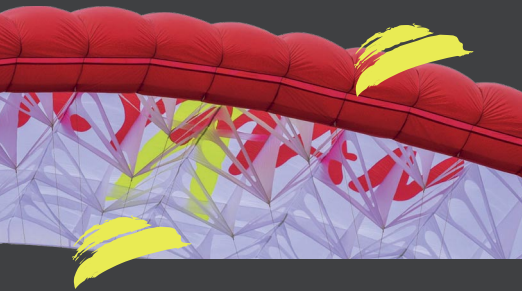


The lightest pod harness in its class, with fairing and aerodynamics, designed to obtain the best performance. Practical, easy to use and compact: carry it comfortably on all your adventures. Optimised in every aspect, the Arrow P is very stable and offers exceptional comfort and ergonomics for its weight. The Arrow P joins the new generation of Niviuk harnesses, with the aim of satisfying the needs of all those pilots who want to fly further.





LIVE YOUR
ADVENTURE



THE SIR EDMUND SHARK IS SKYMAN'S MOST POWERFUL SINGLE SKIN

hybrid single skin with 20% double surface



SIR EDMUND SHARK

most powerful single skin for

Hike & Fly

thermalling

short cross-country flights

www.skyman.aero

ADVANCE BOUNDLESS

In 2023, Advance introduced a truly reversible harness/backpack, featuring a different storage approach...

In the line of the Sky Paragliders Crux or the Neo Shorty, the Advance Boundless stands out with a seatboard, which offers some pilot comfort. The innovation compared to others: a compartment under the seat rather than on the back for stowing the bag in flight mode.

There is also a parachute compartment with a side handle. These features come at the cost of nearly 2.5 kilos more compared to the Neo Shorty (1.55 kg), the Sky Paragliders Crux (1.25 kg), or the new Neo String Pack 2.0 (announced at 870 g - size M without carabiners or back protection), as the Boundless weighs 3.8 kg in size M.

Obviously, these harnesses are not in the same category.



BEAT 2 light

Comfort B



Video: packing of the Advance Boundless

We haven't yet had the chance to test the Boundless, but the video released by Advance shows a simple system with a storage compartment under the seat where the bag easily folds. Despite the moussebag, it would offer a volume of 78/83/90 liters depending on size S/M/L, which is interesting.



PERFECT HIKE&FLY SET



Hike&Cruise (from 2.37 kg - 19, 22, 25 m²)

Techno 2023 (from 1.95 kg - S, M, L, XL)

DuraLight 2023 (from 0.45 kg - litres: 65, 75, 85)



www.dudek.eu



GIN GENIE X-LITE

Protection Koroyd

The Gin Genie X-Lite has been on the market for less than two years. It is a fairly lightweight harness (2.99 kg, 3.08 kg, 3.21 kg, 3.48 kg depending on size), compact when packed, but very comfortable.

We were able to test an early version at the beginning of 2023. Since our already very positive test, it has undergone several improvements: easier adjustments, including for the lumbar area, a pee tube exit, ABS, and optimized geometry (better roll stability, better directional stability).

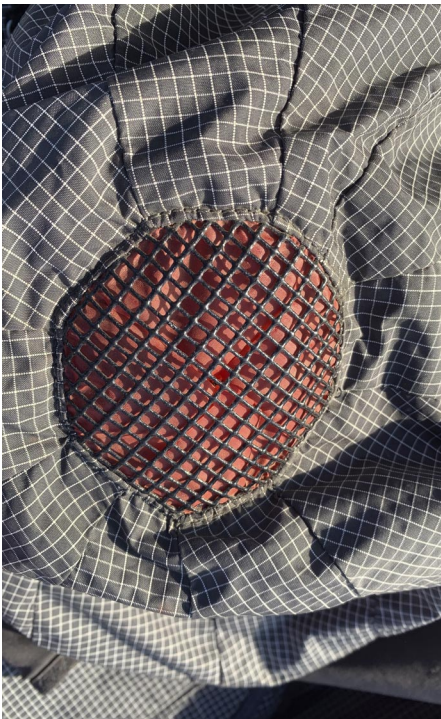
The X-Lite is equipped with a Koroyd protector: the large block under the seat also acts as a seat board and contributes to the comfort and geometry of the harness.

During our tests, we were able to unintentionally verify the effectiveness of this protection...





The materials and craftsmanship of the Genie X-Lite are quite sophisticated and seem durable. The seat is pleasantly deep, compared to a Supair Delight 4 (on the right), for example.





Good maintenance of the aerodynamic shape, and the tail remains well filled thanks to the air intake, which is sufficiently rigid.





A new tandem wing: the Fuse Mini is equipped with the WLE system at the leading edge. Based on the Fuse 4, it has a slight reduction in span in addition to a rippled leading edge. It should be very easy to handle during windy take offs, with very good turbulence damping. It allows light pilots to fly with light adult passengers or children.

GIN

Lots of new developments at GIN. Among other things, the WLE system at the leading edge is now available even on a tandem, and the range of harnesses is expanding, especially with a very light pod.

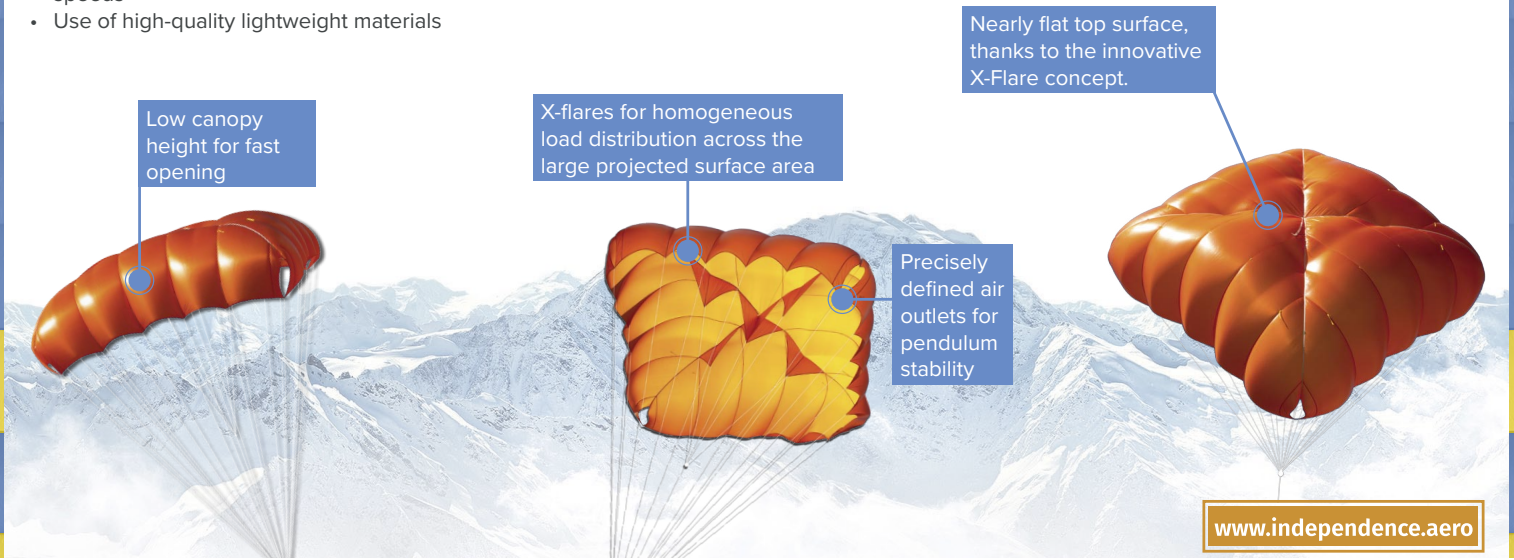
The new Safari 3 tandem harnesses for pilot and passenger offer interesting improvements: in addition to increased comfort for both, the passenger harness benefits from an interchangeable protector. This allows the passenger to land on their buttocks, a practice becoming increasingly common among professionals to protect the legs of less skillful passengers. We will cover this technique in an upcoming issue. The pilot harness is equipped with an Aerobeans protector.



Quick facts about the NG series:

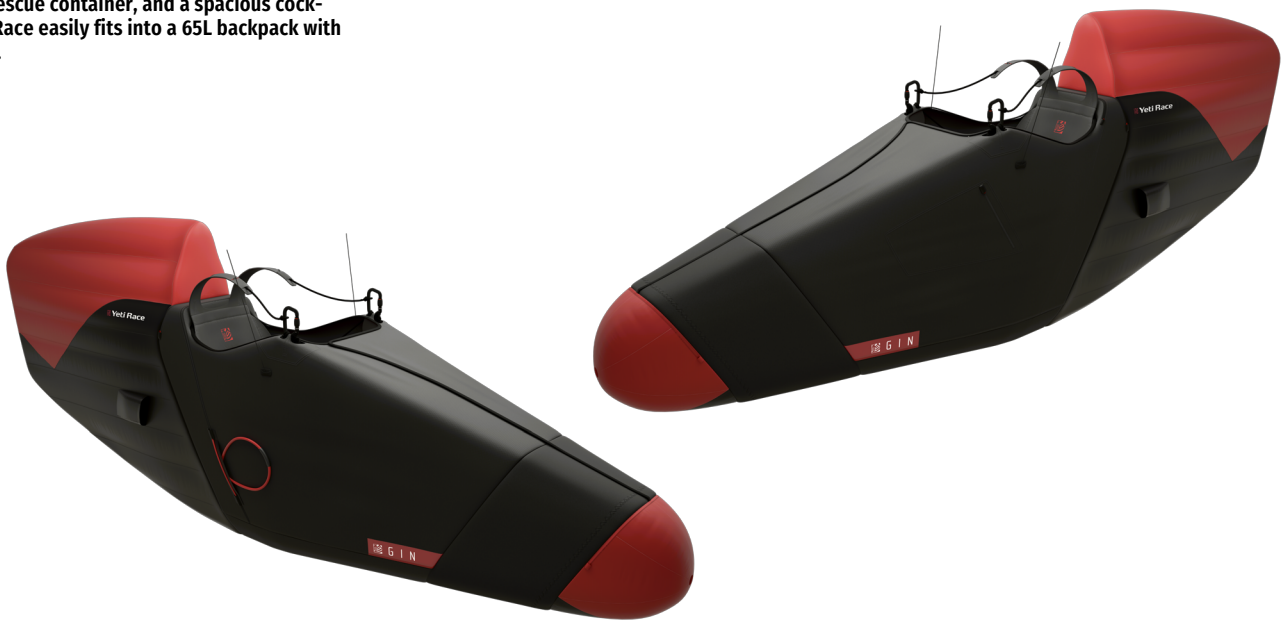
- Available in 3 sizes, in both the NG and the NG Light version. Certified according to EN12491
- New, innovative X-Flare concept for high efficiency
- Excellent sink rates, each just over 5 m/s, equivalent to a jump from a height of about 1.3 m
- Very reliable opening and extremely good pendulum stability
- Intelligent, lightweight construction for fast openings, even at low speeds
- Use of high-quality lightweight materials

	Max load (kg)	Surface (m ²)	NG weight (kg)	NG light weight (kg)
NG 100 Series	100	25	1.45	1.18
NG 120 Series	120	29	1.6	1.3
NG 140 Series	140	33	1.85	1.49



www.independence.aero

100% on trend: the new Yeti Race presents itself as an ultra-light pod harness (announced weight: 1.8 kg for size M), aerodynamic, practical, and extremely compact. Equipped with an inflatable protector, an under-seat rescue container, and a spacious cockpit, the Yeti Race easily fits into a 65L backpack with a light glider.



#TECHNO2024

Already introduced in the spring, the Yeti 6 should be suitable for all levels of piloting. Suitable for hike & fly, from initial training to the first thermal flights. At high wing loading, the Yeti 6 becomes playfully and offers a dynamic flying experience.



#TECHNO2024

The GTO 3 is aimed at cross-country pilots looking for maximum performance in the two-line EN C class while maintaining "a coherent and well-coordinated feeling in flight".



EN/LTF B

NEW GLIDER

TAKOO 6

Wings for two

The new Takoo 6 dual wing is even easier to use, offering an efficient and enjoyable flying experience. The manoeuvrability and efficiency of the controls have been improved, allowing for smoother, more precise turning than ever before. It is an easy, intuitive and durable glider, making it ideal for endless professional and recreational tandem flying.



Drop



Shaggy



Cinnamon



Cinder

NEW COLOURED LOWER SURFACE!



Sizes

38 / 41 / 44

SHERLOCK & WATSON 2

A professional partner

Pilot and passenger united by the same passion: flying. Now it's easier than ever with our new tandem harnesses: the Sherlock for the professional pilot and the Watson 2 for the passenger. Ergonomic and very comfortable, they are the perfect solution for both of you to enjoy a magnificent flight. Elementary, my dear pilot!



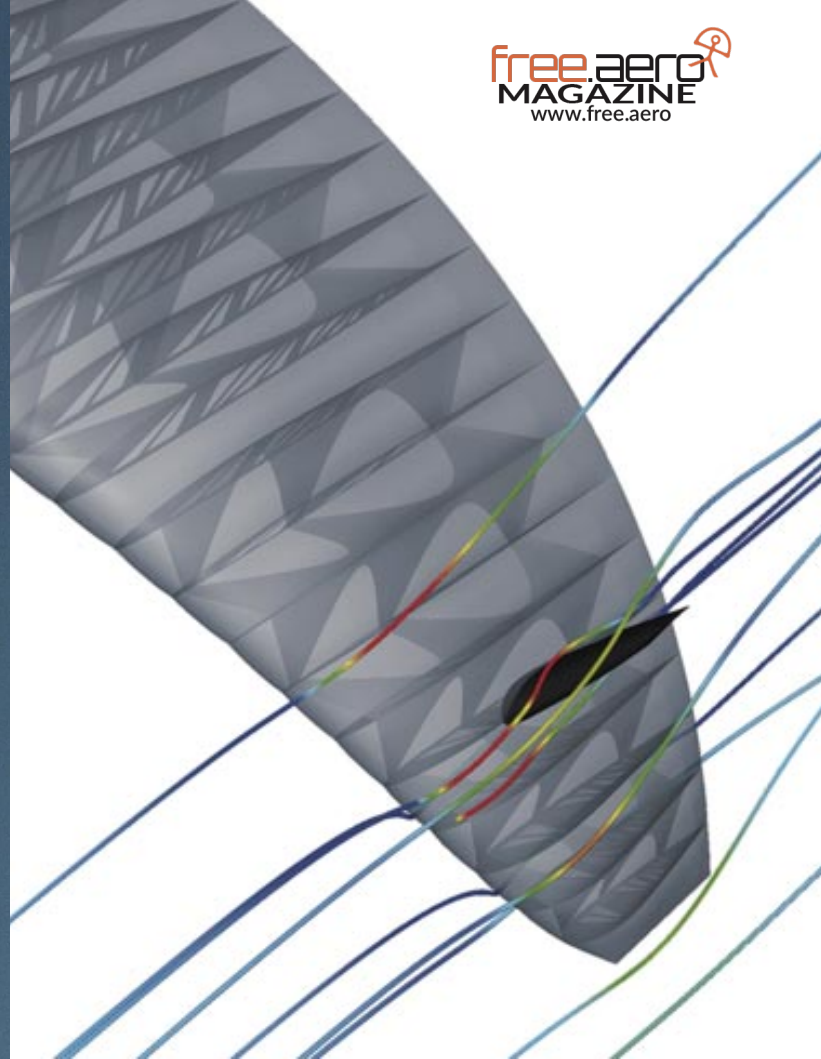
Sherlock



Watson 2



PIVIUK



The winglets, small fins located on the upper surface of the paraglider wings, first appeared with the early days of Advance. These structures inflate simultaneously with the paraglider, and their primary presumed advantage at Advance is performance improvement. Like on an airplane, these winglets are believed to reduce induced drag by minimising vortices at the wing tips, thus optimising aerodynamic efficiency.

WINGLETS

In high-speed aviation, it is widely recognised that winglets offer undeniable benefits in terms of drag reduction.





More recently, Ozone reintroduced winglets, for example on the Photon, but with a different approach. At Ozone, the goal is to allow for a greater wing arc (HiArc) without increasing roll or encouraging an unintended tendency to stay in 360° spirals. Reducing roll is also an important factor for flight comfort, which partly explains the presence of winglets on the new Magnum 4 tandem.

Another interesting point is the position of the winglets on the wing. Unlike the traditional placement at the wing tips, they are positioned closer to the center. According to David Dagault, member of Ozone's R&D team, it would even be possible to add just one large fin on top of the wing for even greater optimisation. However, this choice would not be very aesthetic.

In 2024, other manufacturers are following this trend, such as Air Design with the new Rise 5, presented at the Coupe Icare 2024.





Photo : V. Burkhardt/Pilot Sascha Burkhardt

Photo : Véronique Burkhardt/ Pilote Sascha Burkhardt



Twenty years ago, the Bionic, designed by Olivier Caldara, featured unusual elements to reduce induced drag: the wing tips were curved upwards. As a result, the center of the wing had to be lowered to stabilize the arc and yaw axis.

During a test conducted by Sascha Burkhardt in 2004, the Bionic was found to be original but had a puzzling turn behavior around the yaw axis. Additionally, the tension forces in the arc didn't seem sufficient to provide good cohesion or deliver performance superior to "normal" wings. The Bionic did not achieve the expected success.

The Magnum 4, which we have on test, here lent to Didier Exiga. More on his valuable opinion, as well as ours, in an upcoming issue!

Photo :Sascha Burkhardt/Pilot Didier Exiga/Vol'aim





Photo + pilot: Sascha Burkhardt

The winglets on the Magnum 4 stabilise roll for added comfort but do not hinder playful handling in any way.

The use of winglets is not standard at Ozone, as the Swift Six (right) has not been equipped with them.



Photo: Sascha Burkhardt/Pilot Arthur Burkhardt

NIVIUK TAKOO 6



Talking of tandem wings, here's some surprising news: at the Coupe Icare 2024, Niviuk is already replacing the Takoo 5, despite its undeniable success. More on this in the next issue.

HELP
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Mountain&Flight

Ethic and awesome

Reversible Jackets,
Lady, Hybrid, Thermik Light,
Yéti, Nosleeve, Everest.

- Paragliding
- Down Jackets
- Fill Power 700 cuin
- Flight Muffles

BECOME
A DEALER

OZONE ALTA

Ozone say new ALTA offers exceptional passive safety for an EN A wing, a relatively light weight (3.74kg in size S), and performance that "rivals current EN B wings". It features winglets, which we have also seen on the Photon and recently on the Lyght from the same brand, aimed at improving roll stability.



Photo : Chris Tong Viet

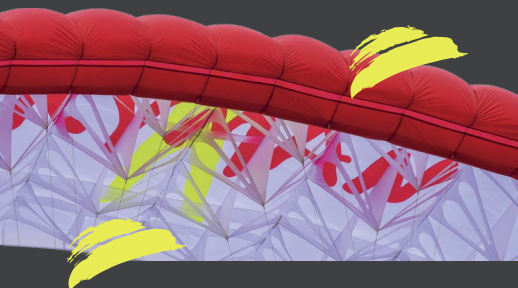
OZONE LYGHT

A direct descendant of the Enzo, Zeolite, and Zeolite GT, the Lyght is designed to be sporty yet lightweight. It's a true 2-liner with high performance, 800 g lighter than the Photon (3.95 kg in size MS). The winglets from the Photon are also present on the Lyght and have been implemented on the Alta as well. As a light and high-performing EN C, will it be the replacement for the Alpina 4?

Photo : Olivier Laugero



LIVE YOUR
ADVENTURE



THE SIR EDMUND SHARK IS SKYMAN'S MOST POWERFUL SINGLE SKIN

hybrid single skin with 20% double surface



SIR EDMUND SHARK

most powerful single skin for

Hike & Fly

thermalling

short cross-country flights

www.skyman.aero

ADVANCE SIGMA DLS

With a spec similar to the Lyght, it is, however, slightly heavier (4.10 kg in size 24). One familiar feature is the wingtips, which reduce drag, though they don't serve the same function as with Ozone, where they are used for roll stability.



Photo : site d'Advance



Photo/Pilot: Arthur Burkhardt

AIRG DENT DE LION -HIKE&FLY FREESTYLE&ACRO

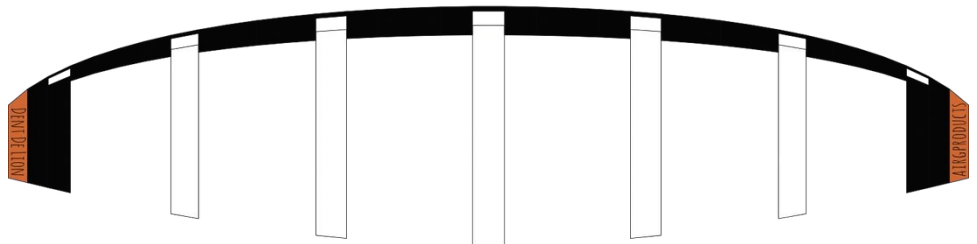
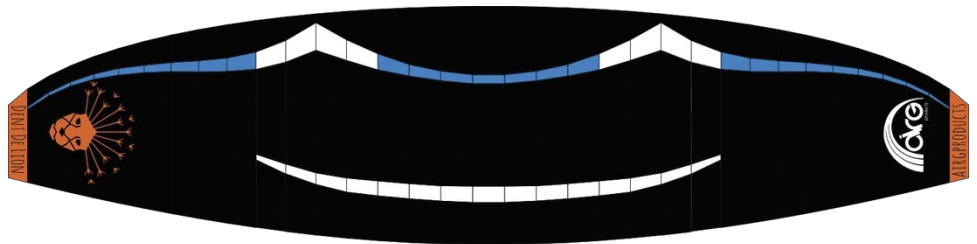
The concept: a robust single-surface for freestyle or acro, also capable of accompanying the pilot on hike & fly adventures.

A very versatile toy then. It was developed by Simon Klemenc and Johannes Glatz, who took over AirG in 2017 from its founder, Richard Gallon.

The result is a 17 m² single-surface wing, weighing 2 kg, with Skytex32 used across the entire upper surface and ribs.

A single-surface wing is not as fast as a double-surface wing, but the small 17 m² area and the presence of (short) trimmers compensate for this lack of speed.

Admittedly, using a single-surface for freestyle, or even acro, might seem surprising, but it clearly works perfectly. In Organya, where much of the development took place, Dent de Lions are regularly seen performing Misty Flips, helicopters,



The new color design "Black 2024"

SATs, and other maneuvers. Some pilots even enjoy taking off in backfly. When you see acro specialists playing with it, you really get the impression that this is a universal toy.

And relatively safe: the wing has no certification other than load testing, but its behavior seems quite stable, in line with the characteristics of single-surface wings. It's worth remembering that single-surface wings can be a bit more reactive above your head, as they move slightly with even the smallest turbulence, but this movement remains limited thanks to their low inertia.

This is not just due to the reduced weight of the single-surface, but also because there is little to no trapped air inside cells. While the air inside a conventional wing doesn't "weigh" anything in normal flight, it does contribute to the wing's dynamic movements. This is why a single-surface wing rarely shoots forward dramatically, as there's little mass in motion. As a result, the wing exhibits a generally dampened behavior (with some exceptions).

The Dent de Lion seems to bring this single-surface spirit into a wing perfectly suited for ground play, waggas, and apparently acro too, despite the lack of inertia for some maneuvers. It is also possible, to some extent, to catch thermals.

We will be testing this wing in more detail and will report back here...

Simon Klemenc from AirG. At Saint-Hilaire, the company will exhibit in the outdoor area.

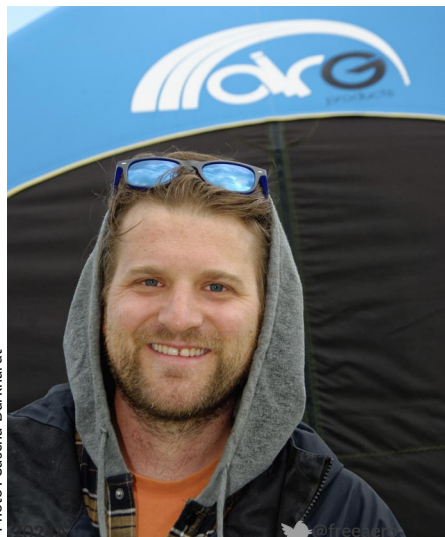


Photo : Sascha Burkhardt



Photos : AirG



SKYMAN SIR EDMUND SHARK

Markus Gründhammer and Skyman have always been pioneers in the single-surface sector. The Sir Edmund is now in its third generation, and it has a younger sibling: the Sir Edmund Shark.

The notable difference: the Shark is equipped with a cross cell in the leading edge, which is fed by a very pronounced Shark Nose opening, hence the name. This technology is clearly visible in the image on the right.

The stabilo is also filled by the leading edge and is quite voluminous. The purpose of this construction is to create strong lateral force to better tension the wing along the span. This is particularly necessary due to the aspect ratio of 5.7, which is significantly higher than that of the Sir Edmund 3 (5.24).

The more complex construction slightly increases the weight of the Shark (1.9 kg - 2.5 kg depending on the size), but the low volume and ease of packing remain impressive.

Comparison:
Sir Edmund Shark,
Sir Edmund 3

Photo: Sascha Burkhardt/Pilote: Arthur Burkhardt





Markus Gründhammer, founder of Skyman and single-surface specialist, flying the Shark 20.

The Shark defines itself as a single-surface wing that is very close to a double-surface, perfectly suited for hike & fly, and also capable of thermal flying and small cross-country flights.

Indeed, the launch is typical of a good single-surface wing: it practically rises by itself, with or without using the A-lines. In strong wind, its eagerness to climb and fly might even take you by surprise. The lift is good.

In the air, in the size 17 that we tested, it is, like all single surface wings, a bit lively, but also very efficient. It's a single-surface wing that is indeed very close to a double-surface glider, with a slight difference in speed and glide.

It allows you to core thermals very effectively. It's amazing what it can offer. For mixed hike & fly and small cross-country use, it's a great compromise. Moreover, it is quite reassuring with its EN B certification.

During landing, the brakes also act on the rear lines after a certain point, which efficiently facilitates flare, a critical point for single-surface wings.

We will continue our testing and refine our impressions, which are very positive so far...



Practical details: Hooks to hold the leading edge in place on a steep slope, and fasteners for the risers during packing.





THE SWING SERAC RS

Swing's lightweight EN B tolerates low speeds well during take-off landings, thanks in particular to RAST technology.

For years now, an interesting technology has been spreading across models from various brands, particularly at Swing, where it was invented. Swing's Serac RS is an accessible, lightweight EN B wing that benefits from the advantages of RAST technology. It offers pleasant and intuitive handling both in the air and during takeoff. During takeoff, you'll notice the typical, steady inflation, with a slight initial delay inherent to the RAST system, making it easier and more predictable. This inflation behavior can even be useful in tailwind conditions, as it avoids the typical "shoot." Good responsiveness and the ability to turn flat allow for simple and precise thermal flying, with a firmer feel compared to earlier models equipped with RAST. During transitions, it's noticeable that the C-risers are quite high, requiring extra effort to control, which can lead to fatigue after a few minutes—a drawback in these times of rear-riser control.



On take-off, the lines don't seem to have any tendency to get tangled, and the control input at the rear works better than in the air.



Photo: Sascha Burkhardt

The rushes are exposed on this type of sail, so you have to be careful not to drag it too much.



Photo: Sascha Burkhardt



Photo: Sascha Burkhardt

One of the great advantages of the Serac is its use of the RAST technology developed by Swing. This partition helps to maintain control during collapses or even delay stalls. We talked about it in more detail in the Icare 2018 issue of Voler.info. On the Serac as well, this technology provides a sense of security: a forgiving mid-EN B wing suitable for a wide range of pilots. Despite the technology and the more complex construction compared to a conventional wing, it remains relatively lightweight at 3.6 kg in size...

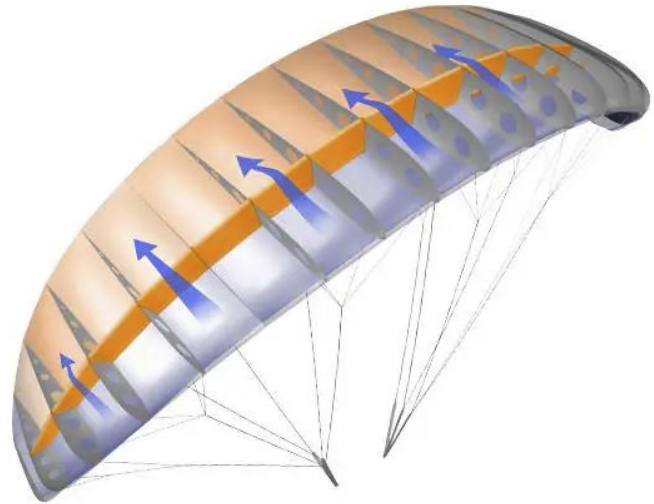


Diagram of RAST technology borrowed from the SWING website. <https://www.swing.de/rast/?lang=en>



SWING SERAC
Web : <https://www.swing.de/produkte/serac-rs/?lang=en>

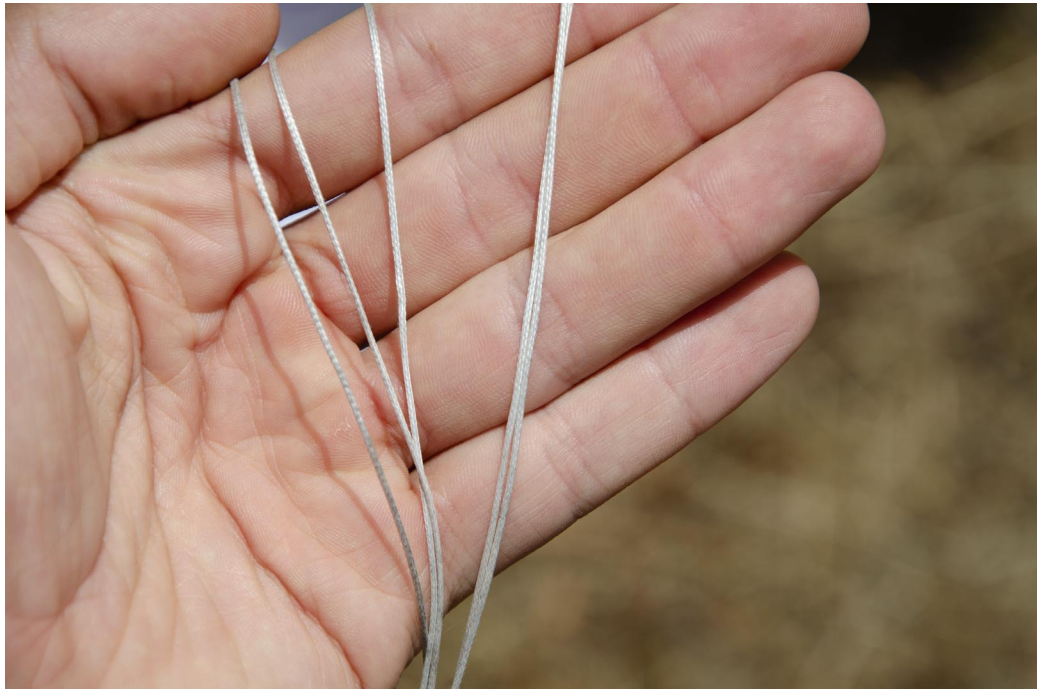
	2022	2022	2022	2022	2022
DATE	2022	2022	2022	2022	2022
SIZE	XS	S	SM	ML	L
CELLS	42	42	42	42	42
FLAT SURFACE AREA [M²]	20,1	22,3	24,6	27	29
FLAT WINGSPAN [M]	10,3	10,8	11,4	11,9	12,4
FLAT ASPECT RATIO	5,3	5,3	5,3	5,3	5,3
ALL UP WEIGHT [KG]	60-72	70-85	75-95	85-105	95-115
FREE FLIGHT CERTIFICATION	B	B	B	A	A
WEIGHT OF THE WING [KG]	3,0	3,3	3,6	3,8	4,0
WEIGHT RANGE EXTENDED	65-90	70-90	75-100	85-110	95-119

Photo : Sascha Burkhardt
Pilote : Arthur Burkhardt

All lines are coated
at the base.



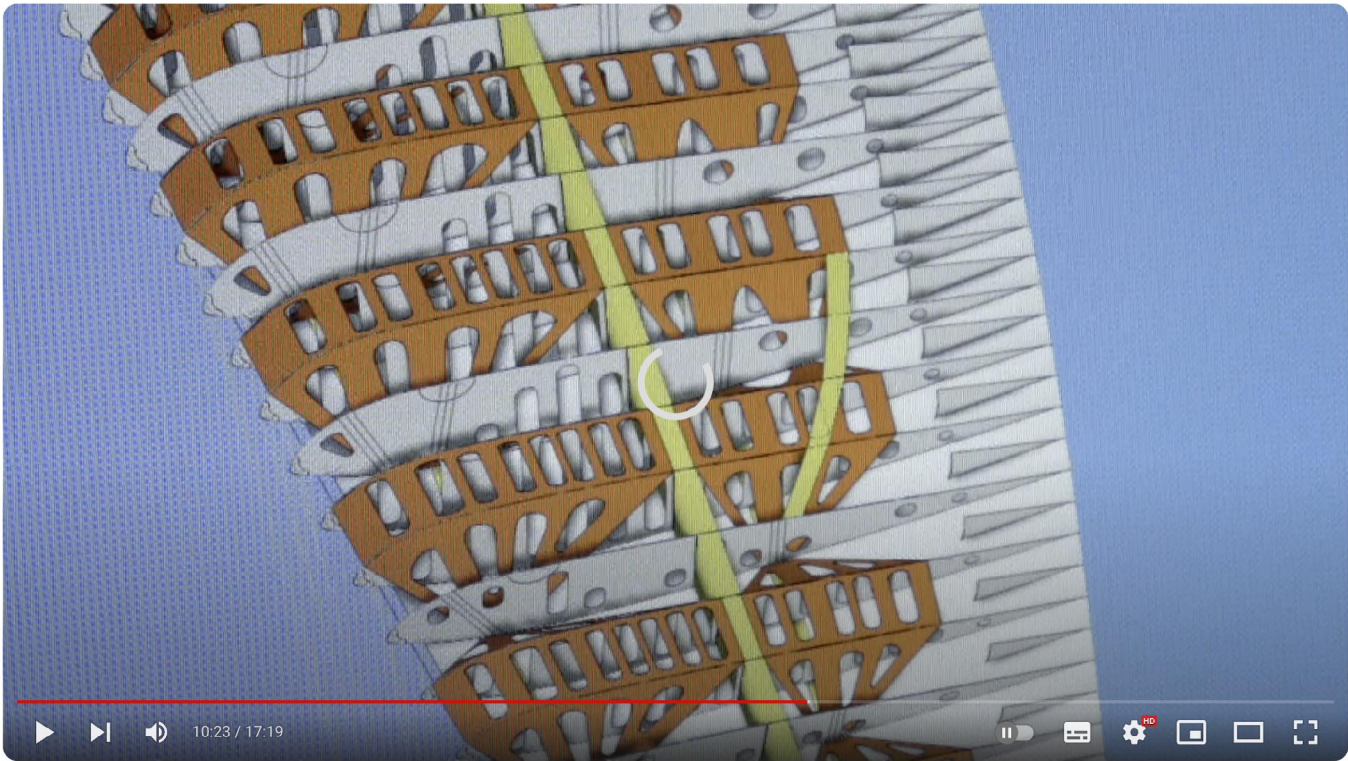
Only the brake
halyard branches
are not.



The fabric feels
hard-wearing and
avoids the "p-bag"
effect.



THE RAST STORY



Swing presents the story of their RAST technology through several testimonials.

The system allows for impressive climb maneuvers.

Photo: Miriam Joanna



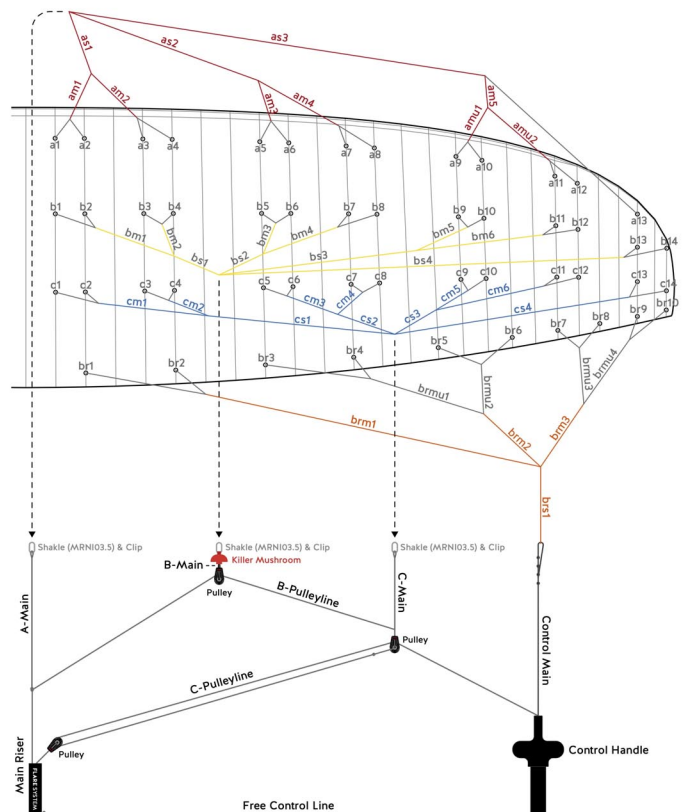
KITE RISERS - CONTROLLING THE ANGLE OF ATTACK

For over two years, Kite Risers technology—risers that allow for direct adjustment of the wing's trim, similar to kitesurfing sails—has been disrupting the soaring wing market. This revolutionary change was initiated by Flare with the launch of the Moustache, the first production wing equipped with this type of riser system.

Flare is part of the same group as kitesurf manufacturer Flysurfer and paragliding brand Skywalk. In fact, it was the synergy between these sports that led to the development of the first Moustache model.

Armin Harich, an accomplished paraglider pilot and head of Flysurfer, applied the typical kite control technique—where the trim is adjusted evenly—to paragliders like the Moustache. This wing allows for a significant variation in the angle of attack, and with its pronounced reflex profile (similar to paramotors), it offers great stability against collapses. These profiles are also known as "auto-stable." The more the angle of attack decreases (shooting forward), the more the profile resists and tries to stabilise itself.

The line plan of a Moustache wing from Flare: in the upper part of the control range, the pilot only adjusts the angle of attack. The trailing edge brakes come into play only at the very bottom of the control range.



A Moustache glides along the coastline. The control system that adjusts the angle of attack is clearly visible.

Photo : Bertrand Cousinié



The climb maneuvers offer a completely new way to play.

Photo : Miriam Joanna



One might think that Jean-Baptiste Chandelier was involved in this development. However, that's not the case; he took possession of the ready-made toys upon joining Skywalk.

Photo : Miriam Joanna



Why a parafoil wing with reflex is more stable in pitch

#TECHNO2024

A standard aircraft configuration

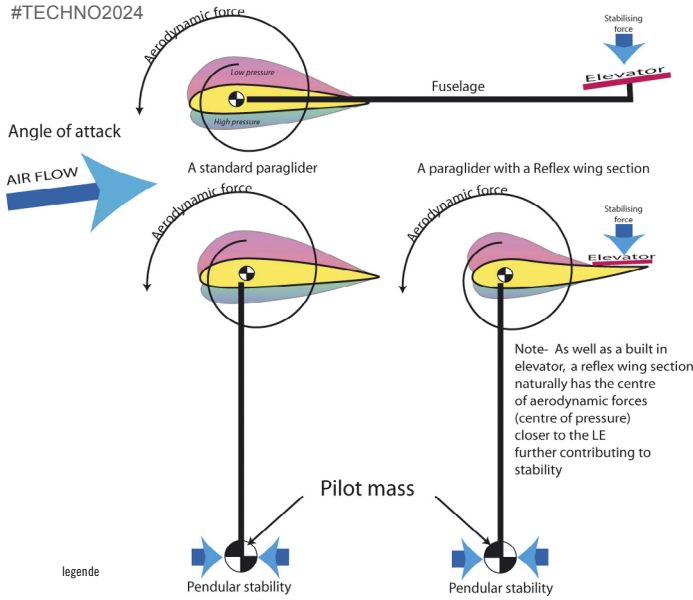
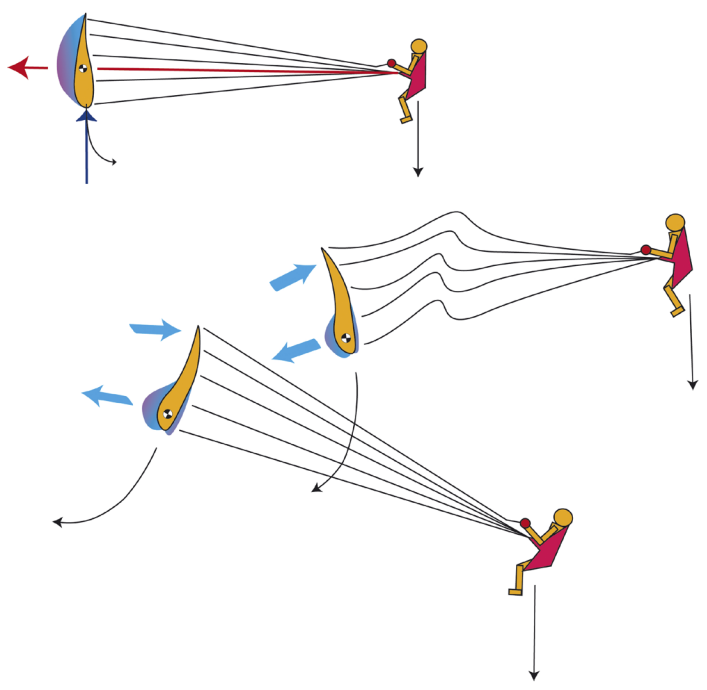
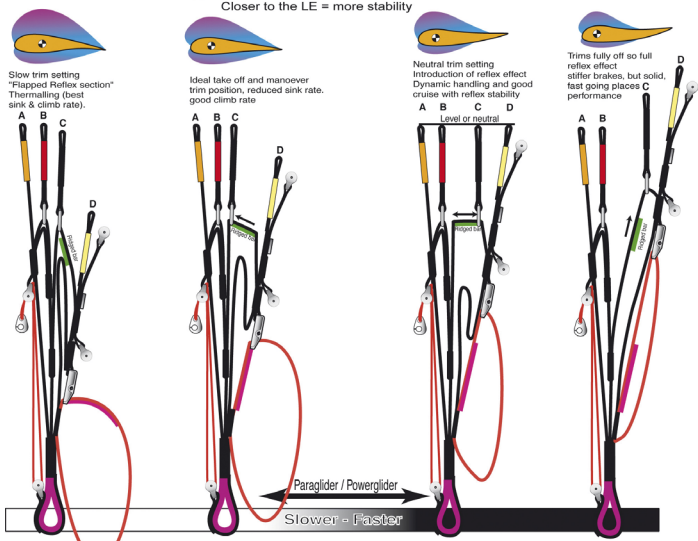


Photo : Véronique Burkhardt Pilote : Sascha Burkhardt



GTR2 Diagram - showing different trim positions and their effect on the wing section

Note: Center of pressure movement Closer to the LE = more stability



Mike Campbell-Jones from Paramania is the pioneer of the reflex profile in the paramotor industry. Eighteen years ago, he launched the first full reflex models. With the diagrams shown here, he was already explaining the benefits of this technology at the time: very fast wings that are nearly impossible to collapse. Today, all paramotor wing manufacturers use reflex profiles, and in paragliding, these profiles are also being adapted to some extent. In kite riser wings, reflex profiles offer a highly effective source of anti-collapse stability.



You can find more information in our 2014 issue (unfortunately French only).

However, stability has its limits: as with reflex paramotors, you have to be wary of a collapse that exceeds even reflex stability. In these cases, the reaction can be very violent. This is another reason why these wings are primarily sold for laminar soaring, although it is also possible for very experienced pilots to do small triangles with them...

Since these wings are designed for low-altitude flights, there is another aspect that requires learning: with released brakes these wings are like "fully accelerated." However, few pilots fly close to the ground with traditional wings at full speed.

Even though the reflex profile of these wings provides additional protection against collapses, they may occur, and speed-range is between 50-70 km/h.

Another characteristic of this practice: like with kites, many pilots have two or even three wings to adapt to wind strengths and push the acceptable wind limits beyond 45 km/h... Smaller sizes also make excellent wings for speedriding.



The wide range of possible angles of attack makes it easier to follow the terrain in proximity flying, as demonstrated here with a small size wing along the trails, in this beautiful demonstration by Ben Kälin, a collaborator of Flare and owner of <https://speedflyingschool.com/>.



Photo : Miriam Joanna



@speedflyingschool

speedflyingschool

www.free.aero

In a barrel roll, often executed in speed flying with a small kite riser wing, the pilot nearly passes above the wing on an oblique trajectory.

Photo : Bertrand Cousinié





The Moustache was indeed the first production wing of this type, although other designers, including Hannes Papesh, have worked on the principle.

Furthermore, while the world of paragliding has recently adopted kite techniques, kites have also learned a lot from paraglider.

FLARE MOUSTACHE

MOUSTACHE MANUFACTURER'S DATA						
MANUFACTURER : FLARE						
YEAR OF RELEASE						
SIZE	13	15	18	22	26	
CELLS	52	52	52	52	52	
FLAT SURFACE AREA [M ²]	13	15	18	22	26	
FLAT SPAN [M]	8.40	9.10	10.00	11.30	12.49	
FLAT ASPECT RATIO	5.4	5.5	5.6	5.8	6.0	
MTOW [KG]						
CERTIFICATION						
WING WEIGHT [KG]	3.1	3.4	3.8	4.4	5.0	

Photo : Flare/ SpeedridingSchool
Pilot: Beni Kälin



The Line is a derivative of the Moustache, more focused on speedriding. The control of the angle of attack could significantly disrupt the world of speedriding, thanks to the increased range of attack angles, controlled by the brakes!

FLARE LINE

LINE MANUFACTURER'S DATA						
MANUFACTURER : FLARE						
Web : https://go-flare.com/LINE/GFPLI11100/						
YEAR OF RELEASE						
SIZE	8	9	10	11	13	15
CELLS	33	33	33	33	33	33
FLAT SURFACE AREA [M ²]	8	9	10	11	13	15
FLAT SPAN [M]	5.7	6.0	6,3	6.7	7.3	8.1
FLAT ASPECT RATIO	4.0	4.0	4.0	4,1	4.2	4.4
MTOW [KG]						
CERTIFICATION						
WING WEIGHT [KG]	1.9	2.0	2.2	2.3	2.6	2.9

FLOW MULLET

The manufacturer Flow Paragliders quickly responded to the Moustache by introducing, using the same kite riser principle, the Mullet and MulletX in January and October 2023.

Photo : Valentin Burkhardt
Pilot: Alessio Leroy



Alessio Leroy, a passionate pilot of the Mullet, here at Pic Moros:

"I have a size 17 and I think it's the perfect size for everything. It flies very fast, glides exceptionally well, holds up in the wind, and is even good for spirals. It's nothing like a regular wing; you have incredible freedom. You can choose where, when, and how you want to move. Having multiple wings in one is amazing—you can decide your speed and glide whenever you want. You can fly in light wind as well as very strong wind. It offers a great freedom of movement. It's really a wing designed for soaring but also very enjoyable for a top-to-bottom."



MULLET MANUFACTURER'S DATA						
MANUFACTURER : FLOW PARAGLIDERS						
Web : https://www.flowparagliders.com.au/mullet/						
SIZE	13	15	17	18	20	23
CELLS	54	61	61	61	61	61
FLAT SURFACE AREA [M ²]	13	15	17	18	20	23
FLAT SPAN [M]	8.45	9.12	9.80	10.8	10.9	11.70
FLAT ASPECT RATIO	5.5	5.6	5.65	5.65	6.0	6.0
WING WEIGHT [KG]	3.00	3.30	3.70	3.80	4.20	4.50

The Mullet, which is sometimes considered slightly more accessible than the Moustache, features a comparable riser system and a certain degree of reflex in its profile. In strong wind during take off, by pulling on the A-lines, it also dives horizontally forward without collapsing.

Excellent craftsmanship on this Mullet that we had the opportunity to test...

“Full attack with arms high”: a recurring state under these wings...

Photo: Flow



Photo : Valentin Burkhardt Pilot: Alessio Leroy





Photo / Pilote: Little Cloud/Tom Bourdeau

We equipped a Puffin 16, after testing it with traditional risers, with kite risers. The result is interesting, expanding the possibilities. Kite risers can be adapted to many Little Cloud wings, here on a SuperFly 19.5. The SuperFly is an intermediate wing with the specifications: "small, lightweight, very safe, and good performance for reaching the landing (on sites requiring finesse)."

The manufacturer Little Cloud is known for its mini-wings and "super-soaring" wings. Even with traditional risers, these wings are inherently well-suited for low-altitude flying in laminar wind, while also allowing for thermal flights.

Lacking a pronounced reflex profile, their adaptation to kite risers may seem less obvious. However, designer Tom Bourdeau supports the choice, while acknowledging:

"The advantage of a reflex profile is that you can use these wings with a lower AOA (angle of attack), allowing you to fly faster than with a traditional profile.

But the reflex effect is not a binary characteristic; it is an intrinsic feature of the aerodynamic profile dependent on many factors in its design (shape/upper surface/lower surface/camber/moment, etc.).

Under no circumstances are these profiles 100% collapse-proof. They will all collapse at some point, often without warning, usually at a low AOA, and with rather poor recovery behavior most of the time.

LITTLE CLOUD PUFFIN KITE RISERS

The stronger the reflex effect, the worse the efficiency and performance (and handling) will be!"

Indeed, at voler.info, we have tested numerous paramotor wings with reflex profiles, both with and without motors, and can confirm this observation. We also recall the so-called "infallible" reflex wings and their brutal behavior when they do collapse...

A Puffin will collapse a bit faster, but one can expect its behavior to be "just" like that of a classic mini-wing.

In any case, considering these remarks, and especially when only soaring in laminar conditions, the pilot can enjoy this type of wing with peace of mind.



APCO NESTRA LIGHT

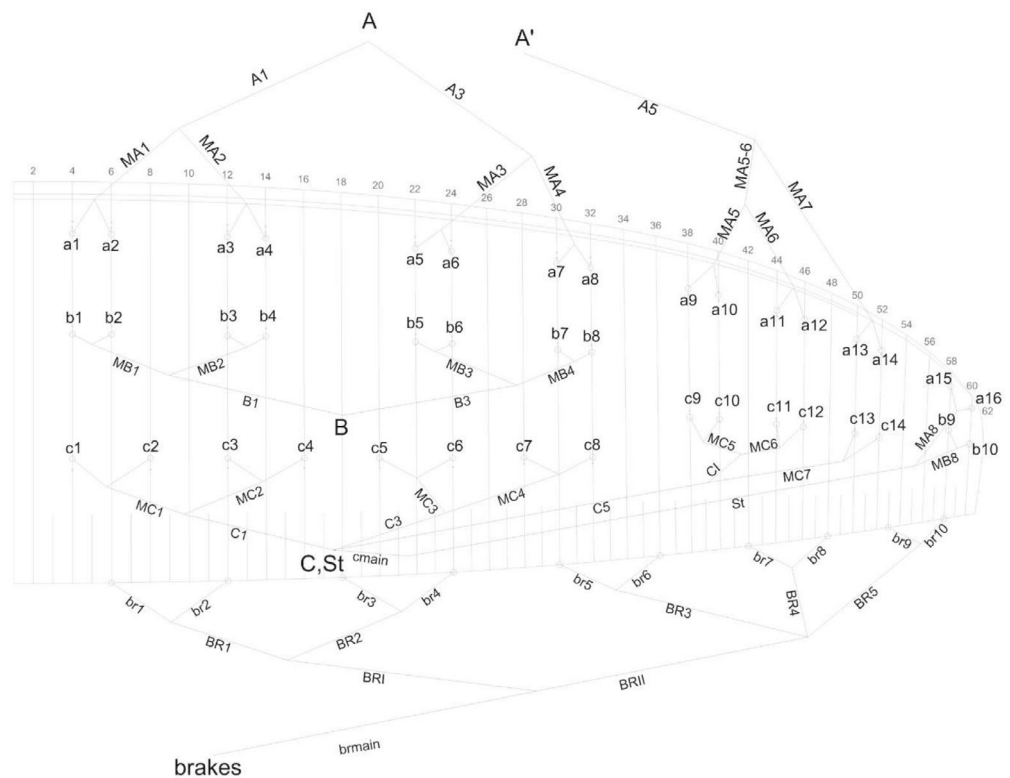
The Nestra Light is probably not particularly suited for hike & fly, as it still weighs 4.55 kg in size M, which places it in the "semi-light" category. For a wing positioned at the high end of the EN B class, its aspect ratio of 6.0 is quite significant. The Apco Nestra gives off an EN C vibe, also thanks to its shape and very optimised line layout.

And indeed, the wing, with its 61 cells and long lines, offers performance reminiscent of a higher category. Highly responsive to the brakes, it is particularly effective in thermals – and quite "fun" to fly as well.

This proximity to EN C wings makes this "high-end EN B" a good alternative for many pilots who are stepping down from that class, seeking a more reassuring behaviour.

Of course, for pilots coming from an EN A, it is much too nervous.

The Apco Nestra is described as "a true two-and-a-half-liner," because the rear lines are all anchored on a single line rather than branching off. Additionally, this design further reduces the total line length (215 m for size M).



Pilote : Arthur Burkhardt
Photo : Sascha Burkhardt



Pilote : Arthur Burkhardt
Photo : Sascha Burkhardt



The wing delivers performance that truly places it at the top of its classification, with only the top speed likely differentiating it from a higher category wing.

As soon as there's a minimum amount of wind, the high aspect ratio doesn't hinder take off at all; the Nestra shows that it can be easily controlled asymmetrically or using the cobra technique.



Pilote : Sascha Burkhardt
Photo : Valentin Burkhardt

#TECHNO2024



Pilote : Arthur Burkhardt
Photo : Sascha Burkhardt



Pilote : Arthur Burkhardt
Photo : Sascha Burkhardt

The Nestra is both performant and playful. Its construction is quite sophisticated.



Pilote : Arthur Burkhardt
Photo : Sascha Burkhardt



SKY PARAGLIDERS

Sky will be at the Coupe Icare with its EN C 2-liner Merlin (which we have already presented, photo on the right), as well as with the new version 3 of the Apollo (EN B, photo above). Both designers, Alexandre Paux and Stanislav Klikar, will be present.





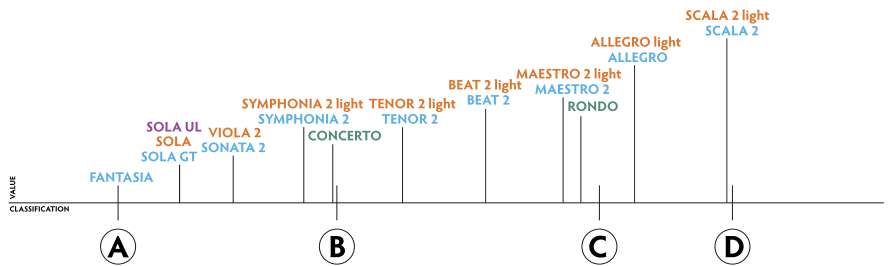
The Beat 2 light

PHI

At the Coupe Icare, Phi will officially present the Beat 2 light in all sizes, as previously announced in Kössen.

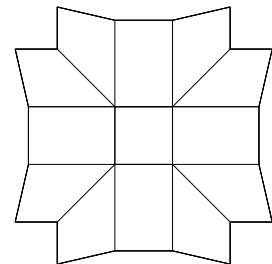
A new rescue system will be announced: its key feature, among others, is that the lines will not be sewn onto the underside of the rescue canopy but will run through the fabric, then on the outside to the edges, ensuring better load distribution and consequently greater strength. This rescue system could become the lightest on the market.

Overview Wings



Phi's product range is becoming increasingly wide.

The new Pop rescue system, a square parachute, is highly simplified yet still effective. According to Phi, it could become the lightest rescue system on the market.



A new weight record is also on the horizon: the new Sola UL, fully certified (EN D), not just load-tested, despite its tiny sizes (10, 12, 14), will weigh only 1.39, 1.56, or 1.72 kg.

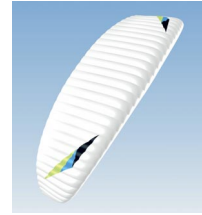
The new Rondo tandem will be a high-performance dual wing, certified EN B, but with very high speed (not specified), thanks to 15 cm trimmers.

The new Cabrio harness will be very versatile, able to be used with or without a seatboard, and will feature "2-phase" protectors: a combination of an inflatable protector (Nitinol, gray) and Magic Beans (foam balls, red).

More information on this in the next issue!

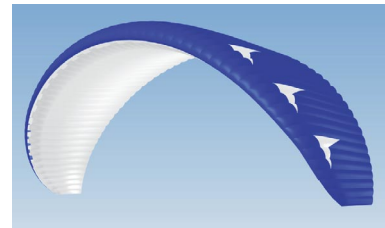
SOLA UL

size	10	12	14
number of cells	36	36	36
projected span	m 6,01	6,49	6,94
projected area	m ² 10,4	12,15	13,86
projected aspect ratio	3,47	3,47	3,47
flat span	m 7,51	8,12	8,68
flat area	m ² 12	14,03	16
flat aspect ratio	4,7	4,7	4,7
line length	m 4,59	4,96	5,3
maximum chord	m 1,99	2,15	2,29
minimum chord	m 0,49	0,53	0,56
weight	kg 1,39	1,56	1,72
certified weight range	kg 55-90	55-105	55-115
certification (EN/LTF)	D	D	D
material	Dokdo D10 / Skytex 27		
risers	R13 (3)		
riser length	mm 500	500	500
speedway	mm 150	150	150



RONDO

size	190	210	230
number of cells	58	58	58
projected span	m 11,12	11,66	12,03
projected area	m ² 29,97	32,97	35,05
projected aspect ratio	4,13	4,13	4,13
flat span	m 14,18	14,87	15,33
flat area	m ² 35,38	38,92	41,37
flat aspect ratio	5,68	5,68	5,68
line length	m 8,45	8,86	9,14
maximum chord	m 3,04	3,19	3,29
minimum chord	m 0,75	0,81	0,81
weight	kg 6,2	6,6	7,0
certified weight range	kg 100-200	110-220	120-240
certification (EN/LTF)	B	B	B
material	Porcher 38, 27		
risers	RZ13 (3+1)		
riser length	mm 347	347	347
trim travel	mm 150	150	150





ZOOM

Thanks to many sophisticated elements in the construction of the XA (EN A), it could accompany the pilot during training and for a long time afterward.

Finally, here is the light version "LT" of the two-liner EN-C/LTF D XC2.





The Zoom XC2 in its classic version.
Below: the XA from our cover...



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Concepteur, Rédacteur en chef, webmaster, pilote test : **Sascha Burkhardt**

Reportage, rubriques : **Valentin Burkhardt, Arthur Burkhardt, Claytone Carpe**

Proof-reader : **Judith Mole**

Pilotes Tests : **Philippe Lami, Pascal Kreyder, Estéban Bourroufiès**

Conception graphique : **Sascha Burkhardt**

Programmation IOS : **Hartwig Wiesmann, Skywind**

Programmation Android : **Stéphane Nicole www.ppgps.info**

Logo des Indalo: **Michael Sucker indalo@web.de**

Magazine valer.info

Mentions légales :

Editeur et Directeur de la publication

Sascha Burkhardt

D-79108 Freiburg

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