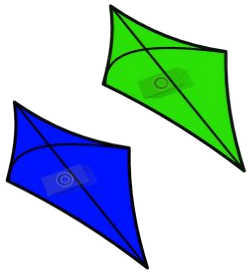
Aerial photography by kite,

from initiation to improvement.

Introduction

This document is intended to promote the practice of kite aerial photography (PACV). PACV or KAP (for Kite Aerial Photography) includes video shooting. It brings together a set of practical sheets aimed at 3 objectives:



tiation: general presentation and initiation documents, -**colored e**-a guide as simple as possible for newcomers. **improvement:** cards –**in blue**-devoted to options for support the development of the reasoned practice of the activity: simple steps, slice by slice, paying attention to their icity and practices shared and approved by several experienced photographers. rity is given to the production of images by kite.

development.This section contains fact sheets –**in orange**–whose practice is less widespread or accessible but which may interest the more curious. It is often treated "off the record" by a few enthusiasts. Lack of maturity and originality sometimes make subjects difficult to share. We will see if this is of interest. Is it sometimes just to avoid making the same mistakes again?

These elements are classified by chapter, grouping the main aspects of the practice: kites, lines, nacelles, devices, etc. The text is regularly updated and accessible with the link or QR code on the left.*(to the latest updated French version.)*

Links:French-speaking forum for aerial photography by kite (NB at the end of 2024 the link no longer works)

KAPablea new exchange platform while waiting for the previous one to come back online. English-speaking forum for aerial kite photography

Date: 06/02/25

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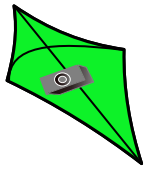

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Appendix 1. How this collection of “KAPIDOCS” documents works

Presentation - general information

KapiDocs

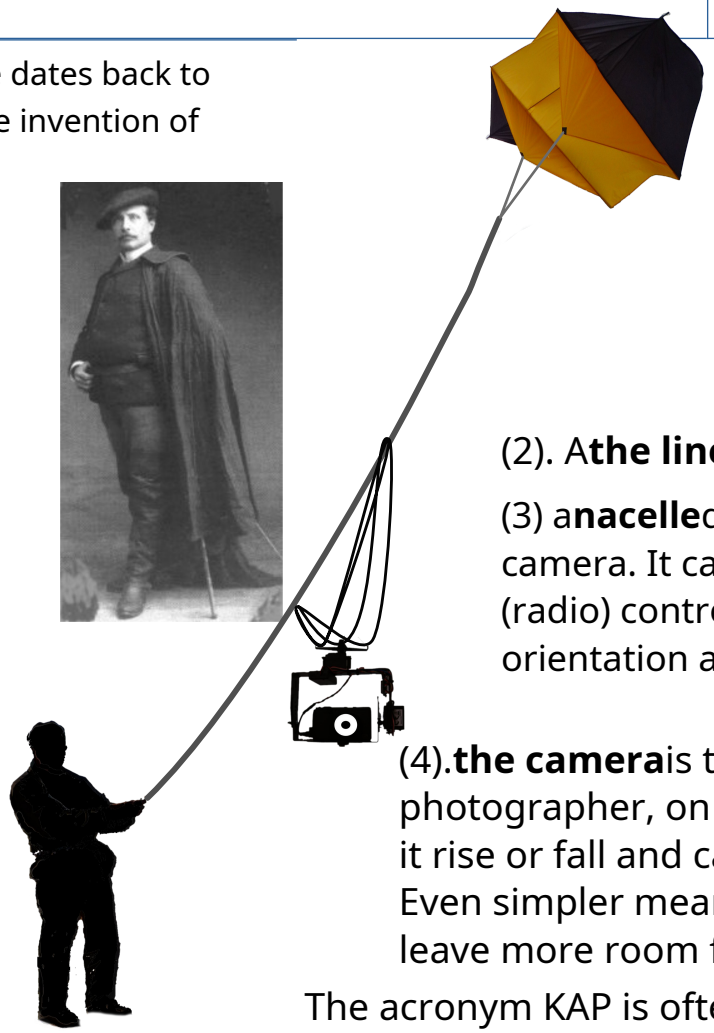
Kite Photography

Presentation A0.

This simple and harmless photography technique dates back to the end of the 19th century (1888), well before the invention of aviation.

Arthur Batut
(1846-1918)

The modalities have evolved considerably since that time, both in terms of the cameras and the kites used, but the elements of the system remain the same.



(1). The**kite**is a "single-wire" model, chosen for its stability. It lifts the camera to the desired altitude.

Each wind force has a suitable kite.

(2). A**the line**the kite is suspended,

(3) a**nacelle**designed to accommodate the camera. It can be manual or motorized and (radio) controlled from the ground for orientation and triggering.

(4).**the camera**is thus controlled by the photographer, on the ground, who moves, makes it rise or fall and can view the shot on a screen. Even simpler means based on a self-timer can leave more room for chance.

The acronym KAP is often used, for Kite Aerial Photography.

Index / keywords: History, Presentation, Batut,

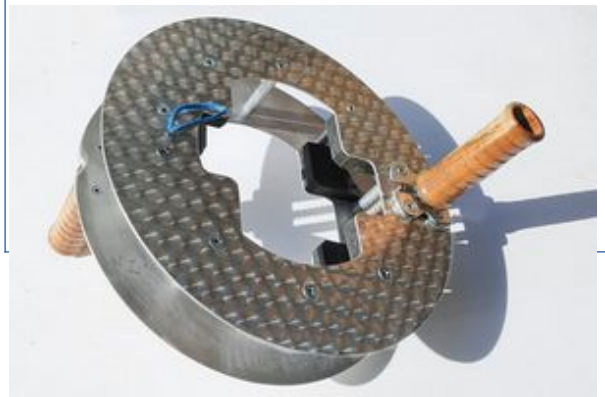
Links:Arthur Batut Museum

Why take kite photography?

Author: M. Dehaye

Kite aerial photography (KAP) is a fascinating activity that uniquely combines leisure and culture. It allows for capturing original perspectives of the world, offering a new dimension to photography. As a hobby, KAP encourages exploration and discovery, while stimulating artistic creativity. It allows us to rediscover familiar landscapes from a new perspective, enriching our perception of the environment.

On this environmental level, it is a practicegentleAnd respectful,rather quiet to observe and document nature without disturbing it. Most of the energy is provided by the wind.
The implementation time, the understanding of the wind and the environment around us, force us to be somewhat restrained in our way of taking images. Finally, the kite, which carries the camera, is also an object that speaks to everyone, also a carrier of sympathy and conviviality.Its simplicity and safety are major strengths of KAP. No advanced technical skills or expensive equipment are required: a kite, a line, and a lightweight camera are all you need to get started. This accessibility makes KAP attractive to enthusiasts of all ages.
Alonethe necessary attention to the few basic rules of courtesy and safety so as not to disturb those around you is essential.



KAP is part of a long historical tradition. Used since the end of the 19th century, well before the invention of aviation, and then for military and scientific applications, it has evolved over time to become a popular leisure activity. This tradition is a testament to the ingenuity

human and our constant desire to explore and document our environment. By practicing KAP, we perpetuate this tradition by adapting it to modern technologies.

Finally, tinkering is an essential aspect of KAP: designing and building your own kite photography system is an enriching process. It allows you to understand the principles of aerodynamics and photography, and adapt them to your priorities. Some are more inclined towards photography, others towards kites. This aspect encourages innovation and customization, making each project unique and adapted to the user's priorities. In short, KAP is a rich and rewarding activity that combines tradition, culture, environmental responsibility, leisure, and tinkering. It offers an original and respectful waytake
pleasure in using the wind and feeling where to “place” our camera depending on where we are and capturing the beauty of the world around us.

Advisory Committee Opinion:	
Index / keywords:	**Initiation A020**
Links:	22/02/25

How to get started	Initiation
Author: C. Becot, M. Dehaye	Date: 29/2/24

Start simple and build up to sophistication later.

The necessary hardware constitutes a complete mini system, with several elements.

(1) The kite: This is the key to successful images: it must be versatile and reliable, stable in a reasonable wind range, and fly without requiring all of your attention. Its size, and therefore its power, must be adapted to the equipment you need to lift.
For an easy start, we recommend a 3-meter wingspan delta. Those who want to build one can try a tried-and-tested model, suggested by Dan Leigh on his website. An alternative is to use a 1.6 m to 2 m rokkaku, which is more readily available for purchase. Also refer to the wako or other models on c. Bécot's website.

HASBe careful, the traction can quickly become very strong with 2m rokkakus.
Practice flying it, initially avoiding days with light, strong, or unstable winds. Test that it can lift a load of 0.5 to 1 kg.

(2) the retaining line: this must be in good condition, adapted to the power of your kite, not too thin so as not to be too fragile (or sharp), not too thick so as not to penalize the flight of the kite: the weight of the line to be lifted is added to the weight of the device. To start, buy a 600m (/kg) polyester spool in a maritime cooperative. And cut a length of 250 meters which will be enough for the beginnings. Put it on a "rondo" type reel or a wooden board cut for this purpose. See links.

(3) The nacelle is at the heart of the system and is what allows the aircraft to be attached to the restraint line and oriented. To begin, keep it simple and light (ideal around 500g including apn!). Basic gimbals are generally suspended by a pendulum. Refer to the Roitlet or Filalu models by C. BECOT, or to the gimbal shown on the Simple and Effective Gimbal page of the document.

(4) The camera. In this area, everything is a matter of compromise. Almost anything is possible, but not without constraints! The three main questions are:

1. the quality of the images,
2. the trigger mode: automatic (intervalometer, etc.) or on command?
3. the presence of a ground video return.

Add a lifeline, which holds the device in case of a problem.
NB Today – 2024 – a good candidate for the first tests could be....a phone (!), more easily found at a low price given the rarity of compact cameras. And easily adaptable to constraints due to its “versatile” nature. An application like Open Camera is enough for automatic triggering.

(5) Accessories:

A hat and sunglasses!
Gloves will quickly become essential if you have a powerful kite. A
hook if you want to secure your line.

Here is a tried and tested configuration that has been used dozens of times for initiations with a variety of audiences and beginners: SV4 fiberglass kite (€80), small compact canon with CHDK (€50), 150m line on a plastic rondo (around €15), filalu basket (€10)

Notice from the Organizing Committee: Take the time to familiarize yourself with the wind and your equipment. The initiation is quick if done in good conditions.

Index / keywords: Initiation,

Links:SV4 Kite ,Wako Delta Kite on the DL site ,reels ,Wren ,filalu Simple and efficient nacelle in this document.

1. KITES

KapiDocs

Some kites available online. Introduction

1 A20

Author: Steering Committee

Updated: 09/24

Many kites could be used for KAP as long as they generate enough traction to lift the basket or the device: the qualities sought are stability, followed shortly by reliability! Let's not forget that we entrust them with our photography equipment, the cost of which is often higher than that of the kite itself! But there is a third criterion often put forward in our activity: ease of implementation.

Everyone generally swears by the 2 or 3 kites... the ones they regularly carry in their bag!
Let's remember here that there is no such thing as a universal kite! Each kite is adapted to a wind range, and exceeding it almost always leads to failure!

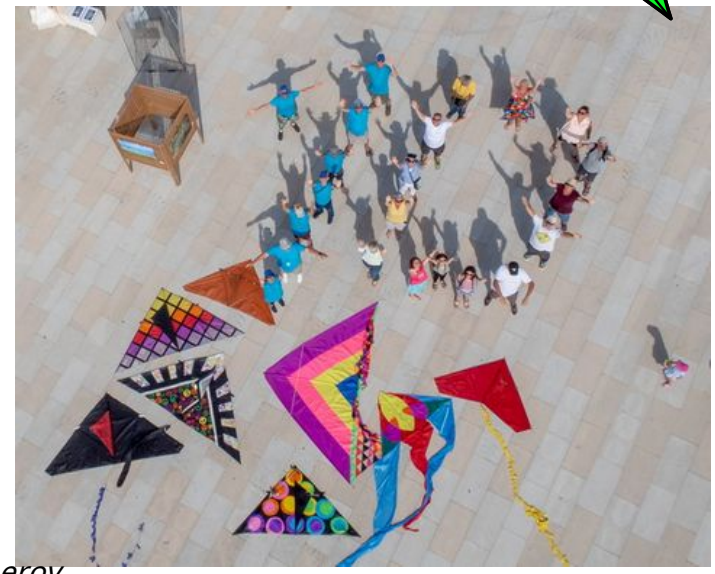


Photo Y. Leroy

It is not easy to find good versatile kites for KAP in stores! Few models are still sold directly:
The delta SV4 still seems to be sold by e-kite.net and is good value for money: its stability is good, thanks to a large drag (in return for an average performance for this size, 2 m high). The manufacturing quality is average: expect to regularly resew the diamonds of the drag. The carbon version is preferable for a nacelle > 500 grams, the fiberglass version, more flexible, has a very high yield weak but has the advantage of never pulling excessively. Find the test here http://www.becot.info/tako/francais/%26tako_1.htm

The rokkaku “first Kite”: almost 2 m high, it pulls quite quickly!
HQ occasionally offered a few deltas with a wingspan of around 3m, which, depending on the version, could be suitable for this activity. Test them before buying ;-)
There are also a few soft kites to be found here and there, but their performance is often insufficient for KAP, unless you take very large versions, which then become very/too powerful.

Into the Wind offers two kites that are often used, but a little less widespread in Europe:
the levitation https://intothewind.com/kites/delta-kites/itw-9-ft-levitation-delta-rainbow.html We THE find regularly at Metropolis Drachen in Europe and probably elsewhere.
and the famous Conyne Delta, a little less affordable.https://intothewind.com/kites/delta-kites/itw-alpine-dc-kite.html
NB: The carbon 6 yard seems a little light. It's best to use C8 for suspending a device. And avoid central fittings on the yard, which are a common source of breakage.

There are also some "flowforms," soft kites, whose lack of a frame makes them practical to use but a little less effective. So, you have to make your own kite: more economical and, above all, more suited to your practice.

See the CV fact sheets. And Christian's website, which offers several CVs that are useful for the KAP: http://www.becot.info/tako/francais/%26tako_1.htm ,including the Wako Yakamate rokkaku

Between Roller and Rokkaku, Sandro offers us the Rokker, cousin of the Rokkaku: stable and safe in kap. Like its cousin Rokkaku, can become powerful. the Rokker:

On the delta side, the specialist is Dan Leigh, builder of the famous R8, acclaimed by many kapers! His site on deltas is essential and presents a standard model to manufacture, efficient, very versatile, to be built in a dimension close to 1.5 m high, adapting the height to the width of the spinnaker roller, of the order of 140+ cm, to avoid too much sewing. See the file on this subject.

Also worth noting are the beautiful creations of Michel Gressier, who, among his complete range of kites, offers a small, very stable rokkaku for sustained winds, and a brand new delta (summer 2024), which we have not yet tested but which is the result of long experience and discussions with the kapers. Not yet onMichel's website but it shouldn't be long! We're eagerly awaiting the first feedback.

Figure 1: Michel Gressier's new Delta "Kap"

CdO Review: The perfect kite doesn't exist! It's all about compromise. Take the time to choose and test the one that's right for you. Of the kites available for sale, the most affordable, with a few caveats, is the SV4. It makes it easy to get started, but its performance can be improved.

Index / keywords: Kite, delta, rokkaku, Rokker

Links:Delta SV4 ,Becot.info ,Delta Standard DL The sky for Cimaise

FLYING A KITE PREPARING THE KITE	Author: C. Becot

By always performing the operations in the same order, the probability of forgetting something is less frequent.

Location scouting

The first benchmark is the wind direction. We will have noted the general weather trend for the day. However, directions on the ground and at altitude vary significantly depending on local and nearby natural obstacles. We will first take advantage of the possible presence of weather vanes and flags. Otherwise, we manage on our own.
To determine the wind direction on the ground, throw some dust or a few blades of dry grass into the air. For mid-height wind, observe it in the branches of trees.
From there and the obstacles around the field we determine the location of the flight and the place where we can hang the wire, a stake to drive in or an existing post, etc.

Equipment preparations

The assessment of wind strength determines the kite, both the model and its size. The final consideration is whether we are looking at a strengthening or weakening wind.
Once the kite has been determined, the best method is to start with the accessories. A stake and a mallet, perhaps, a gamma hook, gloves, and a reel, certainly.

Kite assembly

This step is essential for framed kites, but unnecessary for frameless kites. Go to a quiet spot with flat ground that you've already identified. In strong winds, find a sheltered spot.
In wet conditions, it's a good idea to know how to set up the kite without spreading it on the ground. The kite reel keeps one side of the kite on the ground while you work on the other. Add a tail, windsock, or wind vane.

Takeoff

All that's left is to attach the line to the kite, put on your gloves, and make sure the gamma hook is in your back pocket. It's rare, but it does happen, if the wind is steady and strong and you can launch the kite by hand. Otherwise, there are several methods.

Nothing difficult a priori but depending on the wind conditions several attempts are sometimes necessary.

Method A

There is a providential assistant who will hold the kite about ten meters or more from the kite flyer.

The kite is held facing the wind, either straight or tilted backward. The kite flyer unwinds the line. When the line is taut, the assistant can hold the kite high, always straight or tilted slightly backward. The kite flyer tilts the kite toward them, pulling hard on the line. The assistant releases the kite, which flies away.

NB the assistant should not throw the kite into the air, it is counterproductive.

With a soft kite, the assistant's role is to make it inflate in the wind with the correct inclination.

Method B

Only possible with a kite with a frame.

The kite is placed on the ground, tilted backward. The kite flyer unwinds the line while keeping the kite tilted. When the line reaches a sufficient length, the kite is launched, just as in method A.

Method C

Unroll the line about ten meters or more and attach it to a fixed point. Hang the kite, present it to the wind. At the right moment, release it and quickly return to take control of the line at the fixed point.

Tail

There is no need to extend the tail long on the ground. It should only be able to catch the air without getting tangled. The assistant should not step on it.

Flying a kite without a frame

Kite flyers usually call a kite without a frame a soft kite.

Flight arrangement

Unroll about ten meters of wire and attach it to a fixed point.
Go to the end of the string, unfurl the soft kite, attach the kite to the string. Attach the tail, often necessary for many soft kites.
Ensure the bridle is properly positioned. A twist in the retaining ring is enough to disorient the flight.

Wind inflation

Take the kite on one side. On that same side, shift your position relative to the wind's axis. This way, when you release the kite, it will go towards the axis, moving away from the kite flyer.
Open the first cells to the wind. The others will inflate. As soon as they are all inflated, release the kite.
Go to the anchor point and take control of the kite.

Help from an assistant

With a soft kite, assistance can be multiple depending on the experience of the assistant. The assistant can stand on the other side of the soft kite and participate in the inflation operation. He can perform the inflation operation if he knows it from experience.
If he is already a kite flyer, he can pilot the kite during takeoff.

Kite flight

The ascent into the air

These are progressive releases of line adapted to the wind followed by moments of waiting while the kite gains height. There are, however, some variations and some subtleties. Thus, in light winds, we will advance slowly while maintaining height as best as possible, then we will retreat while releasing the line at the same rhythm.

Maintaining the flight

It all depends on the wind, is it strong enough and steady for this kite? If so, the kite is attached to the attachment point and you just have to keep an eye on it.
Otherwise there is no other solution than to constantly have the spool or reel in hand and to release and pick up the line according to the wind strength.

Bring in the kite

It happens that at altitude, from 50 m and most certainly beyond 100 m, the wind is significantly stronger. The traction is such that bringing the kite back becomes difficult.

One solution is to walk into the wind, rewinding, then going back, and so on.

Second solution if it remains difficult, the thread being hooked to a fixed point we lower the thread by hand then we bring it back. Attached to a second hook we have the leisure to rewind without effort and so on.

The ultimate solution is a winch pulley used on sailboats. Attached to an anchor point, the line is passed through it with a dead turn. The line is then pulled away and then rewound back towards the pulley.

Advisory Committee Opinion:These very detailed descriptions allow you to take your first flights. With experience, the practice becomes almost instinctive. Remember to ensure the stability of the kite before considering attaching the basket.	
Index / keywords: kite, takeoff	**Initiation 1A30**
Links:fi line accessories	03/14/25

Flow, foils and other box kites

Initiation**1A50**

Author: Pierre Lesage

Date: 04/06/25

These box kites, such as the Flow Form and Kap Foil, are a fairly popular choice among aerial photographers. Their design gives them several advantages: without a frame, they fold into a bag and have a small footprint: an ideal choice for backpacking and travel.

However, their start-up and take-off can be more delicate with limited recoil and as long as the boxes are not completely inflated, this type of kite remains unstable and unpredictable. Once "in pressure" be careful of the wind force because these kites tend to pull more than a delta or Rokkaku, a handicap for slack line enthusiasts (soft line where the weight of the basket and the thrust of the kite are balanced harmoniously) but an advantage for carrying a heavier basket equipped with a reflex for example.
These box kites will be perfect in a stable and laminar wind because the boxes will remain under pressure, on the other hand if the wind is unstable and turbulent, it can cause a box to lose its airflow, destabilizing the kite: catching this type of kite is always more acrobatic than for a delta or a Rokkaku where generally it is enough to release the line for the Cv to find "its" wind and its altitude.
The Sutton Flow form has a fairly shallow line angle (40 to 50°) and is ideal for carrying a Picavet suspension gimbal. The Kap foil has a steeper line angle (60 to 70°) and both will require a long tail to increase stability.
It is possible to tune the Sutton flow forms and "Bécotiser" them by adding a strip of lateral gauze; a brilliant find by Christian Bécot, (hence the name of this tuning...) which will significantly increase the lateral stability of the aerodyne and gain around 5° of line angle.

I quite like the Kap Foil 2 square meters, quite versatile, pleasant up to Beaufort 5 without pulling too much, beyond that, it becomes really sporty to master it.

- The Sutton Flow Form was manufactured exclusively by Air Affairs Kite in Hattboro, Pennsylvania, but unfortunately production has ceased; however, it is fairly simple to build for home use and plans are plentiful. See links
- HQ kites manufactures and distributes KAP foils (based on an original design by Ralf Beutnagel, also designer of the Dopero kite) https://www.hqkitesusa.com/products.asp?cat=43
- Peter Lynn Kite manufactures and distributes KAP pilots from 2 to 20 square metershttps://plk.nz/pilot-parafoil-lifter/

Steering Committee Advice: Kites have proven themselves in good conditions. However, their use in beginner hands remains more delicate and should be reserved for large spaces and stable winds. Also, be sure to adapt their size to the wind strength.

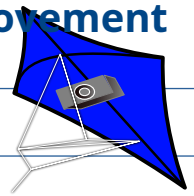
Index / keywords: Flow-Form, KAP Foil, Picavet
Links:details Becot.info kiteplans.org

Make a ROKKER

1B40 Improvement

Author: S. Macchi

Date: 2/19/2024



The Rokker was born in August 2020, a kite halfway between ROKKAKU and Pearson ROLLER.

The ROKKER is very stable, usable for KAP and covers a fairly wide wind range; in a standard configuration it goes from 4 to 40 km/h and it is possible to make it larger or lighter to extend its wind range or smaller and with a stronger sail for stronger winds.
If the wind picks up during a KAP session, the ROKKER can adapt and maintain a line angle without excessive pull, whereas a ROKKAKU in this situation would pull harder with both a risk of breakage and a reduced line angle.

Many construction details are similar to those of the ROKKAKU.
The ROKKER has 2 slightly overlapping sails.

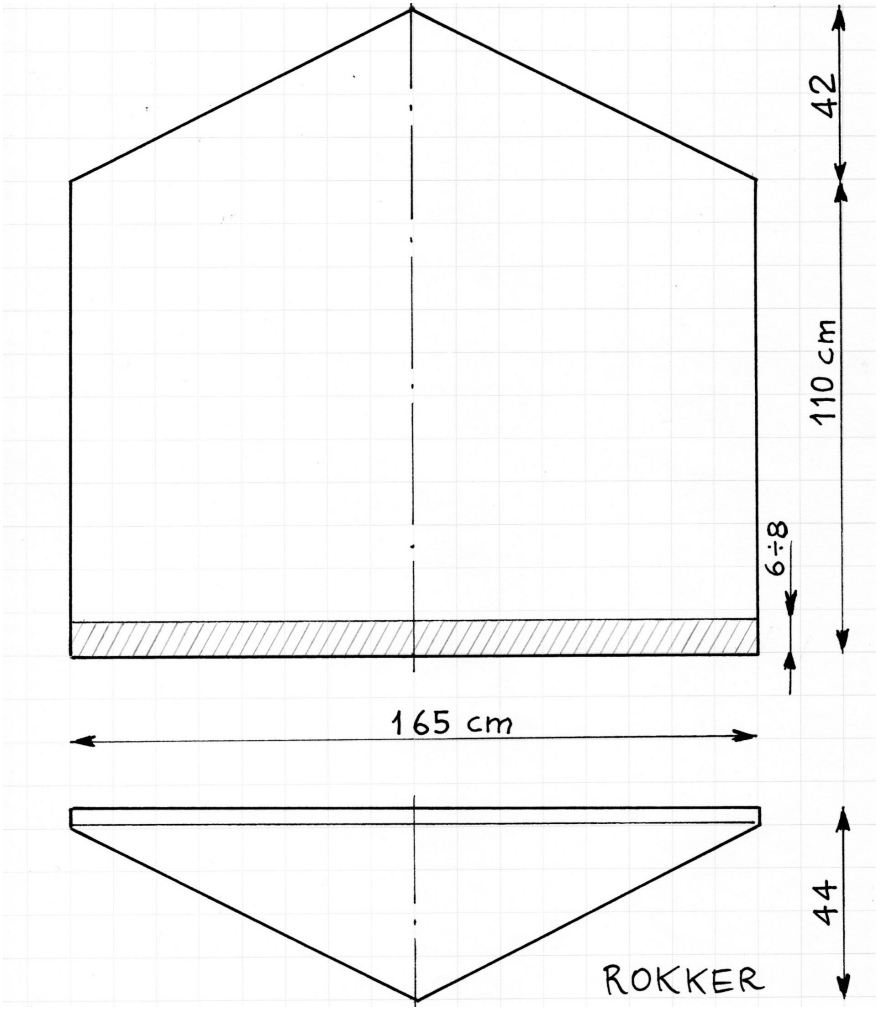
- The main sail, above,
- below, a smaller sail.

The airflow flows at a good speed from the upper sail to the rear of the lower sail and the result is a change in the inclination of the kite.

The upper main sail is similar to the ROKKAKU but its lower part is straight and reinforced on the back with 6-8 cm of mylar with carbon fibers, or any other sail material heavier and less elastic than the sail.

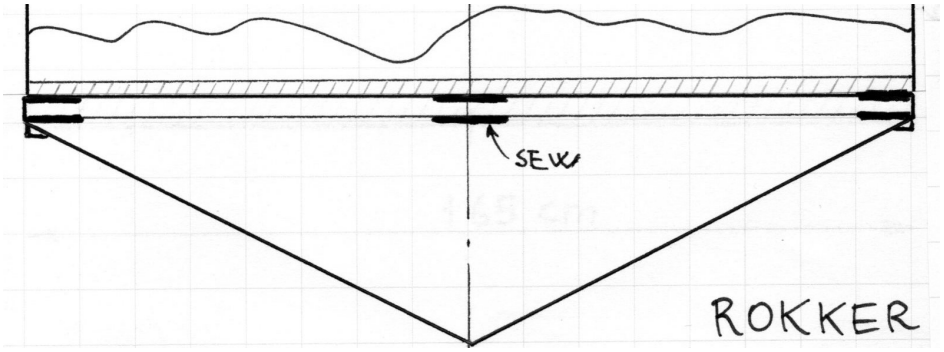
The lower sail also has a pocket along its entire length, horizontally, to accommodate the lower, arched yard.
The spine attachments, top bar, bridle and tensioners for bending the bars are the same as on a rokkaku.

The lower sail must be sewn over the upper sail, overlapping it flat by about 4 cm. The seam is made 10 cm on each side, below and above the pocket where the lower yard passes. Similarly, in the center of the sail, a seam of 12-14 cm is centered.



Other tips:

- a SKYSHARK P4X ...P400 type carbon for the horizontal yards and a standard 8 carbon for the vertical spine.
- The lower sail must be kept taut, without tension, using FSD type terminals, with the slot in the terminal oriented in the line-kite axis. It is important that the lower sail tension adjustment is independent of the bending tension.
- The bridles must absolutely surround the horizontal bars, 2 points at the top and 2 points at the bottom.
- The bend is approximately 18 cm at the bottom and 10 cm at the top.
- The assembly can be done by leaving the yards in place, and removing only the spine.



The bridle and construction details can be found with this link: https://filedn.eu/lh5Hr1UIk2HhLEuIUEk0CQp/KapiDocsPublic/DocReference/Rok%20Bridle%20Guide.pdf

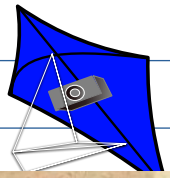
Steering Committee Opinion: Combining the qualities of the Roller and the Rokkaku, the Rokker is an interesting kite for kap, versatile and stable. Be careful, as with its cousins, it can pull significantly with the wind, but its behavior remains sound.

Index / keywords: kite, Rokker, manufacturing

Links:make a rokkaku (Becot.info)Rokkaku Straps and Pockets (English).

Make a delta.

Improvement

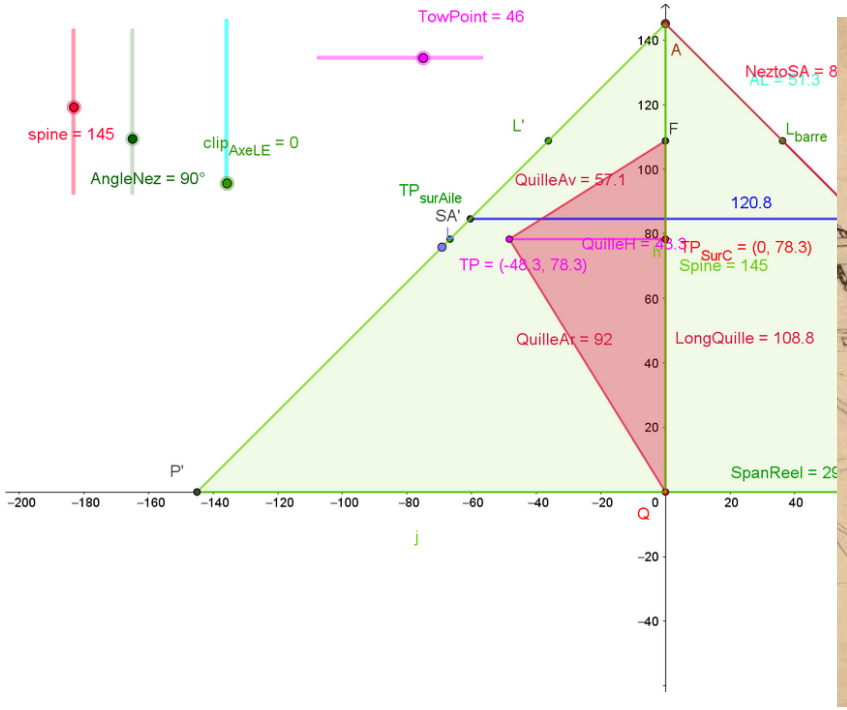


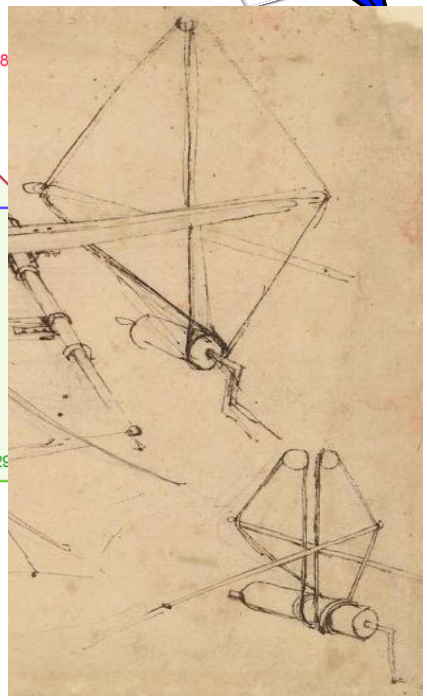
Author: M. Dehaye

Date: 2/16/24

It's tempting to start with a delta kite because it has many advantages, including its simplicity and reliability. It's no coincidence that this kite is widely used in kayaking. Unfortunately, few are available for sale. One option, therefore, is to make one.

The reference for doing this can be found on the site of Dan Leigh, an expert on the subject, who offers free access to his standard delta on this page:
http://www.deltakites.com/plan.html
in a reasonable dimension 140/145 cm high, this gives the following plan:





Carefully follow the advice provided on his page, paying particular attention to the introductory section, which is a bit technical, but often underestimated and so important for the frame. Don't choose overly rigid bars, except for the yard. It's the one that takes the power, so it must be stiff and not fragile. Avoid using a central connector!

Finally, pay attention to how you make the yard: *"Set a yard so that when the kite is held upside down by the attachment point, the distance between the cv and the bar is 12 to 16% of the distance from the nose to the yard pocket. 14% for the average, 12%, more taut, for more efficiency in light winds, 16% for more sustained winds."* Add a balloon keel for added safety in the kap.

CdO Opinion: Of course, making a kite is a challenge, and it can't really be considered an initiation. If you have to start, you might as well start with a good kite!

Index / keywords: Kite, delta, plan, manufacturing

Links:Delta Standard DL ,model made at the Konkar Lab

The dynamic spreader of a delta (adjustable yard)	1C30 advanced training
Author: M. Dehaye	Date: June 2024

The dynamic spreader (DS) is a device that allows the length of a delta kite's spreader to be adjusted, slightly changing its size and thus giving the kite greater versatility. Mike le Duc, an American kaper, developed the use of this device. Initially, it was intended to allow the kite to withstand stronger winds by compressing the spreader, reducing the kite's wingspan and thus its pressure.
To fully understand the principle, it is worth revisiting the general explanations on the yard provided by Dan Leigh: the length of the yard directly modifies the tension of the sail, and therefore the depth of the CV.
A shorter bar therefore allows you to face stronger winds: a little more stability, with the counterpart of less efficiency.
A typical situation is when a hang glider is taking off with light wind at ground level, but which can be more dynamic in the upper layers. The DS allows for this adjustment during flight. It also provides a little softness by smoothing out small gusts.
Construction principle :2 bars are required and placed in parallel in their central part. Junctions allow them to slide over a short length, the return position, central, being ensured by an elastic band which tightens the bars. Each junction comprises a part fixed to a bar, the other part allowing the smooth sliding of the opposite bar. Fine adjustments are to individual taste, but in my opinion:

- The stroke must be limited so as not to excessively modify the shape of the CV. For an average kite, 10-12 cm is already very significant.
- The elastic must be strong enough not to stretch at the slightest breath, otherwise it will seriously affect performance. I recently noticed that it is also advisable to change it because the tension decreases with age!
- At rest the length of the yard must be adapted to the delta for stable flight: too long the CV will be unstable.
- The DS doesn't work miracles: it gives a little more tolerance and comfort, but when the CV goes out of its wind range, it's time to change it!
- Parts can be machined from multiple materials. 3D printing is an ally for those less hands-on and allows for the combination of bits and slides.

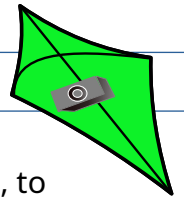
Steering Committee Opinion: The Dynamic Spreader is an interesting approach adopted for optimal delta adjustment. Its construction must be carefully designed to avoid breakage, and its adjustment is sometimes very precise.

Index / keywords: Delta, strong wind, stabilization.

Links:LeDuc page ,details on the creation of a spreader note 11

2. LINES, HANDLES, REELS...

Lines and tensions	Initiation 2A21
Author: M. Dehaye	Updated: 03/01/2025



Which line should I use depending on the kite's traction?

A generally shared principle to limit the risk: the traction of the kite must be at least 4 to 5 times the weight to be lifted, to ensure flight and the line must be able to withstand approximately 10 times this traction, to cope with wind variations, even strong ones. So for a basket + 1.2 kg line set, you will need a traction of at least 6 kg (5x1.2 kg) and a line resistant to 10 times this traction, or 60 kg of resistance. This corresponds roughly to the 600 m per kg polyamide lines that can be found in chandlery stores.

The stronger the wind, the thicker the line will be. But the solution then also consists of changing kites, if you have one, to maintain a similar traction. Several materials exist and a more detailed sheet is in preparation: polyamide or polyester are the most common and affordable materials, but to start, avoid dyneema which, despite its undeniable technical qualities, has a weakness: a very low melting point causing it to break very quickly if the line rubs against an obstacle, or another line. And the loss of equipment. Also pay attention to the structure of the line: braid is generally more pleasant to handle than twist.

Caution is still necessary for your equipment and those around you. Lines available by the kilo in professional fishing equipment are often a good start.

Let us recall some principles of common sense:

- There is no kite capable of lifting a basket in all winds. Each kite has a maximum wind force that should not be exceeded.
- All other things being equal, the pressure on the CV increases with the square of the wind speed. If the wind doubles, the pressure quadruples. But the kite is a relatively flexible structure and depending on the deformations it experiences, its reaction will not be the same.
- The spool must be adapted to the size of the line.
- Reminder: in case of traction or thin and therefore sharp lines, wear gloves!

Steering Committee Advice: The choice of line is essential because its qualities influence the kite's behavior. Prioritize safety.

Index / keywords: Line, Traction

The Kite Line: Technical Sheet	2B25 Improvement
Author: Pierre Lesage	Date: 04/06/25

Line selection is crucial to optimizing a kite's performance. Characteristics such as strength, weight, elasticity, diameter, UV and abrasion resistance, as well as cost, all play a key role. This table compares different line types for a standard 100 kg line strength to help you choose the best option for your needs.**Naked Kevlar is at**

ban: it is prohibited in many festivals.

Line type	Weight (g/m)	Diameter (mm)	Elasticity	UV resistance	Resistance to abrasion	Price (€)	Benefits	Disadvantages
Nylon	~2.5 400m/kg	1.2-1.5	High	Weak	Average	Weak	Economic, easy to find	Stretches, weak UV resistance
Polyester (Dacron)	~1.8 600m/kg	1.0	Weak	Good	Good	AVERAGE	Low stretch, sustainable	More expensive than the nylon
Polyethylene (Spectra)	~0.6 1500 m/kg	0.5-0.6	Very weak	Excellent	Average	Pupil	Resistance high, low diameter	High cost, sensitive to abrasion
Naked Kevlar	~1.2 800m/kg	0.8-1.0	Very weak	Average	Excellent	Pupil	Very resistant, fine diameter	Must be sheathed expensive
Dyneema (polyethylene high density)	~0.5 2000 m/kg	0.4-0.5	Very weak	Excellent	Average	Pupil	Ultra-resistant, lightweight, durable	High cost, sliding to manipulate

Conclusion

This table shows that modern materials like Dyneema and Spectra allow for a thin, lightweight line with high strength, while traditional materials like cotton or nylon require a larger diameter to achieve equivalent strength. Dacron remains a safe bet for beginners in aerial photography, while Kevlar is strictly prohibited for safety reasons.

Advisory Committee Opinion:The classic approach often consists of taking a one kilo (600 or 800m) reel of polyester

in a maritime cooperative. If more demanding needs arise, Dacron and/or Dyneema lines provide greater performance. Be careful with Dyneema, which, due to its low resistance to heat, can break without warning in the event of even rapid friction. It also requires a suitable reel so as not to handle it with bare hands.
Index / keywords: line
Links:

Useful knots in Kap	Initiation 2A30
Author: Pierre LESAGE	Date: 04/06/25

The few knots below cover the essential needs: fixing (lark's head, bowline knot), lengthening/joining (reef knot*)*, stop (figure-of-eight knot) and adjust the tension (whip knot). They are simple, robust and widely tested, which makes them essential for KAP. They require little memory of gestures and can be performed quickly in a situation, even if the wind or cold complicate the task.

Here is a proposal of**5 “essential” knots**»to know for kite flying, selecting those which cover the greatest number of common situations:

1. **Lark's Head Knot**
   - **For**quickly attach a loop to the bridle or flying line.
   - **When ?**To connect the flying line to the kite bridle loop, or for any connection fast and safe on the ground.
   - *Remember to sheath the base loop if it is thin or fragile (dyneema for example).*

2. **Bowline knot**
   - **For**form a fixed loop that does not tighten under tension.
   - **When to use it?**To create a strong loop at the end of a line, useful for attaching a kite to an anchor point.
3. **Square/Reef Knot**
   - **For**securely attach two ends of lines of the same diameter.
   - **When to use it?**To extend a line, join two ends or secure loose ends quickly.

4. **Figure Eight Knot**
   - **For**a strong, easy-to-untie stopper knot that prevents the line from escaping from a loop

or a pulley.

- **When to use it?**To lock one end of a line and prevent it from slipping out of its attachment (pulley, loop, etc.).

5. **Taut-Line Hitch**

- **For what ?**It creates an adjustable tension point on the line and remains reliable under load.
- **When to use it?**To adjust the tension of the flying line when it is attached to a stake, an anchor or a handle. Or for the bending bridles of kites (e.g. rokkaku).
-

Regular practice in tying these knots ensures increased efficiency and safety in the field. A few others, occasionally used, may be useful to know, such as theclove hitch to hang? orthe prusik for a line object and for temporary joining of linesthe barrel knot Have a good flight!

Steering Committee Notice: With these few knots you are ready to practice kap! Be careful, knots are weak points in your system because they reduce the strength of your lines by 20 to 50% depending on the type of knot and rope,

take this into account and be careful! And above all, don't hesitate to change the line if it wears out, because even the most luxurious ones cost very little compared to the cost of the equipment attached to it (cv and nacelle), and the possible risks generated. Finally, an obvious reminder: also remember to fix your line at the end on the handle side!

Index / keywords: Knots, line

Links: Site onThe Knots (multilingual and illustrated) Also available inAndroid app .A Scope Synthesis

Line winders

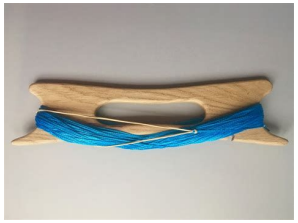
Author: P. LESAGE

Choosing the right line winder is essential for kite aerial photography (KAP). It's not uncommon to have to use it a lot during a session to vary your viewing angle. Often underestimated, this tool can transform your experience, combining comfort and safety, which is essential for your equipment...and the people around you.

Almost everything exists – even the line without a reel, neatly stored in a bag – for all budgets, from simple models to premium equipment. But in all cases it must be chosen according to the size of the line and the traction exerted. Its reliability will quickly be compromised if the tension increases: strands wound hundreds of times calculate the pressure in tons!

Also, make sure to get into the habit of avoiding twisting the line if you opt for manual winding.

Here's an overview of the main options available:

Kind	Description	Security	comfort	Tension	Compactness	Cost
	**1. Flat reel.** The classic monofilament! Simple and economical to make, depending on the line it's intended for, perfect for beginners with lines that aren't too tight. Can become difficult to handle with traction.	+ +	+ - some don't swear that by him	- Adjust your size and resistance	+ + (Depending on size!)	
	**2. Drum reel** With its crank, the drum reel makes it easier to wind long lines. Its speed and efficiency compensate for its weight and size.	+ +	+	+ + ensure the resistance of the means for strong pulls	- -	- +
	**3. Yo-yo winder/*rondo*** Compact and easy to transport, the "yoyo" model is suitable for lines that are neither too long nor too taut. Its plastic generally does not withstand shock or storage under tension.	-	- (not winding fast)	- not to wrap under tension excessive	+ +	+ +

	**4. Reel with integrated brake** These models allow precise control, even in changing winds. Their maneuverability makes them an excellent choice for KAP, despite a slightly higher cost and weight.	+ +	+ +	+ +	- -	- -
	**5. Yoyo with handle**Cthe winders sometimes mounted on bearings can be used for small lines. Their resistance over time is quite limited.	- quite fragile	+	- - to be reserved for low voltages	+	+
6. DIY winders Creating your own reel can be an economical and personalized solution. Using recycled materials or custom-made products, you can design a unique tool. In the United States,**Strato Spool** is a reference in this field.		+ + according to quality of manufacturing!	+ +	+ ensure the resistance of the means for strong pulls	-	+ -

The right reel transforms your experience into pure pleasure. Take the time to assess your needs to choose the ideal tool. Start with the classics and then see which model to custom design or purchase. And most importantly, share your experiences and tips onKAPable to enrich the community of enthusiasts!

Steering Committee Advice: For aerial photography, a reliable reel is essential. It must efficiently handle high tensions while ensuring smooth handling. Models with integrated brakes are particularly popular for their optimal in-flight control. Less luxurious but robust reels are also a good choice. Forget the price, the quality remains!

Index / keywords: Spool, winder, line	**Initiation**
Links:Some models on the Christian Becot site, example of stratospool	Date: 04/06/25

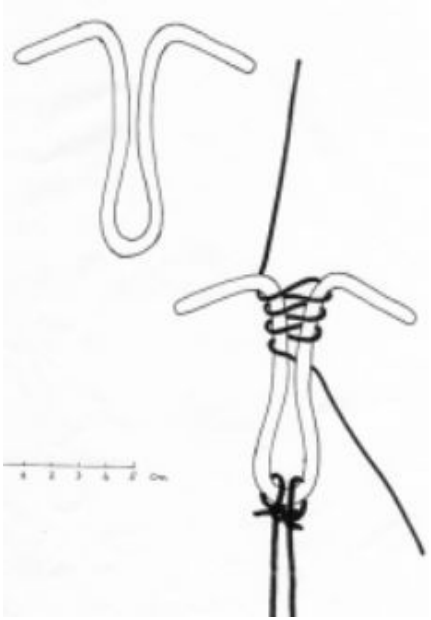
Line accessories

Author: P. LESAGE

Among the accessories useful for handling the kite line, here are the main ones, especially if you practice with significant tension.

The first is maybegamma hook, all the details of which you will find on Christian's website . It allows you to anchor the CV almost anywhere!

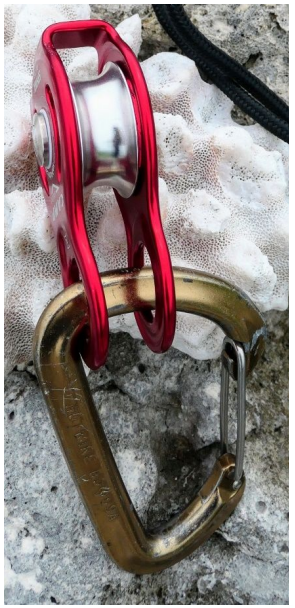
A derivative isthe grapple handle also on this same site.



A variation for attaching the line to an anchor or post: the "8". Used in mountaineering for rappelling, it allows you to brake the line and anchor it to secure it. Combined with a carabiner, it is very useful.

As an alternative handle some use a "crocodile grip"

And finally, when the wind picks up, bringing the kite down by hand or by winding it directly may prove impossible; two types of**pulleys** will allow the kite flyer either to lower the line by walking towards the kite if there is enough space, or to control the tension with winch pulleys such as those used in nautical sports. (They can in fact multiply the effort and therefore reduce the tension, and include a ratchet*u*)



Some also use straps and carabiners which allow you to both hold and hang them from your waist, for example.

Steering Committee Opinion: We all have a few accessories in our bags for handling lines. Don't forget to wear gloves as soon as the tension rises, especially with thin lines that quickly become sharp. And above all, use equipment you trust and are familiar with; in a critical situation, you rarely have time to learn how to use it!

Another very useful accessory, with a very different role: the scale. These are now available in the form of luggage scales at very low prices, so the accuracy is sufficient for our business to properly assess the line's traction.

Index / keywords: lines, straps, pulley, weight	Initiation 2A40
Links:Accessories on becot.info	Date: 05/02/25

3. NACELLES and SUSPENSIONS

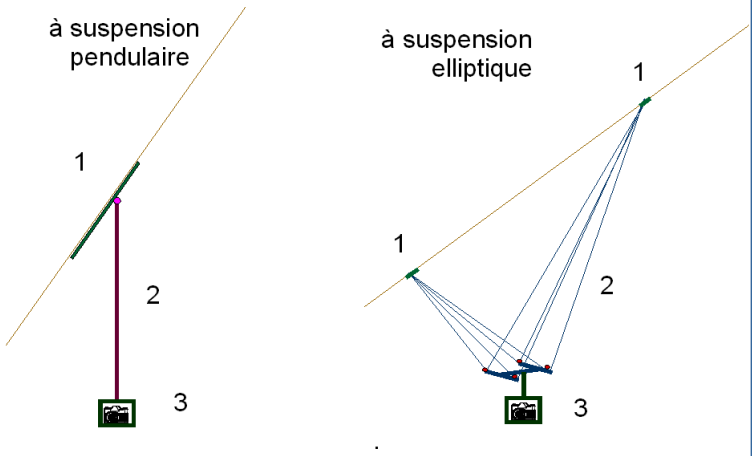
Photo M. Wirth

The gimbals are used to hold the camera equipment and are generally connected to the kite line via a suspension system, the two main types of which are the pendulum and the picavet. They are used both to hold the camera and also often to orient it, either manually or remotely.
There are many types, from the simplest to the most complex. It is important that it is adapted to the device used, to facilitate control.
We should also mention that in recent years there have been gimbals...which have become useless since the device itself is equipped with an orientation device, or does not need one, in the specific case of 360° shots.

The nacelles

Author :

The nacelles are almost always attached to the retaining wire several dozen meters from the kite.
There are two types: pendulum suspensions and elliptical suspensions.
The nacelles are usually called "Pendules" or "Picavet" depending on their type.



A nacelle generally consists of three main parts:

1. The**hanging module**is a fixing bar (pendulum) or two hooks (elliptical suspension)
The preferred material is aluminum, light, not very sharp, easy to work with.

2. The susp**tension**is essential for damping the movements of the cradle. The kite moving, the gusts of wind on the cradle, the tension on the retaining line, are all stresses that will make the cradle move. For both types, the length determines the oscillation period (time for the movement to return). The different movements that the gondola takes are the gyration (vertical axis sometimes called yaw), pitch (along the grain), roll (along the axis transverse to the grain). Damping occurs quickly for the most braked movement. The last movement has the least friction. The settings are such that this last movement is the least disruptive to the images. The turning movement is the most disturbing.

3. The cradle**ceau**is the structure that houses the photographic equipment.
It is almost non-existent in the Filalu nacelle. It is complex when it includes three remotely controlled motorized axes and also supports the electronics and the power battery.

Advisory Committee Opinion:

Index / keywords: nacelle, picavet, pendulum

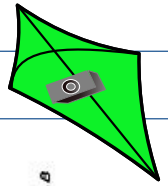
Initiation 3A05

Links:

01/02/25

Make your first “Picavet”

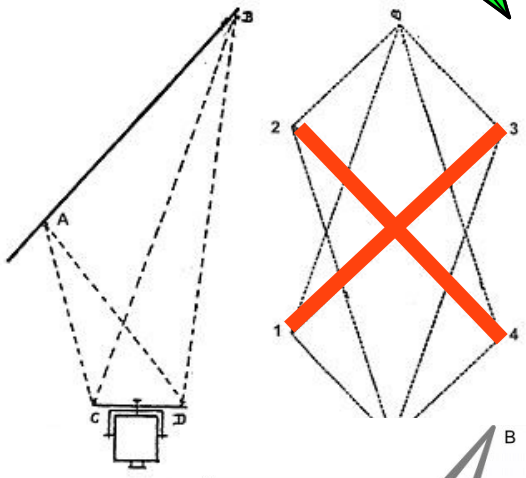
Initiation 3 A10



Author: M. Dehaye

Date: 01/04/24

The Picavet suspension takes its name from Pierre Louis Picavet, who published in 1912 the description of the device to stabilize the gimbal as much as possible. The device seems complex but is actually quite simple. It is based on the use of a line connecting two attachment points on the kite line and four attachment points on a cross designed to support the camera gimbal.
Initially Pierre Picavet proposed a version in**X**that is to say with the line of the kite passing between the 4 Cross attachment points. With 71 cm arms! And a total line length of 18 m. The lacing is then A-1-ring-B-ring – 4-A-ring- 2- B-3-ring-A (top view opposite). A ring is passed on each side of the line, so as to force an identical angle between the two sides of the suspension.
Developments over the past thirty years have brought this pendant light back to the forefront, albeit with smaller dimensions for easier storage. Arms of 10 to 20 cm are now common, making the whole thing more compact.
The cross is fitted with pitons at the ends for sliding the line, and the attachment to the retaining line is done by clips, hooks or small carabiners.
Recent mini gondolas, designed for light winds, sometimes have arms of less than 10 cm, and sometimes even only 2 arms. The rotation damping is then less, but they are designed for light winds, which are generally less turbulent.



Recent gondolas also sometimes have a “**+**» one of the axes of the cross parallel to the wire. (offset view opposite). A
A single ring is then placed on the line passing through the center of the cross. Many other models exist, adapted to try to further reduce the rotation of this suspension, and other accessories can be added to further dampen the movements: sail, stabilizing arch, badminton shuttlecock, etc.
Finally, for added safety, the strands can be tied at A or B to prevent the line from breaking and causing the basket to fall. Many variations are available on the Becot.info website, with[BecAvet](#) a recent 3-point mounting project.

Steering Committee Opinion:*It would be better to use 4 wheels instead of pitons, but we are happy with this rudimentary device.*. (Pierre Picavet. 1912)

Index / keywords: picavet,

Links:[Becot.info flickR kapRig](#) , BecAvet.[Flickr kaprigs](#) ,

The FILALU nacelle	Initiation**n 3 A20**
Author: C. BECOT	Date: 02/29/2024

Here is the simplest, and so light, nacelle!

It is suitable for any compact device weighing up to 400g. It weighs only 25 grams.

For triggering, the device must have a built-in intervalometer, or any other equivalent device.

To make it, you need:

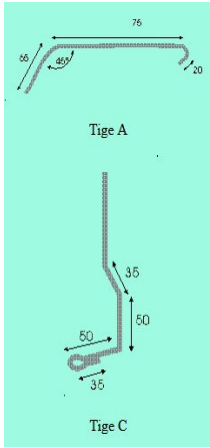
- > a 1m rod in Ø3 or 3.2mm aluminum

- > flexible plastic or silicone tube Ø5-2, length 15 to 20cm which must fit tightly.

This tube should be able to bend and deform easily. Test the length of the fitting and the force required to extract it. Normally, to extract the rod, you must push on the end of the plastic tube, not pull.

Cut the aluminum rod into 3 sections A and C of 200 mm and C of 600

mm Bend the rod A as shown in the diagram



Bend rod C as shown in the diagram

Cut 2 sections of tube, D 50 mm long and E 150 to 200 mm long.

Insert each rod A and B into tube D about 15 to 20mm and rods B and C into tube E

Fix the device

Bend the bottom of the C rod to obtain the desired aiming angle.

In landscape format, a 15° tilt places the horizon at the top of the image.

Use :

Attach the nacelle to the wire as shown in the photograph.

Use the tube to point the device in the desired direction.

After each use, remove the tubes from the rods to prevent them from taking shape and losing their clamping effectiveness.

The nacelle*Filalu*is not intended to be motorized; however, it allows you to take photos at a shooting angle of approximately 100°

In fact, she isself-rotating,

That is, it pivots to the right and left with an oscillating motion. The oscillation angle obtained with a 20cm soft rubber tube is approximately +/- 50°

So, when shooting with automatic shutter release with intervalometer, it takes pictures with various angles around the central position.

Steering Committee Opinion: this solution, operational for years, is undoubtedly one of the most effective for simply starting the KAP.

Reservations: do not exceed the weight requirements!

Index / keywords: Nacelle, Initiation, Lightness

Links:Full details and additional options on the C. Becot Filalu website

Simple and efficient nacelle

Initiation 3 A2

Author: Y, LEROY

Date: 02/27/24

This versatile gimbal makes it easy to use any camera that has a built-in trigger: intervalometer or equivalent. It is composed of:

A + A'_ aluminum plate 30x2x300 mm (upper and lower U)

B_ aluminum tube Ø6x1 mm length 300 mm (pendulum)

C _ plastic pipe Ø6 with textile reinforcement, 10cm long (flexible part of the pendulum)

D _ stainless steel wire Ø2.4 for attachment to the line

E _ kite line

F _ upper safety pin for the pendulum in 2mm wire or stainless steel

G _ lower safety pin of the pendulum in wire or stainless steel 2mm

H _ pendulum fixing and rotation screws 4 x 30 mm

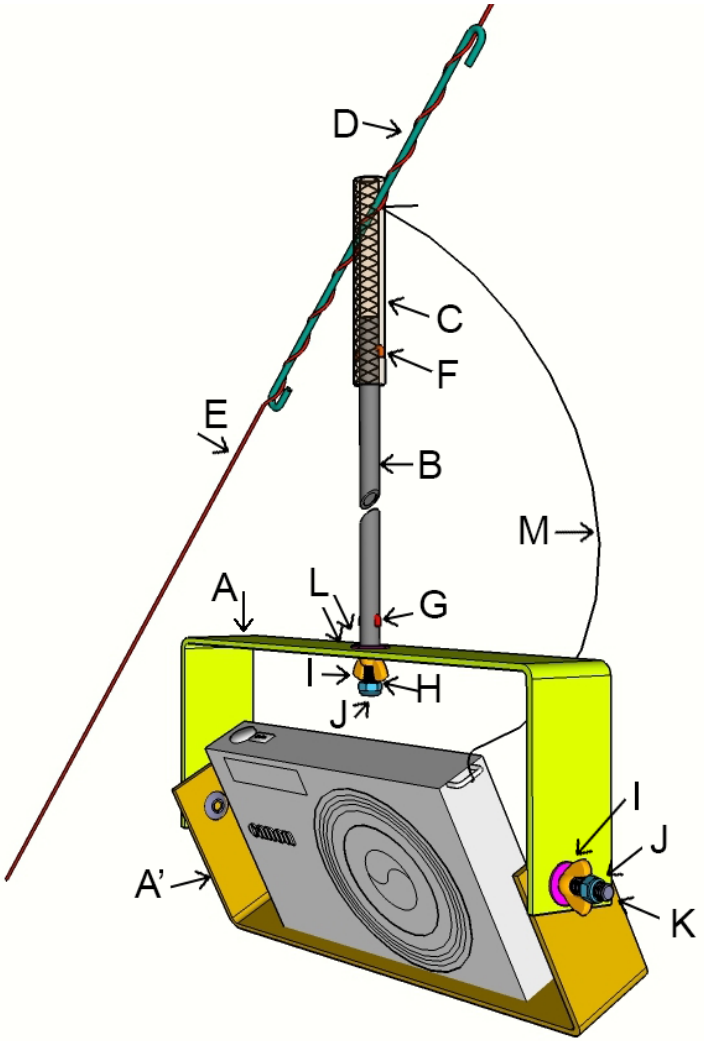
I _ 4mm wing nut (x3)

J _ M4 safety lock nut (x3)

K_ tilt screw M4x25 (x2)

L _ 4mm flat washer (x4)M_ lifeline (safety in case of breakage or loosening of an element

N _ compact camera with built-in or imported intervalometer (CHDK)



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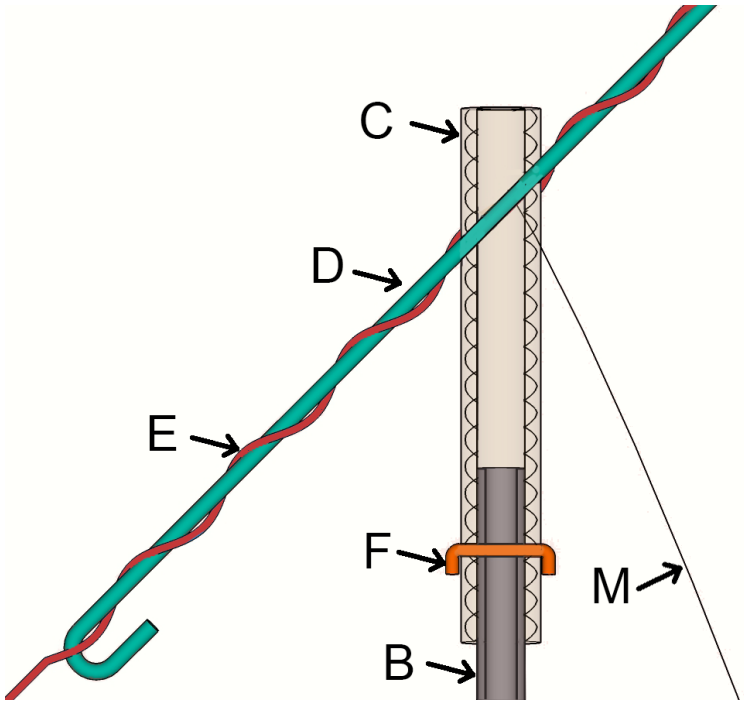
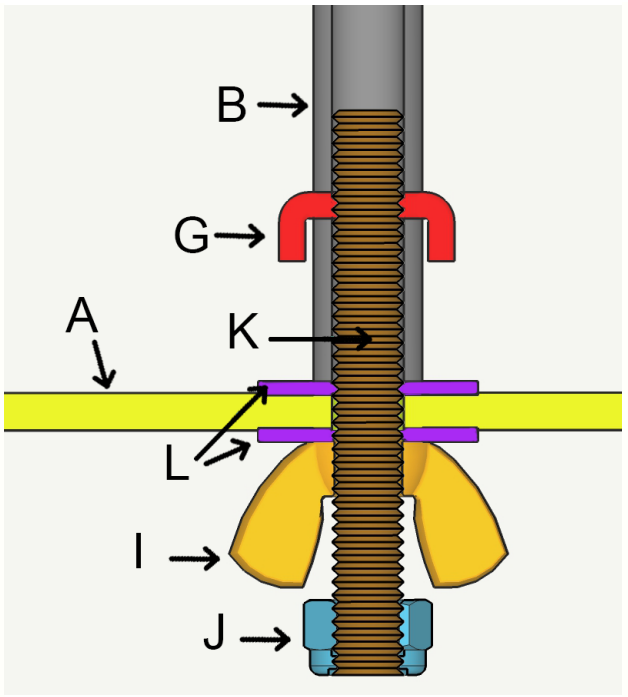
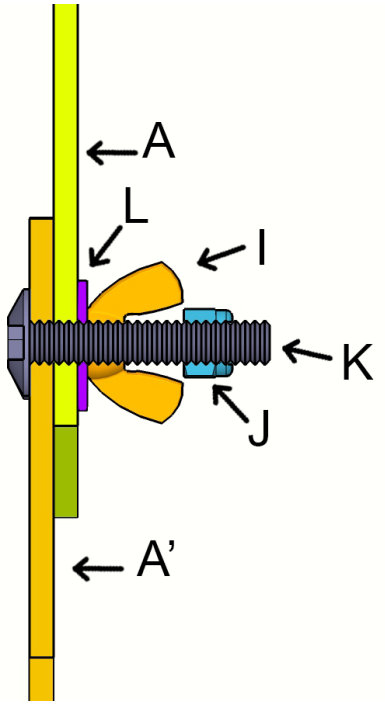






Steering Committee Review: A particularly lightweight and reliable gondola that can be used for a long time without any problems. However, it requires orientation adjustment before takeoff.

Index / keywords: Nacelle, Initiation,

Links:

Evolve the nacelle

Improvement 3B30.

Author: Steering Committee

Updated: 11/24

The gimbals discussed in the introductory instructions are deliberately simple. If you want to take your aerial photography further, you'll need to consider upgrading the gimbal for better control of the camera and its framing.

This choice of nacelle will therefore be made based on the answers to the following questions:

1. Is it adjustable?
2. It allows control of the camera: shutter release, settings
3. Is it automatic (autokap) or controlled remotely by the kite photographer?
4. Does it manage a video return of the ground image?
5. What method of suspension on the line: pendulum or picavet?

Photo M. Wirth

For the implementation of a fixed nacelle, few problems... Go seethe pages of Christian Bécot's website Orthe sheet on this subject .For a complete gimbal, you must quickly ask yourself the two key questions: what interface with the device (triggering and video feedback), and what control of the gimbal: autokap or radio control? The answers will guide the solutions

1. A device for orienting the aircraft, either fixed to be adjusted before take-off, or generally based on servo motors such as those used for model making: generally one for tilt and one for pan of the device, ideally 360° or more. If the orientation is motorized, a module will be required to control the movement of the servos (see 3 below),
2. A control module to trigger the device (And why not access other settings: zoom, exposure, etc.) This device can be internal to the device (intervalometer, wifi, etc.) or added depending on the triggering possibilities (infrared, jack plug, USB port, etc.).This is obviously specific to each device. But it is always possible to add another servo motor which will play the role of a mechanical "finger", to press the trigger.
Let's also mention a basic method that has proven itself: a rubber band holds the shutter release button. This doesn't always work, but it can save a session.

3. A control module that will manage the orientation of the device, and/or the triggering of the device. 2 widespread modes of use:

- Autokap: the operation of the servos and the trigger is automatic: you set a frequency and the gimbal will then trigger at this frequency frequency, but also to change the orientation of the device. For example, every 5 seconds the device rotates 15 degrees and triggers a shot. Alternatively, some gimbals rely on the device being constantly rotated.
- Manual: a remote control must be added that will allow the photographer to send the commands necessary for taking the shot or changing the orientation.

4. A video transmitter that allows the image to be sent back to the photographer by radio to facilitate control of the shot. In the absence of this device, we either take it "by guesswork" or rely on an autokap to hope that the right image will be taken at the right time. Note that the video return, if it sends the image of

the device's screen also allows you to control its operation

5. Which suspension? Historically, the difficult choice is between a pendulum and a picavet. See the information sheet on this subject.

NB As soon as motorization or video feedback appears, the need for a power supply for the gimbal arises, with its share of wires, connections... and weight. Keep in mind that the more you put on the gimbal, the more it will weigh.

see the sheet dedicated to this subject in the following pages.

Steering Committee Opinion:

Index / keywords:Nacelle, electronics, video return, autokap, trigger

Links:Some examples of nacelles on the C. Becot website ,images of gondolas on the Kap Rig group ,And what about Wi-Fi? Complete nacelle

How to motorize a nacelle with servos?

Author: CdO

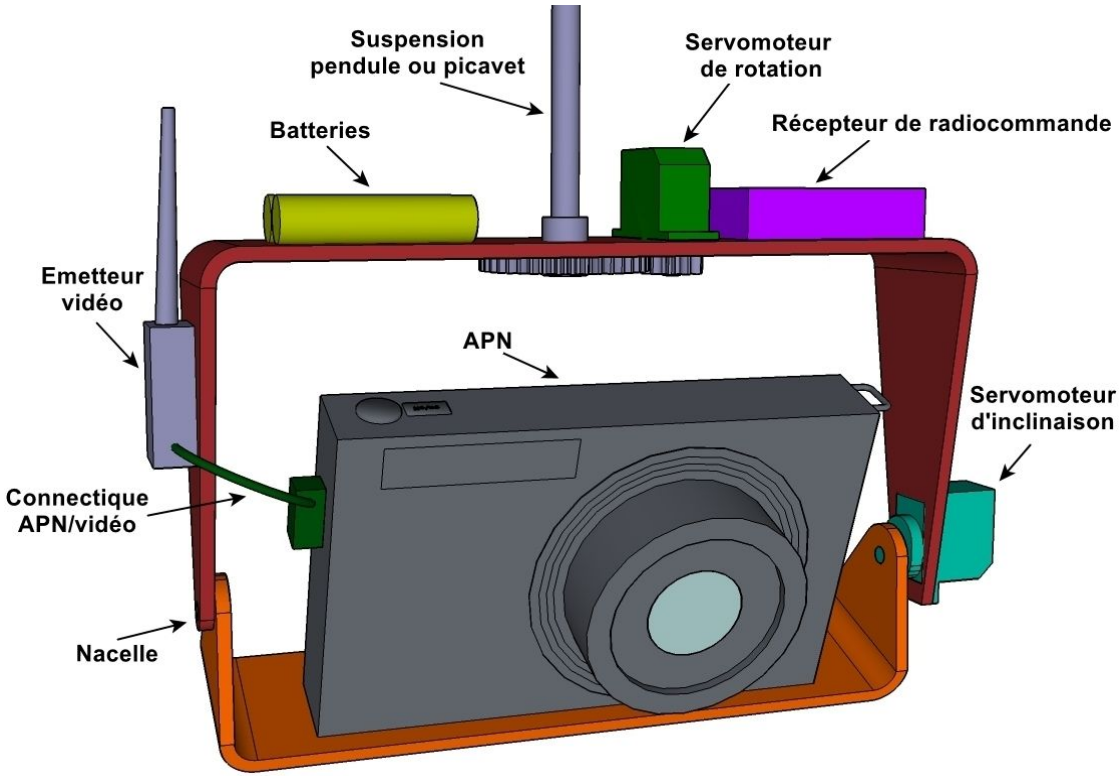
We will take as a referencethe nacelle described here

No matter what material is used for the nacelle, the principles remain the same. There are some images on the FlickR pages of the reality thus achieved

https://www.flickr.com/photos/20201418@N08/52433114828/in/datetaken/

https://www.flickr.com/photos/20201418@N08/50200168731/in/datetaken/

d'other images on Brookes/ken's website http://www.brooxes.com/newsite/BBKK/KITS.html



material :

the parts of the nacelle:

- the U-shaped aluminum (or other material) pieces nested to make the cradle of the nacelle. Generally either the broox pieces or aluminum "flats" which will be bent to the right size.
- screws to fix the motors and serve as rotation axes (tilt)
- 1 axle to fix the nacelle to the suspension (pendulum or picavet)
- Servos: either traditional servos, like the Futaba 3003, or, increasingly popular, mini servos, which are sufficient for a compact camera. They are strong enough for a gimbal, provided it is roughly balanced.

- The pan servo is a servo a**continuous rotation.**Pan rotation is generally achieved via a gear to avoid putting the force and possible shocks on the servo. However, it is possible to use a direct connection with large servos such as those offered by KAPshop on the express condition
  - that the basket remains of a reasonable weight, (<600 gr)
  - to ensure that they are fitted with a 4 mm diameter axlecrossing the gable
  - that the lifeline, intended to hold the equipment in place in the event of breakage, is in place and reliable, see the Brooks Beak kits http://www.brooxes.com/newsite/BBKK/KITS.html
- If the axis is offset to avoid having the weight of the nacelle rest on the servo motor axis, small gears must be provided.
- 1 tilt servo.
- optional 1 trigger servo, which will press like a finger on the trigger. The servos

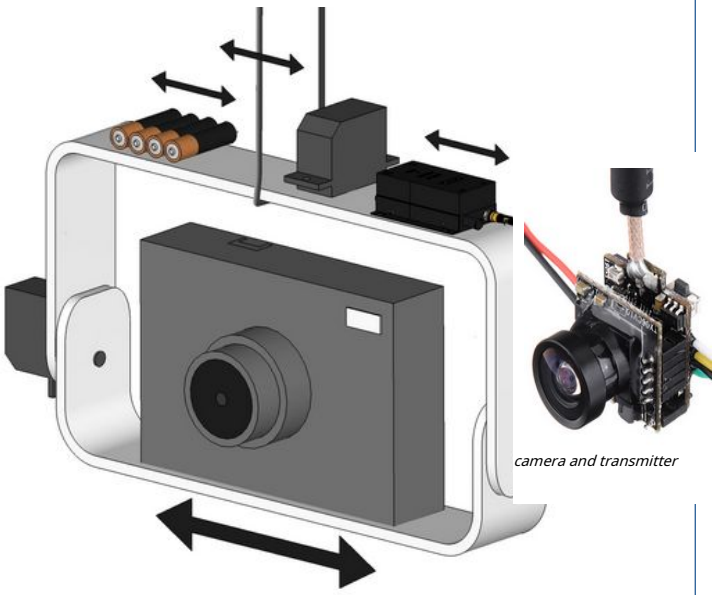
are controlled by a pulse supplied either

- by a model-type radio control, via a radio receiver,
- by a small electronic circuit embedded on the nacelle for automatic movements, for example a rotation every x seconds. Ex Arduino circuit, Aurico...
- Note that some devices allow you to do both alternately or even simultaneously: camremote, arduino+radio, Wifi, etc.
- Connecting the servos is generally quite simple and is done on the radio receiver, or equivalent, with a 3-wire cable, 2 for power, the third used to control the position of the servo or its rotation speed.
- Radio control: you should choose a radio with at least 3 channels: one to control rotation/pan, another for tilt, and a third for shooting if you plan to use a 3rd servo.
  Important: In KAP, your hands are often occupied by the line. Choosing a control that's not too bulky is a smart choice. Similarly, if you're using a screen for video feedback, it's a good idea to choose a radio that can accommodate this screen, or even integrate it.

  Depending on the model, the joysticks may differ, but the pan servo must be controlled by a joystick with a return to a central position to stop rotation.

  NB Pay attention to the different devices that can use radio waves, between radio, video return and possibly wifi.Make sure to use different radio frequencies.

- 1foot screw to fix the device
- 1 lifeline that will secure the device.



camera and transmitter

General design.

Think carefully about the position of the elements on the nacelle and ensure as much as possible that the nacelle is balanced: the forces of the servos must be limited and for this the rotation axes must be as balanced as possible according to the weight of the device.

If the frame is not predefined, for a first creation, it is necessary to plan its size to leave approximately 1 to 2 cm around the device to be able to handle it and pass any cables.

Plan for more if you plan to use other devices that do not have the same format.

Also carefully assess the path of the lifeline to avoid tangling during rotation.

Attach the servos to the chassis and attach the servo horns to the moving parts. Ensure they are securely fastened.

Advisory Committee Opinion:

The first basket is rarely the most accomplished. But the construction really isn't too complicated. Nevertheless, keep a critical eye on the safety of the equipment and...the people around it!

Index / keywords: Nacelle, servomotor	**Initiation**

Links:	05/15/2025

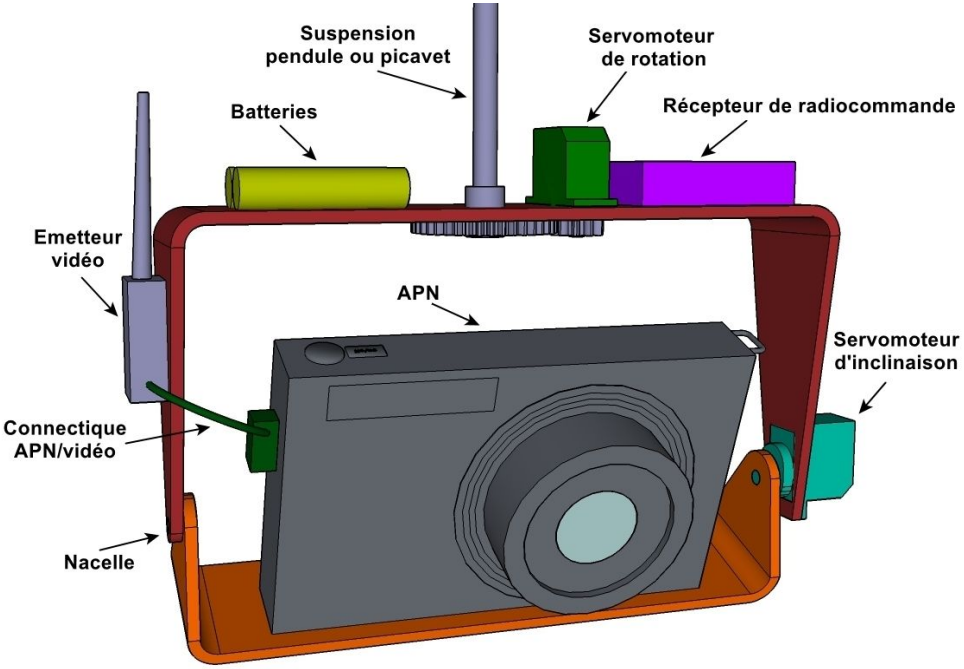
Radio-controlled nacelle with video feedback	3B50 Improvement
Author: Y. LEROY	Date: 04/06/25

Upgrading the gimbal will allow for better control and shooting by visualizing its framing through the addition of a remote control and video feedback.

For framing, the camera is rotated and tilted by two servomotors controlled by a radio control operated on the ground by the aerial photographer. A third channel can be used for triggering via a specific connection if the camera allows it. Or by a third servo acting as a mechanical "finger" on the trigger.

The video feed is sent by the gimbal's transmitter and viewed on the ground on a screen or phone equipped with a receiver. You must ensure that the device has a connection that allows live view during shooting, or use a transmitter that integrates a camera.

Of course, formulas derived from this principle can be adapted to your own configuration: automatic movements and/or triggers, continuous rotation, etc.



Steering Committee Opinion: A complete gimbal is a real plus and an unparalleled pleasure for anyone who wants to master their framing. Developing an operational gimbal adapted to your camera can sometimes be tricky, especially with the scarcity of connections with the digital camera, both for the trigger and for the video return. The alternative remains, of course, automatic triggering.

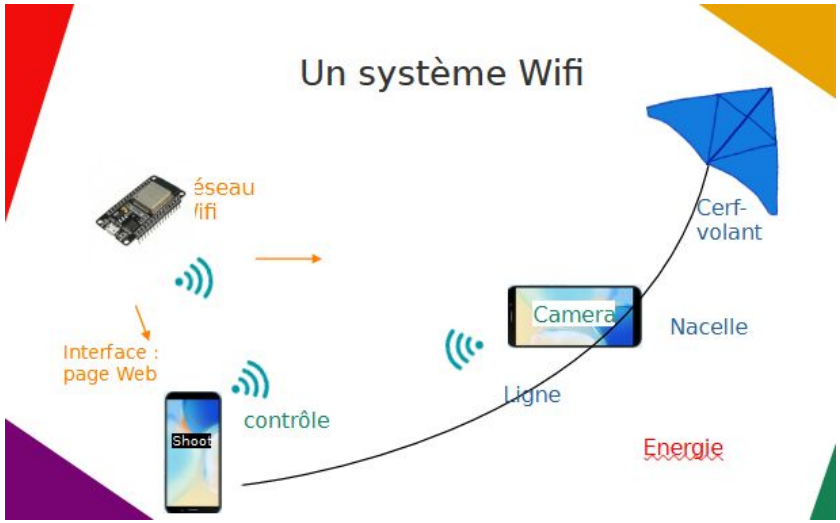
Index / keywords: nacelle, framing, remote control

Links:FlickR Kaprig

What about WiFi?	Improvement 3 B40
Author: M. Dehaye	Date: 02/29/2024

Wi-Fi is a communication protocol designed to connect multiple devices over an ad hoc network. The technology may seem complex, but the increasing use of cameras using this protocol, while at the same time the traditional video outputs of our devices are tending to disappear, undoubtedly leads us to ask the question of its use for PACV.
And it's been about ten years since some people started putting the first action cams, directly connected to their phone on the kite line, or on the kite itself. And this approach brings a new breath of fresh air to the kap: no wires and easy access to video feedback/trigger.

For years I thought that WiFi would be impossible to adapt to due to excessive consumption and too short a range. Until I met a drone pilot who sent his little "tello" so far away that we could no longer see it! I
I even had the pleasure of seeing a small Canon fly over 250 meters while sending the image and triggering it back to the ground on a simple phone. Tempting, right?
If we add the phenomenon of the generalization of the telephone as a "basic" camera and its ability to manage this technology, the temptation is great to take a little interest in it.



We can then consider WiFi as a solution for:

1. allow the device to be triggered,
2. benefit from ground image feedback,
3. Why not control other functions as provided by the manufacturer: mode, exposure, zoom.... All this is not uninteresting! Manufacturers are also planning for some “sdk” development systems that allow direct commands to be sent to the device

Today, it is a very affordable way to take your first steps in PACV if you want to benefit from video feedback and easy triggering, at least... at a reasonable altitude.

4. If we want to go further, why not consider managing the nacelle via control modules that can connect via WiFi ESP32, Raspberry.... With the development of the Internet of Things, which aims to make other types of devices communicate, why not use on our equipment what allows us to remotely control our boiler, our lighting?

Let's be cautious, however: there are still quite a few pitfalls, including an often limited – and above all capricious – scope and the relative complexity of the system. But the first steps can be very simple, and quickly rewarding!

See the links for some possible configurations and the results obtained. Osmo, Canon G9X, phone, complete gimbal....

Steering Committee Opinion: Caution! A complete Wi-Fi solution is far from an easy path. However, it is certainly the inevitable gateway today at a time when "traditional" devices are on the verge of extinction!

Index / keywords: Wifi, Radio control, video return, triggering

Links:The KapEZ , a basic configuration, a complete nacelle
Insta 360 X3 Camera !

The video return	Improvement3B35?
Author: M. Dehaye	Date: 04/06/25

Having video feedback is a definite advantage for being able to fine-tune your framing.
It generally consists of 3 parts: image capture, transmission to the ground and display for the kite flyer.

1. The most practical capture is the one that directly recovers the image from the camera, and displays it on the camera screen. The device must then have a "video out" socket capable of broadcasting the image live at the time of shooting. (live). Analog sockets are increasingly rare on recent cameras, and are sometimes replaced by HDMI sockets. You must ensure that they are usable for shooting (live) and not only for reading images. Note that the return of the functions displayed on the camera screen allows you to view possible alert messages such as a full card or an empty battery... For some recent devices equipped with an application interface (API) it is possible to retrieve the video stream on a Wi-Fi address, with the range limits that this imposes.

If no socket is available, you will need to use a kit that includes a mini camera, duplicating the view of the camera – with the transmitter.

2. Ground transmission. This is generally done by small, conventional 2.4 or 5.8 GHz radio transmitters, which weigh only a few grams. Choose frequencies different from those used for the camera controls. These transmitters are often analog and require converting any HDMI output. They will also require a power supply, which sometimes causes some interference if it is shared with the servomotor power supply. Also note the emergence of digital transmitters from drone technology, which are very promising.

3. Display for the pilot On the ground, it is advisable to group a receiver, associated with the transmitter on the nacelle, and a screen capable of displaying the feedback thus obtained. Here again, technologies have evolved and we find fully integrated products, sometimes even with the radio control. Some receivers can be connected directly for viewing on a phone, avoiding the need for other screens and batteries. Screens are now available in all sizes and quite affordable. Some receivers can connect to – and be powered directly by – a phone.

The connections are generally quite simple, but be careful with the power supplies: the voltages required for the servos, feedback, etc. can be different and require attention to avoid malfunctions, sometimes random. Also take care with the soldering to avoid false contacts, and respect the regulations which impose power limits, largely sufficient for our activity, so as not to disturb others.

Steering Committee Opinion: Implementing video feedback is not always easy depending on the device in question, but when done carefully, the device allows for real control over the shot, for a more photographic approach to KAP. Drone technologies (FPV) have made this equipment increasingly lightweight and affordable.

Index / keywords: video feedback, power supply

ROTASCOO: a mini rotating nacelle without batteries

3C30 Development

Author: Jean Daniel Chantelauze / Michel Dehaye

Date: 03/13/2024

The rotaScoo is a minimalist nacelle project, designed for light winds and allowing the device to rotate without carrying electronics or batteries.
The project originates from a project led by the “PPublic Lab » Californiana few years ago, we discussed electronic-free gimbals. Jean Daniel and I then decided to reduce it to the bare minimum to cope with light winds, when lifting an electronic gimbal is difficult. After a few modifications, we arrived at the following result:
The system is based on a device that tilts the nacelle's mini pendulum, which with each movement will tilt onto the next tooth of what could look like a gear. And thus gradually shift. The rotation assumes alight pulse on the line. Unlike constantly rotating gimbals, without pulse the gimbal does not rotate, allowing you to choose your shooting angle. See the "view from above" effect in the links. The rotation washers are made with a 3D printer and the 2 mm metal uprights, adapted to the shape of the device used. Please note that the device as presented here only works in light winds. and with a line that is not too heavy, because with the distance, the small rocking movement becomes more and more difficult to obtain. And excessive jolts can obviously cause more damage than satisfaction: they will inevitably lead to the loosening of the fixing screw! Use in strong winds is strongly discouraged and would require a complete review of the device to return to a solution closer to that of the Public Lab.

It is easy to understand that this device, coupled with a device controlled by a telephone, provides a simple solution for a very pleasant kap in light winds!

Steering Committee Notice: Please note that although this solution is attractive, it is not suitable for all weather conditions! Limit it to light winds!

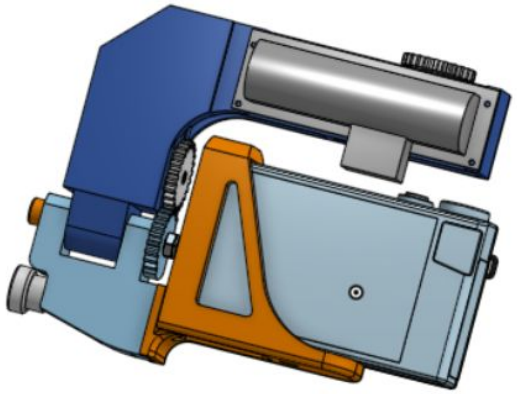
Index / keywords: low wind, lightness, 3D printing

Links:visualize the effect (NB poor quality),3D files ,Public Lab page (looks dead?),Kaptery

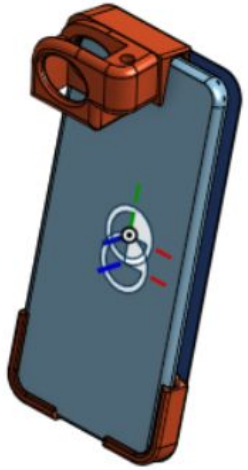
3D printing!

Author: Michel Dehaye

Nice, my fellow kapers told me; you who have a 3D printer, give us a sheet on this new equipment for making nacelles and everything. Doesn't it work?
Well, to be honest, I'm not an expert on the subject, and above all, I still lack the perspective to see how it all behaves over time. I've used Brooxes or aluminum nacelles in all directions. But I can't consolidate any experience here.
So yes, 3D printing is quite stimulating:



- We do it "by hand" if we struggle a little with the design tools: in size, in shape, in robustness. I was lucky to have a helping hand from a mechanical designer to make a real gimbal, it's great! Applied to my standard gimbal, I was able to make it more versatile (for different devices) and finally adjust the main weak point: their suspension from the picavet by the single axis of the servo screw!! . The result is there: a truly custom-made gimbal, with interchangeable "shoes" adapted to each device. I even made a shoe for a phone!
- We also gain in simplicity, by limiting the number of parts. For example, I cut my gears to the exact size of the servo pinion. No more horns and other intermediate parts. Another example where customization brings a real plus below: a UL gimbal intended for a phone: everything is perfectly calibrated for the servo and the phone. Very quick assembly. And weight kept within the objective of 250 gr phone included. Likewise a mini gimbal to lift an osmo pocket on a half picavet, relatively easy to make in 3D

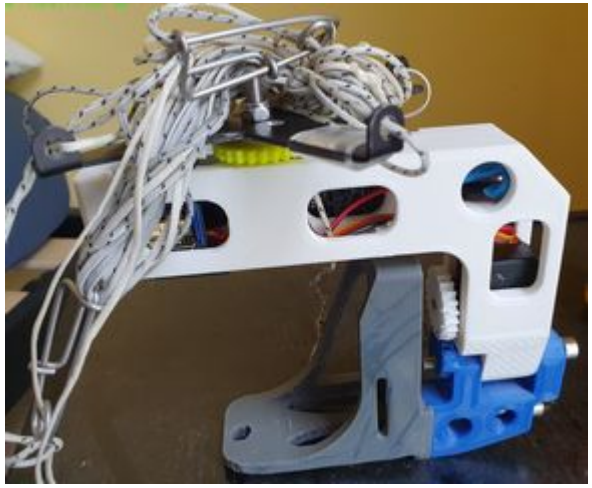


But then why this slight lack of enthusiasm to share?

- distrust of PLA, this material used by the printer which has the reputation of melting quite quickly? We have seen some very deformed ones on the beaches of La Turballe. The layers sometimes peel off and tear off without really knowing the cause? I do not yet have enough perspective to appreciate the durability of these nacelles, and to be frank, having removed the point of fragility of my nacelles, I am not going to remove the lifeline! And what about this nacelle, which fell out of my hands at the time of

make the bag for Cervia, whose pivot broke cleanly and it took 13 hours to reprint! Well, it held with glue but...

- capricious mood of these printers, certainly not expensive in absolute terms but whose settings are sometimes very mysterious and above all quite unstable.
- There are also some rebellious pieces: I still haven't managed to design a picavet that is both as robust and as light as our little Brookes crosses. I have, however, tested some original things, with 3 branches, folding...

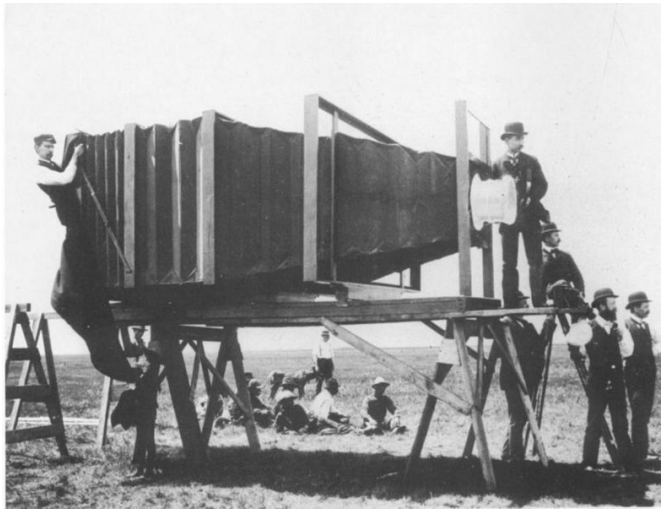


The fact remains that the tool allows you to think outside the box and add a little originality to your projects. And above all, to stick to what's needed. For reasonable costs. But the kap also needs to be robust and reliable. It's important to remember, therefore, that whatever the tool: computer, vice, or screwdriver, making a nacelle requires a bit of skill if you want to do it well and beautifully. I certainly haven't reached that stage yet with the I3D. Nor perhaps with the screwdriver, and since I don't have a vice...

- 3D printing therefore apparently simplifies the production process... if you like to work with your PC, because you have to deal with several software programs: CAD, 3D printing. But the good news is also that the world of the internet allows you to draw great inspiration from what has been done by others.
- So after 3 years of testing, I think it's not bad... especially for adapting equipment intended for light winds as best as possible. But I still can't visualize the weak points for more traditional systems designed to sometimes withstand a beating, or small shocks. Decoding the risks is perhaps not as intuitive as with our traditional gondolas?
- I also note that other kAPers who have tried the I3D adventure with varying degrees of success also remain quite discreet. Some other colleagues with very classic materials sometimes make things lighter. And prettier, right?
- So it's time to compare opinions! And perhaps why not consider pooling our desires and successes? And dream of a shared modular design, followed by printing in a dedicated workshop, or at one of us who has mastered the subject and can combine materials.

Advisory Committee Opinion:We are two of the CDOs to have addressed the subject, with good results but also less good ones. 3D printing requires attention to avoid the risk of equipment falling, but it is surely worth it.

barely by the versatility it brings.	
Index / keywords: nacelle, I3D,	**3C50 Development**
Links: Links:Osmo page , rotascoo	01/02/25



4. PHOTOGRAPHIC CAMERAS AND CAMERA.

Between tradition and more recent tools, there is a wide choice for aerial photography.
This chapter aims to share each other's experiences with different equipment, with a KAP perspective.
The scarcity of "classic" devices, easily triggered remotely and allowing the screen to return to the ground, is obviously regrettable. But at the same time, we are seeing the appearance of new shooting tools, renewing our approach to the discipline, and sometimes bringing a breath of fresh air to the field, making access to video, for example, more accessible: telephones, action cams, and others continue to surprise us with their ever more innovative features!

KapiDocs

Which camera should I choose?

Author: M. Dehaye

All devices can do KAP, but several criteria are important for your choice:

- **The quality**, remains essential if you want quality shots. Tests abound on the net and the objective is not to repeat them here. The main guides are the size of the sensor, the quality of the lens, the presence of an aperture etc. Some KAPers have used full-frame SLRs or have tried to lift even more demanding cameras. But this can only be done with large kites and the associated equipment.

  High image quality will facilitate any post-processing needs. Even if image quality and Quality images are not synonymous! You need to choose a camera that you'll enjoy taking pictures with easily. With KAP, this requires a few additional compromises!
- **Weight:**Everything would be easy if good cameras were light (and cheap!). This is rarely the case: a good sensor and a good lens - especially a zoom! - are rarely light. The race for technical specifications weighs on the balance; we can prefer cameras of moderate size and weight. These cameras, traditionally called compacts, or now hybrids with intermediate-sized sensors, constitute by far the majority of cameras used in KAP. Between 200 and 400 grams they let themselves go on complete gimbals around 500-700 grams. The star of the segment remains to this day the Ricoh GR with its APS C sensor, its quality lens...and its minimal weight (not like the price!)

- **The resistance**The life of the "KAP" device is tough: jolts, even shocks, dust, sand and wind, intensive use, not much is spared them. And a clumsiness can happen very quickly, including at the bottom of the bag! This is why some people prefer sports devices or action cams designed for active lifestyles. Their often low weight, combined with integrated connectivity or automation, makes them very tempting. Be careful, their rendering is often "unique" and ultimately of poor quality despite the progress of recent years. If their use is limited to small images or the web, this is sufficient.

- **The budget:**Faced with these constraints, the choice may be to opt for a cheap device, to make your debut while waiting for something better. The entry-level products from manufacturers have unfortunately become very rare and poor, replaced by the most active segment in recent years: the telephone! They have therefore logically made their appearance in KAP, being fairly open solutions. See the pages dedicated to the subject. But they often remain at the entry-level of basic products (small sensor, non-existent diaphragm, etc.),

even if manufacturers develop a lot of know-how to get the best out of it.

Some functions are very useful in KAP due to the difficulty of remote control of the device, and its relative instability.

- A built-in intervalometer allows for autoKAP. On a phone, you can add an app to do this.
- A well-defined sensor allows you to crop images whose orientation will be a little haphazard. At this level, if the sensor definition is not everything, 12 M pixels seems a minimum today.
- A speed priority or a “sport” mode will allow you to favor high speeds (< 1/500s), limiting the risk of camera shake.

- Increasingly rare trigger or video output sockets simplify the design of gimbals with image feedback.
- Everyone will have to juggle these different criteria depending on their budget, their approach, or simply what they have in their bag. Don't hesitate to ask for opinions and compare the images produced. KAP is a kite-flying activity, but it is also, and perhaps above all, a photographic activity, where the equipment plays a major role in the final rendering of the images.

What resolution for our images? 100 pixels per centimeter!

A good quality print requires a resolution of 300 dpi (dot per inch) to be viewed at close range. One inch being 2.54 cm, this means that 118 pixels are required per cm of the final image, which we will round up to 100 for simplicity. For example, a postcard (15*10cm) requires approximately 1500*1000 pixels, or 1.5 M, a 30x40 print approximately 12 Mpx, etc.

Large-format prints follow a slightly different logic, as they can be printed at lower resolutions when viewed from a distance. Recent enlargement software also performs miracles in terms of enlargement and processing. But as mentioned at the beginning, the better the base image, the better the final result.

Raw or JPEG format?

It's a matter of choice...and time. JPEG is often more efficient and more flattering when output directly from the camera, because manufacturers are best placed to optimize their images. But if you want to keep originals, process them yourself, and be able to improve them as software evolves, then buy a big hard drive and keep your RAW files.

Steering Committee's Opinion: Choosing a camera is not trivial because the constraints in KAP are significant: but the choice is key if you want to obtain quality visuals. As in traditional photography, the best is the one...with which YOU take good images!

Index / keywords: apn

Initiation

Links:DXO benchmark ,DPREVIEW device catalog ,

Date: 04/06/25

What if the device to start with was a....phone?	Initiation 4 A10
Author: M. Dehaye	Date: 02/29/2024

Choosing the device to start KAP is a delicate choice.
Any device can fulfill the role, taking into account the compromise: quality - weight - remote operation: (triggering, screen transfer, etc.). Especially since the devices that have become classics in the discipline (Canon S Series, Ricoh, etc.) are either becoming unobtainable or expensive.

The main criteria are therefore:

- the desired quality,
- the weight to lift?
- Remote control of the device? Intervalometer or command control?
- Video feedback or not?

A few years ago, daring to fly a phone for beginners was a bit surreal: expensive and of poor photographic quality, the phone seemed incongruous. But the first phone gimbals are now 20 years old and I admit to being a little moved by this one:https://flic.kr/p/aH8MF

If you're starting from scratch, it might be the perfect candidate: you'll easily find one for cheap, especially if a cracked screen doesn't bother you. That's good for the kap, we don't look at the screen ;-) If you're also looking at previous generations, it's likely that it will be of reasonable size and weight! Add to that the fact that several applications can make the phone more versatile for photography: you can start with Open Camera (on Android), free and open source, which allows for quite a few functions, including an intervalometer mode that's a bit hidden in the menus behind the "burst" section!
The most curious can try to trigger it remotely: forget Bluetooth whose range is still too limited to date, but some Wifi modes are possible with the wifi version of open camera or Ipwebcam which allows control from another phone. And even consider solutions for "mirroring" the phone from the ground, but unless I'm mistaken to date, these systems are generally the source of such latency that use is not easy: the simplest remains autokap for its first images.

Here is a bike rack adapted to go quickly on a simple pendulum

You'll also find some inexpensive accessories to quickly make a gimbal: a selfie stick, a tripod adapter, a wire pendulum - anything goes! One or two safety bungees and off you go! Don't forget to add a lifeline - a small safety line - just in case...

Well, the phone doesn't only have advantages: its wind resistance is more sensitive than a classic compact, the quality isn't always exceptional, but it's there and quickly adapted. It also allows for quick image checks, and if it doesn't work, you can start again!

Steering Committee Opinion: The Phone as a Digital Camera? Opinions are divided ;-)
Index / keywords: Open Camera, Phone, start, Autokap, Wifi
Links:KapEZ Open Camera ,a raw phone image

Ricoh GR III: an asset for aerial photography by kite	Initiation 4A50
Author: Pierre Lesage	Date: 04/06/25

THE**Ricoh GR III**is the third edition of a – long – tradition of compact cameras appreciated in particular by fans of aerial photography by kite.
Equipped with a 24-megapixel APS-C sensor, it offers excellent image quality, comparable to that of some larger DSLRs, allowing it to capture sharp and detailed images. Its fixed 28 mm f/2.8 lens is ideal for aerial shots (some users might prefer a wider focal length, like a 24 mm. Let's forget the wide-angle converter, which is too heavy for the KAP). The camera offers various shooting modes and the ability to save custom settings. Above all, it has a built-in intervalometer, a valuable feature for the autoKAP. Finally, its weight of 257 grams (battery included) definitely makes it an ideal candidate for the KAP. However, the camera has some limitations: The lack of real-time video feedback means it is impossible to see what the camera is capturing from the ground, there is also no socket for remote triggering, and of course, no interchangeable lenses. The user is therefore limited to the integrated lens, without the possibility of changing focal length to zoom or modify the perspective.

Please note that battery life can be limited, especially when using features like image stabilization or intervalometer. An hour of auto-capture will drain its endurance, so it's recommended to bring extra batteries.

Steering Committee Opinion: The Ricoh GR III is an excellent choice for the KAP thanks to its weight, its image quality, and its settings adapted to our practice. The lack of video feedback, of a suitable release cable will discourage fans of "custom" gimbals. So, looking for the second-hand version 2 could be an alternative for the latter. Especially since the price of the GRIII could also deter those, beginners or cautious, who would not want to install such an expensive cable!

Index / keywords: camera, Autokap

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DXO One device	4B25 Developments
Author: M. DEHAYE	Date: 02/04/2024

The DXO One camera is a bit of a UFO in the world of digital cameras. Originally designed to be coupled with an iPhone, it was in fact a photography concentrate to fill the gaps of the phones of the time (2015). And sold relatively expensive (price of an entry-level SLR at the time), it was a flop, since the DXO company after difficulties abandoned its sale.

The good news is that it can be found at a good price second-hand, and often in good condition since it's hardly ever used! This makes it a godsend for kapers, because it has advantages for us:

- a weight of 100 and some grams ;-)
- a 1-inch 20 Mpix sensor whose quality is beyond praise. Associated with a real lens (f1.8) of good quality with a real diaphragm, a real RAW... (video in full HD = 1920*1280)
- an integrated intervalometer,
- a fairly simple and interesting wifi operation, allowing for example to launch the intervalometer remotely. And which has the good idea of reconnecting on its own...if you have an iPhone!

Be careful, it unfortunately has some flaws that will surely be prohibitive for many:

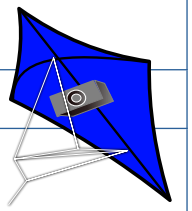
- exclusive iPhone access to configure it (an Android version, not tested, exists. But without Wi-Fi).
- indecent battery life, especially with Wi-Fi: in such a volume, there must not be much room left for the battery
- a very unusual shape, with a paltry screen, but do we need it?
- The absence of foot screws

So why this feature? Quite simply because for 100+ grams we have unmatched image quality at this weight, capable of saving a session when the wind is very light. Launched with an intervalometer or via Wi-Fi for

For those with an iPhone, it's irreplaceable when the wind is light. At the end of a simple wire or a mini nacelle, it's incredibly effective, if you do it quickly...as well as at the end of a pole ;-)
Steering Committee Review: An unlikely favorite. A camera that's surely more useful in KAP than elsewhere! With the many reservations mentioned, this is a product that's certainly niche, but it can help out if you can find it at a reasonable price!
Index / keywords: Camera, intervalometer, Wifi,Lightness
Links:Full resolution image ,DXO One info ,the online "manual"

Insta 360 X3 Camera

***4B30 Improvement*.**



Author: M. Dehaye

Updated: 09/15/2024

The insta X3 is a 360° camera, capable of filming in 5.7k (5760 px wide) and taking 70 Mpx spherical images (11968x5984 px). Remember that 360° images are spherical images covering the entire surrounding space, with an extreme angle of view. Friends of curved horizons, welcome!

This is the 2nd device of this type tested (after the thetaS a few years ago which did not leave me with an imperishable memory). The specificity of the X3 is to capture 360° views, in a resolution such that one can then, in post-processing, extract from these views, panoramas or "cropped" videos which are at least surprising, at least on screen. And this quite simply from a well-designed software. One can then select the part that one wants to keep, with the desired angle. Be careful this has an impact on the size of the images produced; thus the export of a cropped video can only be done in full HD (= 2K) and a photo of approximately 90° x 60° will reduce the resolution of the image by approximately 11/12!

In KAP, this camera becomes even more interesting because it doesn't need to be oriented. It frames everything, including the kite and the line! It can then be fixed in a very "rustic" way, making any gimbal unnecessary: a simple pendulum wire is enough! Which also disappears from the image! In addition, the magic of the software means that the camera's movements are almost completely compensated thanks to the gyroscopic data! All this is stabilized without question. And the artifacts are bearable on screen. The camera also has a "pure shot" mode that allows you to compensate rather well for the exposure differences, which are inevitable with such an angle of view! As the camera weighs less than 200 grams, it makes it very "versatile", provided once again that you appreciate the somewhat caricatured rendering of this type of camera!

It can connect via Wi-Fi, with a range of around 40 m, and you can then manually control the trigger and video feedback, and launch the different modes: video, photo, intervalometer, etc. Reconnection can be done in flight. Latency is not negligible, and varies depending on the mode.

Be careful, to preserve so many pixels, the files are large! And take up space. A video clip quickly reaches a gigabyte, and a complete raw photo exceeds 100 MB! Memory cards and a powerful PC are required!

In the end, a product that's not really a camera, not really a video camera, but not so badly suited to the KAP, which allows us to renew our points of view, albeit with a very wide-angle bias. And a price that's a bit high for pure photographic use. Be careful when handling: the lenses are very exposed (experienced!). Lovers of classic photography, move on.

Without direction and stabilized, the nacelle is reduced to a minimum!

Opinion of the Steering Committee:member of the new generation of fairly versatile cameras, a rather fun and simple product, if you accept the very typical rendering, to spend time on the screen in post-processing, and if the price is not prohibitive.

Index / keywords: Wifi, Action Cam, 360°, panorama, Camera

Links:Manufacturer documentation. 360° image.Video post processing

An atypical device: the Osmo Pocket

Improvement 4 B41

Author: M. Dehaye

Date: 02/29/2024

The Osmo Pocket is a – really! – small camera that has the particularity of benefiting from 3-axis mechanical stabilization, guaranteeing fluidity when shooting video.
Its use in kap truly allows you to easily enter a new world, that of kite video. Indeed
Perfectly stabilized, it opens the door to shots with impressive stability, rarely seen in kap, all in equipment < 200 grams. A stunning tool for tackling calm conditions.

Equipped with a specially designed accessory to make it work in WiFi, it can then be controlled remotely. Its stabilization also makes it possible to simplify the gimbal used to the extreme since the stable position is maintained by the camera itself, and the head has a controllable movement over more than 300° in pan and more than 90 in tilt. Also note the possibility of creating panoramic views by 4 successive views with rotation of the head. (unfortunately only works with the horizon in the center).

My preference is to use it upside down to allow access to vertical views. This comes at the cost of poor ergonomics, as the display on the phone is also inverted, especially for video.

Of course, all this has its limits:

- The DJI ecosystem is demanding – sometimes distressing! –and not all phones are compatible!
- The sensor is small, but the images are clean, thanks in particular to flawless stabilization, 12 or 16 Mpix depending on the version.
- The video shots (4k) are impressive for “KAV” but quickly become boring, because we don’t have the mobility of drones.

The Wi-Fi range is random (+- 60-80 m) but using a repeater is possible, although a bit irritating.

- The ergonomics are not the classic kap ergonomics
- Panoramic views are possible (3*3 and 4*1) but only “centered on the horizon”.
- stabilization is sensitive and does not like to be shaken to the extreme: to be reserved for stable wind.

mini I3D nacelle + half folding picavet: it fits in a glasses case!

In summary, a truly atypical camera, which allows you to enter kite video without too much difficulty. The photo quality is honest, equivalent to that which we had on the Canon S100/110 series. Raw files possible. Be careful, the ergonomics are a little unusual and require a little practice.
A somewhat demanding device that requires some effort to handle, but allows you to fly light and bring back a few video clips. A very versatile tool, which can also be found at a reasonable price second-hand.

Steering Committee Opinion: The tool is indeed interesting, even if it is not suitable for everyone. It should be reserved for moderate winds due to the sensitivity of the head.
Index / keywords: Video, WiFi
Links:a 4K video plan (400MB!)

KapEZ: Use a phone as a device

Development4C50

Author : Mr. Dehaye

Date: 21/6/2024

KapEZ allows you to use a phone as a camera and control it from another phone/ tablet that remains on the ground. Either as a classic device, or to allow you to share aerial photography with other people. The principle: a phone is prepared and installed in the air and the participants, on the ground, will be able to use their own phone, to connect to it (via Wi-Fi), benefit from the video feedback, and above all be able to take the images themselves whenever they want. And retrieve them directly on their phone.

Materials needed:

- an "aerial" phone that will take the images. It must first be equipped with the IP Webcam application (Android). It is based on a simple, non-remote-controlled gimbal, or why not a selfie stick or a rotascoo image ->
- Another phone on the ground, in the user's hands, (or tablet... any terminal capable of opening a web page).
- An ESP32 type circuit, placed nearby, will generate the Wi-Fi network and manage the aerial telephone, via a web page. This circuit must be loaded with a program (Arduino sketch), which will perform these functions. It is powered by a portable battery or why not directly by one of the two phones, as in the image on the right. Note that the use of the IpwebCam app can also be done without using an ESP, via direct Wi-Fi. The interface is then the slightly more loaded one provided by the app.

More detailed information on preparation and implementation is linked below. I can adapt the Arduino program to your needs if you wish.

NB the number of simultaneous connections is limited (3 or 4),

Advisory Committee Opinion:Using the Arduino box doesn't make accessing this tool intuitive and requires a bit of exploration. However, once programmed using the provided example, operation is relatively simple. It can even be a gateway to the KAP, if you don't have a suitable device.

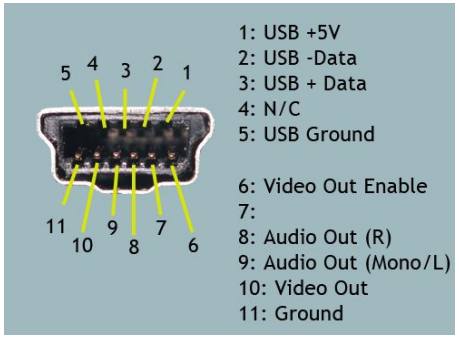
Links:rotascoo,Ipwebcam ,Arduino sketch for the ESP32 ,KapEZ Notes .

Canon S100/S110 Camera	Improvement 4 B50
Author: Michel Dehaye	Date: 03/13/2024

The two Canon S100 and S110 cameras are no longer young (2011-12). They were good little compacts for our activity: light (200 gr), equipped with video outputs, and above all modifiable by the CHDK/SDM "hack" to add intervalometer and remote trigger functions, via the USB port, and CHDK or SDM script. Giving them great versatility. Both also have the possibility of recording "raw" files.

The main differences are the presence of GPS, and a weakness in the lens part of the S100. (Although both devices tend to fail on this point).
2 important notes: 1. adding the CHDK also allows you to control other functions remotely, such as zoom....or other camera settings
2. The video output is via the USB port (specific wiring) and the simultaneous use of the CHDK/SDM for control via the USB port makes it essential to use an 11-pin cable which is very difficult to find...

These two devices are now a little outdated technically (noise in particular) and are increasingly difficult to find second-hand.
But their ability to accept the CHDK, and thus offer a solution for a complete radio-controlled gimbal with video feedback or simply an intervalometer, has allowed many kapers to equip themselves at a reasonable price. All in a weight of less than 200g! So certainly they require a little work to get the best out of them, but you can easily find better in this



weight range?
Steering Committee Review: A device whose success among kapers has proven its effectiveness. But their age, fragility, and exotic connector make them ideal for those willing to get their hands dirty to get the most out of them.
Index / keywords: CHDK, SDM, Canon,
Links:discussion on taking here,specifications compared on camera Decision ,CHDK Home Page , CHDK page in the document

CHDK an intervalometer for Canon cameras	4B55 Improvement
Author: M. Dehaye	Date: 05/03/2024

CHDK (Canon Hack Development Kit – H for Hack, meaning unofficial, even pirated -) is a software overlay that can be installed on certain Canon compact cameras, notably the S90/95/100/110 series, which have accompanied many of us. As well as the G7x I and II series, the latter not having been tested in kap to my knowledge.
It allows you to add some additional functions, such as "scripts", small internal programs in the device, but also the ability to use the USB port to activate the trigger. With such scripts, you can implement an intervalometer function on compatible devices,
Be careful, the installation and implementation are not intuitive, but it's worth the effort to add these additional functions to these devices. This can be done either with one of Dave Mitchell's tools - one of our kaper friends from across the Channel - called STICK. Or with CHIMP, which runs on Windows. See the links below.
Each device must be equipped with a specific version: the principle is to use an image taken with the device. The installation tools will then detect if the version corresponding to the device exists, and install it if necessary on the memory card in order to benefit from these additional functions, temporarily introduced on the memory card.

Don't hesitate to call on some kapers still using these tools because they are tools that are aimed at devices that are already more than 10 years old. Despite their quality, they tend to become rare. And I use them less and less myself and therefore gradually lose the habit of using them. (I nevertheless continue to think that the combination of SDM - cousin of CHDK - on a gimbal equipped with a video return and a camremote remains the most versatile thing I have seen for the kap, since it allowed for devices like S100/S110/G7x I to control all the functions of the device, including the zoom, the exposure settings....as well as viewing the images taken...!).

NB this type of hack is used as usual and according to the established formula, without any guarantee...
For those who would like to dig deeper, I prepared a document a few years ago – a bit indigestible, it is true – aimed at explaining all the functions provided by these tools, and in particular SDM.

Steering Committee Opinion: These tools are particularly powerful, but should only be used by those willing to do a little digging. It's a shame that compatible devices are rare.

Index / keywords: CHDK, intervalometer, triggering, SDM, Canon

Links:CHDK website .STICK explanation page ,CHIM installation page P,SDM for Dummies ,simple intervalometer script

5. OTHER CROSS-CUTTING THEMES / SUBJECTS.

Summary of regulations in France	Author: C. Becot

THE KITE

The kite is**an aircraft**, captive, without anyone on board, not remotely piloted.

The SERA-FRA regulation is applicable in France.

According to SERA definitions, it falls into the categories of aeromodel and aeromodel toy (the one intended, no exclusively for children under 14 years old**).**

Flight height

The flight heights of kites are determined from those of visual flight of manned aircraft SERA 5005 § f 1 & f 2, and SERA-FRA.5005 f 1 -i with the minimum heights imposed on these aircraft in the decree of October 10, 1957, article 1 ABCD.

Indeed, articles SERA-FRA.5005 § f 1-ii and § f 2 specify:

*Aircraft operating without persons on board may operate below the minimum height set out in SERA.5005 f) 1), elsewhere than at the locations specified in point 1), at a height of less than 150 m above the ground or water or 150 m above the obstacle the highest located within a radius of 150 m around the aircraft.*These articles therefore apply to kites.

From these rules the authorized flight heights for kites emerge:

- up to 150 m above ground and water without human activities on the ground
- up to 300 m above areas where human activities are carried out.

NB: Heights above 300 m are possible but of no interest for kites.

No-fly zones

There are many areas where kite-flying is prohibited:

Corridors reserved for other aircraft, emergency services, airport air corridors, etc.

The RTBA, Very Low Altitude Network, from the ground up to a specific altitude. AZBA maps show this network and indicate the dates and times of no-fly zones.
Government, industrial, petrochemical buildings and facilities, prisons, airports, natural areas, etc.

Parks (in Paris, ...), beaches, etc. are specifically prohibited for kites.

PHOTOGRAPHY

The execution mode

To date, aerial photographyby kite is authorized without constraints on its mode of execution.

No Photography Areas

Since 2017, the list of areas prohibited from aerial data capture (ZICAD) has been established by decree (aerial photography by photographic, cinematographic, or any other sensor). The areas can be viewed on the ZICAD Geoportal.

https://www.geoportail.gouv.fr/donnees/zones-interdites-a-la-captation-aerienne-donnees NB

Above the legends there is the link to the decree which gives the contours in GPS.

The right to image

It is important to respect:

- the right to privacy of individuals
- the rights of the owners of the photographed property

- the rightintellectual property for theauthors of architectural works, gardens, etc.

Outside of private use, the publication of images in publications, in exhibitions, or on the internet may require the authorization of the relevant rights holders of the photographs.

SYNTHESIS

In France, outside prohibited areas, kite flying is permitted up to a height of 150 m in areas without human activity and 300 m in areas with human activity.

Aerial photographyby kite is free, without authorization or declaration. There are areas prohibited for kite flying and places prohibited for photography.

The publication of aerial images is subject to image rights authorizations.

Note:

Among the aeromodels there are unmanned remotely piloted aircraft, commonly called drones, subject in France to specific legislation: the decree of December 3, 2020 (version applicable from March 1, 2025). Article 1 of this decree specifies that kites are completely excluded.

Advisory Committee Opinion:It's best to know the rules to follow to avoid any potential hassles that might arise during photoshoots. The legislation isn't straightforward because it isn't specifically designed for kites, and the confusion with the rules for drones doesn't help. Ultimately, though, it's not very restrictive.

Index / keywords: Legislation	**Initiation 5A05**

Links:Geoportail , legislation,	04/22/25

Preparing for a KAP session

Author: Y. LEROY

Knowledge of the basic rules of kite flying is necessary to ensure responsible use. Many of these rules can be found in the following pages, in particular:Regulation AndSecurity by C Becot
Check the weather forecast to determine the wind direction and strength and determine which kite(s) and spool(s) are best suited to the conditions. Satellite mapping software can help you prepare for your session and avoid discovering upon arrival that the environment is unsuitable for your session (power lines, vegetation).
If possible, choose your flight time to benefit from optimal lighting for your subject based on the sun's position. Other apps, such as Sun Quest, can sometimes be useful for checking the sun's shadows at different times of day.

If you rarely fly, try to create a checklist or "routine": even the most serious of people have forgotten a basic element of photography!

The first thing is to make sure that the basic equipment is ready and in flying condition:

- kite(s)... with all its bars!
- coil(s)
- nacelle: check its condition. Check the pendulum or picavet and the lifeline.
- camera: battery charge, memory card capacity, camera mounting screws
- radio control: operation and load control.
- video feedback: operation check and batteries.

Don't hesitate to trigger it to make sure everything is working.

Also include in your bag, if conditions should be more demanding:

- a pair of gloves for handling the line under tension,
- a backup memory card
- spare batteries for each device
- a gamma hook and a winch pulley
- clothing suitable for the conditions (warm in winter, shoes, glasses and sun protection in summer or when the sun is in your face, hat, etc.), and water if the session is long.

Steering Committee Advice: If your main objective is the ride, enjoy! If you want to be sure to bring back some images, devote a little time to these preparatory routines which help to the regularity of the results! According to the formula "the

Bad workers always have bad tools! Don't forget to also review the equipment at the end of the session, especially if any incidents occurred, to prepare for the next one!	
Index / keywords:	**Initiation**
Links:line accessories ,	Date: 04/06/25

I prefer AutoKAP	Initiation 5A10
Author: Pierre LESAGE	Date: 04/06/25

The first challenge for a new aerial photographer is to first fly his kite, master the takeoff, control his flight and ensure his descent without incident.
The second challenge will be to recognize the stability of your kite and decide when to tie your basket to the line, then raise it to the desired altitude to begin shooting.
The third challenge will be to check the video feedback from the gimbal, to operate the potentiometers to fine-tune the framing of the subject, to trigger or to play on the length of the line to refine the framing while maintaining control over his kite.... This is the KAP where the operator, a true one-man band, controls his kite, the environment in which he is evolving, has his eyes on the kite, on the control screen and on the risks of obstacles surrounding it.... An activity which requires a lot of concentration and leaves little room for improvisation.

The more complex it is, the greater the risk of failure... and this maxim also applies to aerophotography, where a video channel will not transmit the image, a radio channel will remain deaf to a trigger command, a battery will not have been recharged or even more infuriating the SD card will have been forgotten on the computer! Despite all these frustrations it is an activity that teaches patience, organization, resilience, modesty and when everything works perfectly it is an excellent learning experience to later free oneself from video or radio feedback and do auto-KAP where paradoxically a new component will intervene: the pleasure of flying a Kite!

The KAP where the aiming, the rotation (pan) and tilt movement, triggering of the nacelle, are controlled by the aerial photographer who also keeps an eye on his kite is quite stressful but allows very good results when everything works well.

With practice, the altitude relative to the subject, the angle of inclination relative to the horizon and the distance relative to the subject depending on its focal length become almost automatic and the video return as well as the radio become optional....

In the practice of autoKAP, that is to say without pan and tilt remote control, without video feedback, two practices must be distinguished:

- Auto KAP intervalometer: Gimbal and fixed camera without rotation, the camera is generally set to a shooting interval between 2 and 10 seconds. This requires some practice to reach the desired altitude depending on your subject and the angle of inclination that you have given your gimbal. It is a simple and effective technique for taking vertical images of a subject, as in archaeology.

- AutoKAP intervalometer and rotation: in this variant, the camera is always in intervalometer mode for shooting, always with a tilt defined at the time of takeoff but the automatic rotation of the gimbal by a motor allows to expand the possibilities of results and assembly of several images in panoramic mode.

Switching from KAP with remote control and video return to autoKAP means switching from fly fishing to trawling with a lot more waste, especially with auto-rotating gimbals, but with a little practice and a well-adjusted gimbal, it is not uncommon to successfully assemble panoramic images of up to 25 images.

So KAP or Auto KAP? To try to summarize, here is a comparative table of the advantages and disadvantages:

Criteria	KAP (Kite Photography)	AUTO KAP (Automation of Kite Photography)
Control	Manual control, providing a more immersive and personalized experience.	Automatic control, less direct interaction with the shooting process.
Flexibility	High flexibility to adjust the angle and timing of shooting.	Less flexible, the shots are more random.
Complexity technical	More complex, requires radio-controlled systems and possibly software.	Relatively simple, requires less technical equipment
Weight of the nacelle	Fully equipped, a KAP carrycot without a camera* will weigh from 200 grams for the lightest to 4 or 500 grams for the heaviest.	The absence of electronics makes it lighter (120-150 grams) and likely to take off in lighter winds.
Cost	May be more expensive due to the electronic systems required.	Generally less expensive because less technology is involved.
Reliability	Depends on the reliability of the automated system.	Depends on operator skills.
Interactivity	Direct interaction with the shooting process.	Limited interaction.
Learning	Technical learning curve to set up and maintain the shooting system but also related to piloting the kite.	Learning curve related to kite flying and photography.
Personalization	High capacity for customizing shots.	Random and limited, however experience will replace chance.
Deployment	May require additional time for setup and pre-testing.	Quick to set up and deploy.
Adaptability	May require adjustments to fit.	Can be quickly adapted to different conditions.
Treatment of images	Usually quite fast because the image was composed and framed when taken.	Significant waste, sometimes time-consuming panorama processing.

Steering Committee Opinion: Everyone has their own preference. It's up to you to find the approach that best suits you for maximum enjoyment, and to know how to change it according to your constraints. Autokap favors a simpler approach, with lightweight and simple equipment. The results leave more room for surprise.

Index / keywords: Autokap
Links:

I prefer remote control and video feedback.	5B20 Improvement
Author: Yves LEROY	Date: 04/06/25

During my first years of kite aerial photography, autokap did not exist and the results of the shots were quite random. The inclination and orientation of the device had to be preset before the takeoff of the basket and a mechanical timer was preset to trigger the camera. To overcome these difficulties, the systems have progressed over the years. Since then, we have been able to pilot with precision
the orientation and inclination of the camera with a motorized gimbal, its triggering and visualizing live what the camera is aiming at to precisely refine the framing but all this requires adaptation with the following equipment:

- a 3-way radio/receiver (tilt/rotate/trigger)
- a suitable nacelle with rotation and tilt servos plus a video transmitter
- batteries to power the receiver, servos and video transmitter
- a radio control to control the servos and the trigger
- a video receiver to control the shots on a screen or a phone

Obvious advantage :With this configuration, you have total control over the recorded images. It allows you to precisely adjust the shooting angle according to the altitude as well as the framing, and a few triggers are enough to obtain the desired result, in a true photographic approach. The time spent sorting and processing images is reduced to a minimum. A video return also allows you to better take into account less visible elements of the ground in the image.

On the other hand, adapting the gimbal increases its mass by a few dozen grams and requires the purchase of specific additional equipment: radio control, servos and video receiver, batteries, etc. The configuration requires a little care for implementation, but with experience, the result is all the more satisfying when you achieve the image you really wanted.

Steering Committee Opinion: The complete gimbal, despite weighing a few dozen grams more, allows you to compose your images with more care than by the chance of the autokap alone. Careful production is necessary to avoid any problems during use, and allows you to create a gimbal "to your liking."

Index / keywords: nacelle, video return, ...

Links:complete nacelle

What if we combined framing and autokap?	5C25 Development
Author: M. Dehaye	Date: 04/06/25

The “autokap” approaches promoted by Are Pierre and the "framed" defended by Yves ultimately so far apart? Certainly in the approach, since one favors simplicity, and the other the efficiency of framing. Yet why not try to combine them? Wouldn't autokap with image control be a plus? Conversely, wouldn't the "manual" solution be easily supported by an automatic approach, as soon as the kite flyer's attention is monopolized by difficult conditions or... by a technical problem.

This idea may seem strange, but it is not without emotion that I remember my first“small” nacelle whose mini command module was designed by Deltakap . If the gimbal didn't receive a command, it would start to trigger and rotate on its own, thus compensating for any bad configuration. Subsequently, my camremote allowed to choose several configuration profiles (kap or autokap, already). I had insisted with Linnar, its designer, to make a mode integrating the 2 advantages: because in the middle of an autokap session, what a pleasure to take back control and linger a little on a somewhat tight approach on the subject, especially if you then have other controls on the device: video return, exposure, zoom... the system then resumes its autokap cycle.

Likewise, it is easy on a conventional radio control to shift the trim a little to let the gimbal rotate slowly while maintaining the trigger at regular intervals, and indulge in a few pans in the middle of a manual session. Because the recent approach to a fast autokap, made possible by our cameras supporting solid bursts, allows these superb pans. We can transpose this to a classic "framed" gimbal. I try to include this function of synchronizing movement and triggering in all my gimbals. Obviously this assumes having a motorized gimbal.

If not, why not put a video return on an autokap gimbal. Of course we can do without it, since we are "trawling". But let's admit that it is annoying to see when reading the images that if we had been a little more to the left or opposite, then the images would have been even better. Or that the perfectly framed photo is right between the two automatic views...but it is not on the memory card!

The evolution of lighter hardware makes this approach accessible: two mini servos, a power supply, and everything else weigh around 70 grams. Not so imposing in the complete system!

I like autokap, but I like even more to report the image I want to make! And often frame tightly. I would add that the video feedback often allows the control of the operation of the device. Who has never done an autokap session with a full card, or a

empty battery won't contradict me!

Ultimately, automatic reflexes are good, but they're only useful if they help us take better pictures, or make them easier. Being able to let go of them is also a good approach. Isn't that the difference between taking a picture and taking pictures ?

Steering Committee Opinion: The idea of combining Autokap and controlled framing is interesting. However, the gimbal still needs to be adapted to this, which isn't always easy.

Index / keywords: Autokap, trigger, panoramic,

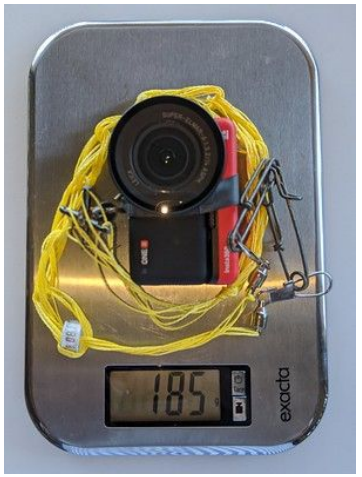
Links:Camremote , Radio control,CHDK (canon devices) ,.Auto/man nacelle prototype

The Kap 'ti vent: flying in light winds.	Improvement 5 C30
Author: M. Dehaye	Date: 19/9/2024

Practicing kap in light winds is often a challenge because the low tension does not make it easy to raise the device, and any drop in wind causes the device to descend quickly!

This situation of a loose line ("slack line") - often under one kg - may seem pleasant for the smoothness of the flight, but requires reviewing the entire system thus constituted to make it more responsive. Flying in light winds requires above all patience of the test!

1. Choose a larger, more powerful kite. Increased surface area is often the key, and you can then choose from the -very- large deltas (> 4m), the rokkakus or rokker of more than 2.20 or weak wind cv: dopero, fled, genki.... Some cv of reasonable size sometimes have behavior to watch out for: fled, clipper....
2. Change the line. A Dyneema line, preferred for stunt kites, is thinner for the same strength. Do not use if there is a risk of chafing against an obstacle or another line, given Dyneema's very low melting point. Dacron lines are less risky.
3. Using a "fast" winder makes the exercise easier because it allows you to quickly tighten the line in slack conditions and avoid having to put the camera on the ground. Or even create your own relative wind: the kap crank ;-)
4. Lighten the basket and camera. This is obvious, but the lighter the equipment to be lifted, the less likely it will be necessary to use a powerful kite! A small device and a mini basket, or even no basket at all: for example, in light winds, a tiny pendulum used just to attach a device to the line without any other equipment, or mini baskets, which Wolfgang has the secret to. See images on the right.



mini pendulum

Steering Committee's Opinion: Slackline flying is fun, but there are significant risks to your equipment. Practice before attaching expensive equipment! Flying without wind remains a challenge!

Index / keywords: light wind,

Links:

In Pierre's bag	Magazine	Date: 04/06/25

As a self-packer, my bag remains relatively light (except for the roller). Here's what it contains:

Kites:

I mainly take**delta: R11, R8, Storm'R**, as well as a**small Rokakaku of 1.15 meters**. With these four models, I can cover a wide range of wind conditions.

Wire and winder: Automatic speed reel with disc brake, equipped with 1000 meters of 130 kg olive-colored Dynema. (a little bulky but ideal for my aerial photography practice)

Shooting equipment

6. Two autoKAP Suptig platforms: o

- One equipped with a**Insta360 RS**1 inch The
- other of a**Ricoh GR III**

-Memory cards, batteries and power bank, just in case.

7. These nacelles**,**of**300 g**And**450 g,**allow operation even in very light winds.

Accessories:

- **Strap**mountain,**figure 8**And**carabiner**.
- **Small tools**:pliers, screwdriver, knife, Kodak screws, pieces of inner tube, ultra-resistant Velcro.
- **Pair of leather gloves**for handling the wire if necessary.
- **KAP Photo Album**:useful for explaining the practice to the authorities.
- Smartphone with up-to-date DGAC kite regulations.
- **Modular Frill Tail**to stabilize the deltas depending on the wind.
- A bag optimized for efficiency and versatility!

Recent finds (<1 year):Suptig for a worry-free autokap

In Michel's bag	Magazine	Date: 04/06/25

The kites.

In KAP, I almost only use deltas for their qualities that I am beginning to understand well: stability, ease of assembly, and reliability. My favorite trio is made up of an R9 (SMAC-made height 165 for light wind, marvel of balance) of an R7 (original DL height 130) and "R6" (self-made height 115 for tonic wind) Let's add the StormR (homemade height 100 for the fight it does not take up space.Queueless Demo)

If only one were needed.a model to be made between the R7 and R8, see delta sheet.

The line. I often hesitate between two (65 or 40 kg) but from now on I often prefer the 40 kg Dacron Black line, on a magnificent compact spool that Yves has the secret to.

Favorite gondola:2-axis gimbal, controlled by Wi-Fi and allowing you to alternate between autokap and classic kap with video feedback. Advantage: versatility

The deviceis always a compromise: the Fuji XF10 for its image quality, unfortunately difficult Wi-Fi controllable. The Canon G7xIII remains a constant ally thanks to its great versatility, responsiveness and remote control via Wi-Fi with control of shooting parameters: TV, zoom, EV correction, etc.
With this device, the nacelle weighs around 570 grams, still too heavy despite the constant efforts to reduce weight.

the tips:

- The bars of the large deltas rise upwards for more compact storage.
- “Secret” weapons for the calm: an Osmo Pocket (champion of versatility: photo, stabilized video and video return in 150 gr.) and a G9x on a Rotafree (1-inch sensor in less than 250 grams to lift).
- Always have a spare battery and power bank as well as a spare memory card.
- A tail to add a little drag when the line is too vertical.

Recent finds (<1 year):a fragile but fun 360° insta X3 to change your viewing angle

List of websitesproposedOrgrouped togetherby the CdO

The list of sites below aims to group together sites containing practical information on the implementation of kite aerial photography (KAP).

It contains links to pages**listed by the CdO (in green),**

or**Sites suggested by kapers (in blue)**.The CdO then strives to give a synthetic opinion with the main themes covered, after taking the time to browse. The opinion may seem a bit biased but mainly aims at moderation to stay in line with Kapidocs = encourage the reasoned practice and development of KAP.

Please feel free to suggest any site that could contribute to this list (see appendix for addresses).

Updated on 04/06/25

NAME / ADDRESS	*Cdo Notice*	*dominant*
English-speaking forum	A good forum for exchanges with kapers from all walks of life.	Kap
~~**French-speaking forum**~~	A must-see site for regular exchanges in French. A lot of interesting information is stored there, unfortunately without order or moderation. Currently unavailable	Kap
KAPable	The new KAP exchange platform	Kap
Becot.info	A benchmark site for its reliability and experience, across the entire KAP section. Some very original approaches, always interesting. The bibliography section is exceptional.	Kap and others
Flickr Images	A source of inspiration for images. With links to equipment too,	Images
Wokipi Kite	A fun site to read about the history of the kite.	Kite
Cape Kite **the last reviewavailable**	Not specific to KAP, but some good ideas to be gleaned there. Note the free availability of back issues for everyone's enjoyment. It's a shame there isn't a proper website with SEO!	kite
Evan Reinheimer	A real site, a real photographer and real photos. A page dedicated to technique with well-made short videos, in particular	KAP / Photo

	on kites in flight. To be extended if necessary onYoutube	
Nicolas Chorier	A site with magnificent images, and a little—too little!—technique. A reminder that with real photographic equipment, it's still beautiful!	Photo / KAP
Between lines	Not much KAP but a nice digital magazine in full color on kites with lots of links to follow to clear your eyes!	Kite
Hang kites	If you had to keep only one site on deltas, it would be this one. Not always easy to read, but full of accumulated experience and a desire to share it. Too bad that updates are increasingly rare. The manufacturing page should be known by heart by all kapers using a delta ;-)	CV / Delta
Andrew Newton Blog	A somewhat old blog with lots of good finds.	KAP
David Hunt	A unfortunately old site, with many dead links but which still presents many concepts that are not explained elsewhere.	Kap
S.HArbord Archives	A site only accessible in archives but which is full of nuggets.	Kap Nacelles
James Gentles	Lots of interesting stuff about the KAP technique, which James is an expert on, providing us with many technical solutions for triggering our cameras for years.	KAP
Stevebrockett	A very nice site, with beautiful kites, beautiful pictures - not in kap - and other things.	resume
The sky for a picture rail	A marvel! It's worth noting that Michel creates CVs that can be very effective for our practice. These include some well-designed rokkaku, and a new delta that we haven't been able to try yet but which looks promising.	resume
The Arthur Batut space	The Arthur Batut space is a marvel for those interested in the KAP. One small regret, however: there could be more photographic archives on the site to fully enjoy them.	KAP
Kite flying and heritage	A website promoting KAP in the service of heritage. A rather personal, sometimes atypical approach, rare enough to be encouraged.	KAP
The earth at the end of the wire	Robert Lifran's website, with beautiful images.	KAP

Kap Jasa	A site for regular practitioners in Slovenia. (in English). Updated very regularly.	KAP
Kite Plan	A must-see site for finding plans that are sometimes unobtainable elsewhere. Not everyone has the same interest in kap, but if you're itching to get started with a sewing machine, this is the place to go.	resume(plans)

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Appendix 1. How this collection of “KAPIDOCS” documents works	Date of publication: June 4, 2025

Aimed at collecting and sharing, "Kapidocs" relies on everyone's participation in its writing. It is free and voluntary, with a few simple principles:

- Anyone practicing aerial photography – or the techniques involved – can either submit a sheet on an aspect of the practice that they wish to promote/share, or formulate ideas to add to it, in the form of a question/request.
- The content of the written files remains the responsibility of their author(s), who is mentioned in the file, with possible additional links allowing for further exploration of the subject. They also remain the holder(s) of any intellectual property rights.
- Intended for sharing, except in exceptional circumstances, the sheet must be concise and accompanied by simple illustrations. Particularly in the Initiation and Improvement chapters.
- Implementation initially relies on regular contributions from practitioners and a steering committee (CDO), initially composed of Christian Bécot, Michel Dehaye, Philippe Jullien, Yves Leroy, and Pierre Lesage. Its composition may evolve depending on the wishes to fully participate in this project.
- The CDO drafts certain files that he considers useful to share for content of general interest. He supplements the others with an opinion or possibly reservations about use to be taken into account.
- This document brings together the information sheets written on the date of publication and should therefore be expanded over time. It is available to all, provided, of course, that the reference is cited.
- A particular effort of the approach aims to group together what already exists, either directly in this document, or via links accessible on each file.
- The update is scheduled monthly.
- A reflection is still underway to ensure the validity of the files over time.
- We are also testing solutions for occasional translation, but the main update will be in French, unless other resources are freed up.
- We will try to make the connection withKAPable, the new KAP exchange platform.

If you would like to contribute, you are welcome! Contact one of the CdO members at the following addresses:Christian ,Michel ,Philippe , Rock ,Yves , You can also download the standard blank sheet**here** .

The indexing is based on 3 estimated levels of practice, identified color **A) Initiation,** **B) Improvement** **C) Development**	and the files by chapter on the main elements of the equipment. by 1. kites 2. lines and reels 3. nacelles and suspensions 4. devices and cameras 5. others, including more subjective files, illustrating concrete practice.