



THE AIR-WATER SPORTS EQUIPMENT: THE UPPER PART CATEGORIZATION

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Abstract: The paper presents a classification of existing kites both by construction and use, and those used in air-water sports being detailed as they represent the most used at the moment. The article also include a history of kite. The categories of kite presented are: leading edge inflatable kites and foil kites. First category includes the C-kite, the hybrid kite and. C-style hybrid kite, and the second, the classic foil kite and the valve foil kite.

Keywords: kite, air, water, sport, classification.)

1. INTRODUCTION

Due to the social and economic actual context, characterized by an accelerated rhythm the need for relaxation and leisure began to be increasingly filled by practicing extreme sports, especially those can be performed on air and water or both. Among these is kiteboarding, a sport practiced on the water surface.

The equipment required for this sport is made up of: wing, a control system consists of lines and a control bar, and a board.

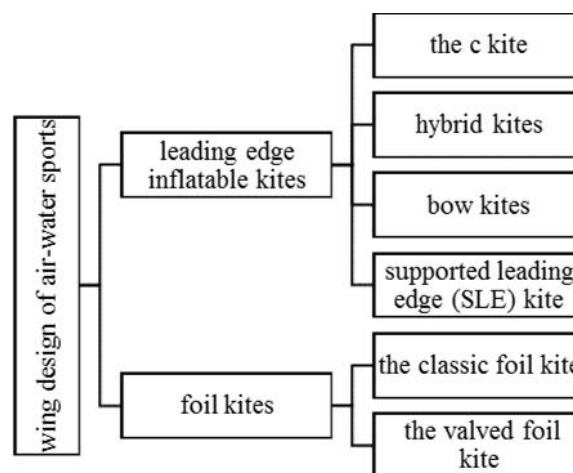


Figure 1: Classification of kites by wing design

The kite, the upper component of the assembly, had a journey that took more than 2000 years. It was invented in China and for its construction, was used silk mounted on a bamboo frame (strong, lightweight and elastic). Chinese medieval sources attest that the kite was used to measure distances, to determine wind speed, signaling equipment, military operations and lifting of persons. Chinese kites arrived in India, Japan and other Asian countries, is associated with various traditional and religious events.

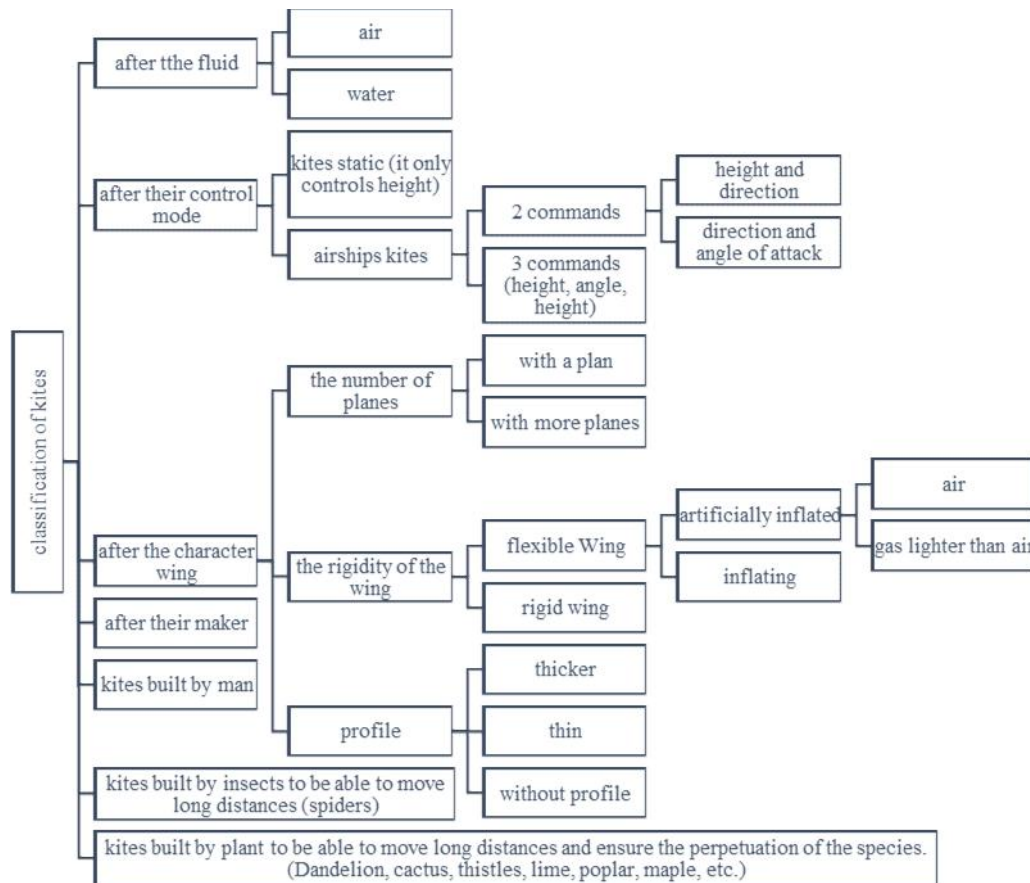


Figure 2: Classification of kites

2. CLASSIFICATION OF KITES

Kites, in terms of wing design, fall into two categories, and these can be divided into further subcategories

2.1. Leading Edge Inflatable Kites.

These kiteboarding kites have a hollow tube framing that is pumped full of air to give the kite its shape. Because these air tubes float so well, these kites are the most common for riding on water.

The C- kite is the original kiteboarding kite up until recently, this was the only kind of inflatable kite on the market. It has square corners and forms a deep C-shaped arc when flying. It gets its characteristic shape from its lines, which are attached at the four corners of the kite.

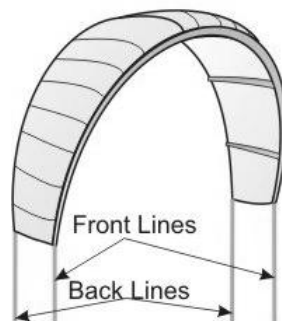


Figure 3: C kite

The 5th line C- kites come equipped with an extra line that attaches to the leading edge of the kite. This line helps the rider re-launch the kite from the water, and it acts as an additional safety system to de-power the kite. An important note about the 5th line is that it does not carry any tension when the kite is in flight it is simply used to help de-power and re-launch. Since this line carries no tension, the shape of a 5th line C- kite is exactly the same as a classic C- kite, and all performance characteristics remain the same (except the de-power and re-launch).

Some Hybrid kites have a line that looks identical to a C- kites 5th line, but the difference is that it is under tension. On a Hybrid, this line can be used to hold the kite in a different shape than a normal C- kite can have, which opens up a whole new range of design possibilities that affect kite performance. This is why a C- kites 5th line isn't under tension – the moment it is, the kite becomes a Hybrid.

Provided that all aspects are identical, there are no differences in performance between a 5th line and classic C-kites since the only difference between the two is the extra line. However, when compared to Hybrid or Bow kites, C- kites perform much differently.

The Hybrid kiteboarding kite was developed in order to merge the benefits of C and Bow kites into one kite. Since hybrids are a fusion of two different styles of kites, their specific design can vary greatly – some are almost identical to C-kites, others are similar to Bow kites, and the rest fall somewhere in between.

Variable or not, there are two characteristics that all Hybrids have/they are:

1.They have leading edge bridles.

2.A bridle is a line that connects to the front edge of the kite that is under constant tension when the kite is flying. Because these lines carry some of the load of the kite, they can be used to hold the kite in a different shape than a normal C-kite, which opens up many different design possibilities.

3.They have a convex trailing edge

The shape of a Hybrids trailing edge is what makes them different from a Bow kite. Hybrid kites have convex trailing edges, while Bow kites have concave trailing edges.

Apart from these two characteristics, Hybrid kite design can vary greatly. In general, hybrids come in one of two styles: ones that are like C- kites, and ones that aren't.

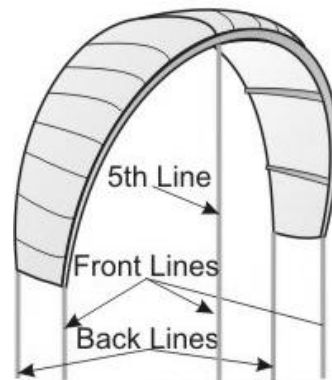


Figure 4: C kite with fifth line

C- Style Hybrid. This style of hybrid simply tries to maintain the performance of a C- kite, while gaining some of the benefits of having bridles on the kite (greater de-power range, greater wind range.). The bridles on this style of kite can be very basic, which is why they can be confused with a 5th line C- kite.

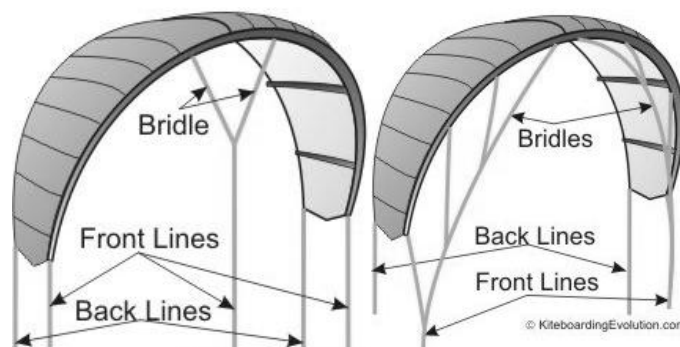


Figure 6: C Style hybrid kite

Bow Style Hybrid (Sometimes Called a SLE Kite) This style of hybrid kite has more complicated bridles and can vary widely in shape and profile. Sometimes the only thing keeping this kind of kite from being a Bow kite is the shape of the trailing edge, Like the C kite, the Hybrids design gives it unique flying characteristics.

Bow Kites. This style of kiteboarding kite is one of the newest styles on the market. Its defining characteristic is the shape of the trailing edge, which is concave.

Because of this kites unique shape it looks much flatter when it flies, and is why this type of kite is sometimes called a 'flat' kite. In addition, the shape of this kite is what gives it its near 100% de-power and large wind range.

Like the Hybrid kite, the bow style kiteboarding kite has bridles that attach to its leading edge. These bridles are necessary to help hold the kite in its flat shape - without them, the wind would force the kite into a sharp curve, just like a C- kite

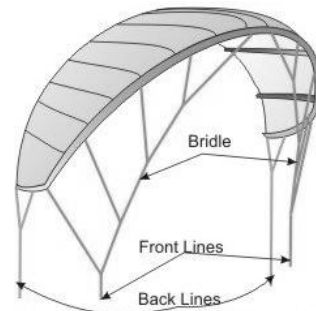


Figure 7: Bow kite

The bow kite's shape causes it to perform much differently than C and Hybrid kites.

A supported leading edge kite is any kite that has bridles attached to its leading edge. This means that Hybrid and Bow kites are both considered SLE kites, even though they are different styles of kites. A C-kite is not a SLE kite because it has no bridles.

2.2. Foil Kites

Foil kites have no air bladder like the LEI kites above. Instead they are composed of square cells of fabric that trap air and 'inflate' the kite. In addition, the front lines attach to various points across the bottom of the kite, so as the kite pulls the lines hold it in the correct shape.

The Classic Foil Kite

This kite can not be used on water; because of its open cells, it cannot be re-launched if it falls in the water. Instead, the cells fill with water and the kite flounders. Although not suited for water, this kite is great for snowkiting or landboarding.[7]

The valved foil kite.

This style of kiteboarding kite differs from the classic foil in only one way: it has valves in the air cells that let air in, but does not let it escape. Because the one way valves trap the air in the kite, it will hold its air when crashed in the water and can be re-launched

3. CONCLUSION

There are two major different designs of kiteboarding kites: Leading Edge Inflatable kites (Bow, Hybrid, and C kites) and Foil kites. Leading Edge Inflatable (LEI) kites are most commonly used on water, while foil kites are mostly used on land.

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