Kite Designs and Practical Uses

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Recognizing the Need

- Market Pull
  - Kites invented in China
  - Believed that the first kite was created by philosopher Mo Di
  - Early Kites also used for military Purposes
    - Surveillance, Missions, Etc.
  - Began to be used for recreational use
  - Spread across the world
Recognizing the Need

- Technology Push
  - First used for simple needs
    - Alexander Wilson: raise a thermometer
    - George Pocock: four stringed kite to pull carriages
  - Changed the world, introduced more advanced technologies
Recreational Use:
In the 1940s, architect Bill Green made the first Delta Kite prototype. The kite was an instant success, and a business was established. Consumers wanted a simple, yet effective kite for recreational use. By 1957, this business had successfully obtained a patent for the kite. This design soon became used worldwide, and to date, is used often as a reliable and simple kite that can be flown in little to no wind without issues.

Recreational & Enterprise Uses:
The Delta Style is used in common Hang Gliders. Hang Glider producers often use the Delta design for their gliders.
Delta Kite Design & Construction

Design:
Delta Kites, as previously stated, can be operated in light wind. Additionally, the Delta is versatile design that can be changed depending on wind conditions. The overall size of the kite varies from kite to kite. Generally, the frame is triangular, but the bottom can be altered with curved scallops. These are simply curves that are cut out of the straight rear of the kite.

Construction:
Many Delta Kites have fiberglass or graphite rods for spars and plastic or nylon fittings to fasten the spars to the sail. Nylon is frequently used for the sail. These materials are generally found in mass produced Delta Kites, however, a multitude of strong, flexible, and lightweight materials can be used in place of these.
Rotor Kite

Design:
- A horizontal spindle has two or more semicircular paddles attached to it, as well as one or more circular/oval pieces mounted perpendicular to the spindle, for stability
- Relies on lift created by one or more sets of rotors in order to fly
- Works by the Magnus effect
- Research into rotor kites was deepened during World War II, being used as an aerial observation platform
- During the 1950s, rotor kites were developed as recreational aircraft, largely due to the efforts of Dr. Igor Bensen in the United States

Uses:
- Energy generation
  - Wind turbine kites
  - Harnesses high altitude wind currents to generate electricity
Traction/Power Kite

Uses: Transportation for surfing and land boards, energy production by attaching large sail to a point and have it pivot and turn a generator.

Design:
- Design comes from Foil Kite.
- Invented in 1963 by Domina Jalbert of Florida
- An aerofoil shape is created as a structure inflated by wind entering vents in the front
- The cross section which causes the air passing over the top to travel further than the air passing underneath
Box Kite Design & Uses

- **Design:**
  - The typical design has four parallel struts
  - The box is made rigid with diagonal crossed struts
  - There are two sails, or *ribbons*, whose width is about a quarter of the length of the box.
  - Ribbons wrap around the ends of the box, leaving the ends and middle of the kite open
  - In flight, one strut is the bottom, and the bridle is tied between the top and bottom of this strut
  - The dihedrals of the sails help stability
  - The so-called traditional box came about after somebody simplified the Hargrave design

- **Uses:**
  - Simple and effective flight
  - According on design and materials used can be used with light or heavy winds
  - Wooden dowels are sturdy
Works Cited


