

GK Aerospace – Technical Challenges

Problem statements

1. **Design a hand-launched, unpowered flight vehicle** with powered control surfaces: Your vehicle should be launched by hand, and it must stay in the air as long as possible. The key is that **while the vehicle is unpowered in terms of propulsion**, the control surfaces (like wings, tail, or rudders) can be adjusted using sensors, servos, small battery source etc.
2. **Use simple, easily available materials, hence cost conscious:** The prototype should be made from materials that are commonly available in a campus environment—think lightweight materials such as foam, cardboard, ropes, bands or Balsa etc. The control system should also be simple and small, such as small motors or servos that are easy to integrate.
3. **Incorporate powered control surfaces:** The powered control surfaces (e.g., ailerons, elevators, rudders, or wing flaps) will allow you to stabilize the flight or adjust its trajectory. You can use small motors or servos to adjust these surfaces during flight. The goal is to use the powered control surfaces to **keep the vehicle stable** and help it stay in the air for longer.
4. **Safe, stable and controlled flight:** The vehicle should be stable during flight, meaning it should not just fall out of control (SAFETY FIRST). The powered control surfaces should be used to adjust and fine-tune the aircraft's stability, keeping it aloft for as long as possible after being hand-launched.
5. **Flight trials:** The design shall survive at least for three trials. Shall not disintegrate.

Deliverables

1. A short video (max. 2min) on your journey of designing and prototyping this challenge.
2. Flight demonstration at VIT campus on IANC demonstration day.

