USE CASE · HYBRID VTOL

High-altitude surveillance drone for border posts

A mountain border post has thin air, cold, wind and no runway. A drone for that post must take off from a small pad at the height of the post, stay up long enough to watch a pass or a ridgeline, and keep its link and its navigation when conditions are poor.

IN SHORT

- A surveillance drone for a mountain border post must launch at the height of the post; the Star INXS Hybrid VTOL launches vertically at 4,500-5,000 m above sea level and has a ceiling of 6,000-7,000 m.
- It flies for 60-120+ minutes at full payload on its wing, with a 5-30 km data link, and is rated for –30 °C to +25 °C and winds of 15 m/s with gusts to 20 m/s.
- Its payload is a 4K camera with 30x optical zoom, an LWIR 640 x 512 thermal camera and a laser range finder of up to 5 km.
- GPS, NavIC and GLONASS are backed up by INS and VIO, and video and telemetry are encrypted with AES-128 / AES-256.



THE FIGURES THAT MATTER

FIGURE	WHY IT MATTERS AT A BORDER POST	HYBRID VTOL
Launch altitude	The drone must take off at the height of the post	4,500-5,000 m ASL
Ceiling	Room to climb above passes and ridgelines	6,000-7,000 m ASL
Tactical altitude	Working height above the ground	500-1,500 m AGL
Endurance	Time on task	60-120+ min at full payload
Link range	How far along the border it can work	5-30 km, VLOS / BVLOS
Wind	Mountain winds are strong	15 m/s continuous, gusts 20 m/s
Temperature	Cold starts at the post	–30 °C to +25 °C

HOW IT IS USED

1. **Check the rules.** Flying in India follows the DGCA rules and local permissions, and forces also follow their own regulations.
2. **Prepare at the post.** Carry out pre-flight checks at the post or helipad. Rapid battery swap and cold-weather power management are part of the power system.
3. **Launch vertically.** The aircraft lifts off on its four lift rotors from a small pad, with no runway.
4. **Cruise and observe.** It changes to wing-borne flight and watches passes and ridgelines by day and night with the EO, thermal and laser range finder payload.
5. **Recover.** It returns and lands vertically at the post. Return-to-home, obstacle sensing and parachute recovery protect the aircraft.

COMMON QUESTIONS

Who makes the Hybrid VTOL?
Star INXS Solutions Pvt Ltd. The Hybrid VTOL is designed and built in India.

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