

Employment of Unmanned Aerial Vehicles (UAVs) and need for Unmanned Combat Aerial Vehicle (UCAVs) in the Indian Army



Presently our three services have limited numbers of these aerial vehicles and each service is looking towards its individual requirement | Image: India's first combat-capable unmanned aerial vehicle (UAV), Rustom-II/ Geospatial World

The Indian Army needs UCAVs for its battle requirements. .The versatility of the UCAV has been demonstrated particularly in strikes against terrorist camps in Iraq and Afghanistan. India needs the UCAV particularly for surgical strikes across the Line of Control apart for surveillance missions - Maj. Gen. (Retd.) PK Chakravorty*

Introduction

UAVs are a force multiplier in the current battle space. The classification of UAVs in the US Armed Forces follows a tier system. There are separate tiers for the US Air Force, Marine Corps, and the US Army. The United States Air Force tier commences with the Small/Micro UAV filled by the Batman (Wasp Block III). Tier I comprises of low altitude long endurance represented by the Gnat 750. Tier II consists of Medium Altitude, long endurance (MALE) which currently has MQ-1 Predator and MQ-9 Reaper. Tier II + has High Altitude, Long Endurance (HALE) UAV. These UAVs have an altitude ceiling of 60 to 65,000 ft, the airspeed of 560 Km per hour, radius of 6,000 km and an endurance of 48 hours. The role for this type of UAV is currently filled by the RQ-4 Global Hawk. Tier III is a high altitude, long endurance low observable UAV. The parameters are similar to the Tier II+ aircraft. RQ-170 Sentinel is in this class of UAVs. The characteristics of the Marine Corps tiers are similar except for the specific UAV. With regard to the Micro UAV, Wasp III fills the role. Tier I filled by RQ - 11B Raven B. Tier II consists of Scan Eagle and RQ-2 Pioneer. Tier III Pioneer and Shadow. The US Army which has also inducted UAVs follows a similar pattern to that of the US Marines.

Acquisition of UAVs by Indian Army

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The Indian Armed Forces have been operating UAVs for over a decade, in our case, the Indian Army was the pioneers followed by the Air Force and subsequently the Indian Navy. At the outset, DRDO was tasked to produce a Catapult launched UAV which was developed by Aeronautical Developmental Establishment Bangalore and improved to meet user requirements. Most of the UAVs of the Indian Armed Forces were procured from IAI Malat, whose UAVs were in service with numerous Armies. The Indian Army initially obtained the Searcher Mark I, followed by the Searcher Mark II which could operate at an altitude ceiling of 15,000 ft and finally we acquired the Heron which could operate at an altitude ceiling of 30,000ft. The Indian Air Force immediately followed the Army and acquired the Searcher Mark I followed by Searcher Mark II and acquired the Heron UAVs prior to the Indian Army. The Indian Navy also acquired the Heron UAVs which suited its long-range offshore requirement. Reports indicate that the Indian Air Force has of late acquired the Harop which is a UCAV.

Employment of our UAVs

UAVs are great force multipliers and there must be a synergy between the three services to optimize their employment. They could be employed for multifarious tasks fruitfully. Presently our three services have limited numbers of these aerial vehicles and each service is looking towards its individual requirement. In as much as the Army is concerned the Herons are performing exceedingly well in surveillance missions in the high altitude regions as also providing critical information to manoeuvre elements in our Southern deserts. They would be providing the target inputs for our missiles and also provide PSDA on the engagement of targets. The Herons have been able to fly in a dual role and thereby fly at ranges of 400 km, yet in high altitude areas screening problems do occur. This can easily be overcome by providing Satellite Communications (SATCOM) to these UAVs which apart from overcoming the problem of screening would enhance the range of the UAV to 1,000 km. The Searchermark II is being used in the mountainous region as also in the plains and semi-deserts. It is to the credit of our UAV pilots that they have optimised the aerial vehicle successfully under our conditions. They have provided excellent inputs about any intrusions on the Line of Control as also on issues pertaining to the terrain which assist us in operational planning. The issue which is of concern is the quality of pictures obtained while using the Synthetic Aperture Radar (SAR) does not give us a clear indication of the object. Recent international improvements in SAR provide a clear image of the object. As most of the militants be it in the North or North East have their hideouts in areas of thick foliage, there is a need to obtain a high quality of SAR devices to generate good images which would lead us to militant camps with precision. The Searcher Mark I variety is a short-range UAV

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which is being suitably used in the hilly regions and plains. The Nishant an indigenous product manufactured by DRDO which is launched from a vehicle and recovered by parachute is possibly under induction and would be utilised in the plains. All UAVs presently held by the Army are being controlled at the operational level and serve the needs at the higher level. There is a dire requirement of UAVs at the tactical level which needs to be provided to force multiply results at the ground level for undertaking missions with accurate intelligence.

Need For UCAVs in the Indian Army



The UCAV detects strong pulses from targets such as missiles, radars and hits at the source. It is possible to launch the Harop from ground, sea and air | Image: Wired UK

The Indian Air Force is currently equipped with Searcher Mark II, Herons and in the process of inducting the UCAV Harop. The tasks visualised are Surveillance and destruction of selected targets by loitering missiles and PSDA. Searcher Mark II and Heron are similar to the systems held by the Indian Army while Harop is a loitering missile capable of seeking targets and destroying them with pinpoint accuracy. Harop is also described as a self-destructive Killer drone. Harop can be used in high-density conflict and counterinsurgency with 1000 km range and six hours endurance. It can be launched against land-based and sea-based targets. The drone loiters over the target area and attacks the targets, over which it undergoes self-destruction. The UCAV detects strong pulses from targets such as missiles, radars and hits at the source. It is possible to launch the Harop from ground, sea and air.

The Indian Army needs UCAVs for its battle requirements. The versatility of the UCAV has been demonstrated particularly in strikes against terrorist camps in Iraq and Afghanistan. India needs the UCAV particularly for surgical strikes across the Line of Control apart for surveillance missions. Further, we have to note that China has already featured its Chang Hong-3 and Chang Hong -5 UCAV platforms in various defence exhibitions in recent years. Considering China's developments in this field, the day is not far when Pakistan will receive these Chinese built aerial systems.

In as much as the Army is concerned at the strategic and operational level, there is a requirement for UCAVs and short-range loitering missiles. The UCAVs could be formed on the Herons each of them mounted with two Fire and Forget missiles. Each divisional

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artillery brigade must have a battery of UCAVs comprising of eight aerial systems. Further, each Corps must have a Loitering Missile Battery comprising of eight missiles with associated ground systems. At the tactical level, there is a need for Mini UAV which would be hand launched have an endurance of two hours, a range of 10 km and have a payload which can provide good details over the area the vehicle operates. In the initial stages, it would suffice if each infantry battalion, combat group and artillery regiment be provided with two systems each having two aerial vehicles.

While the requirements are clear, the moot point is what the roadmap for their procurement is. The DRDO is presently developing Rustam, a Medium Altitude Long Endurance (MALE) UAV and Aura a UCAV for a long time. Any process undertaken must meet timelines, as the inordinate delay would be operationally not acceptable. The UCAV and the loitering missile are being produced by Israel who is setting up joint ventures with DRDO. It would be prudent if our inescapable requirements are got from the Original Equipment Manufacturer and subsequent requirements be delivered by Joint Ventures. The other development issues could be examined by the Army in conjunction with DRDO in a deliberate manner. It is recommended that the issue be accorded Priority.

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