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ALS-50: A Boon for the Indian Defence System

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Tata Advance Systems Limited (TASL) had recently successfully delivered the Advanced Loitering System-50 (ALS-50), or 'Suicide Drone,' loitering munition to the Indian Air Force (IAF).[1] This has not only reduced the dependence on foreign military equipment imports but has also given a boost to the 'Make in India' initiative of Prime Minister Narendra Modi. The ALS-50 was displayed at the DefExpo 2022 and received the Raksha Mantri's Award for Excellence in the Defence and Aerospace Sector.[2]

Loitering munitions are simply advanced and autonomous missiles that can hover in the air for a set period of time, track or identify their target, and then hit it with utmost accuracy. Loitering munitions mostly follow the remote control system through which they can be operated at the time of loitering. Equipped with a camera, these drones can loiter around the target and provide imagery to the command-and-control centres. Once the troops see a promising target, they can order the drone to dive onto it and detonate its warhead. Sometimes, though, hitting the target becomes difficult for loitering munitions in the case of targets in motion like tanks and boats. For instance, Russia deployed the Lancet-3 unmanned aerial vehicle (UAV) to strike a moving Ukrainian boat on the Dnieper River near Zaporizhzhia.[3] The loitering munitions in the case of stationed or fixed targets work on a 'fire and forget' concept. The recent use of loitering munitions, also known as revolutionary weapons, draws attention to the use of autonomous weapon systems for future warfare, the degrees of their autonomy, the procedures to identify targets accurately, and most importantly, the compliance with the laws of war per se.

ALS-50 can be distinguished as a drone that has a length of 2.4 meters, a wingspan of 3.8 meters, and a maximum take-off weight of 50 kg. With a range of over 50 km, it can stay airborne for more than an hour. Not only does it have fixed landing gear with four legs, but it also has a chin-mounted electro-optic/infrared (EO/IR) turret and can carry anti-armour warheads.[4]

This drone possesses vertical take-off and landing (VTOL) capability, making it compatible with operating in any terrain, including high-altitude areas and mountainous regions. The VTOL feature allows it to be launched like a quadcopter. The drone can then transform to a fixed-wing mode for flying longer distances. Additionally, it has five more compatible flying modes, such as fully-autonomous, semi-autonomous, loitering, attacking, and returning home. The weapon projects autonomous capabilities and precision attacks as well, reducing the personnel's exposure to risks. It will allow the IAF to conduct missions and swift precision strikes from any terrain, such as the deck of ships, valleys, jungle clearings, etc.

In the world today, they surely act as a bridge between the precision-guided weapons that require human intervention and the autonomous weapon systems of the future with little or no human involvement. India's induction of the ALS-50 has boosted the offensive capabilities of the country in the international market. The ALS-50 successfully demonstrated its capabilities during the tests in the Pokhran district of Rajasthan when it accurately hit the defined ground target with an explosive warhead.[5] The ALS-50 had also been successfully tested in Ladakh.

The induction of the ALS-50 loitering munition depicts the IAF's ambitions towards military modernisation and securing the concept of 'self-reliance' in defence procurement. With the ongoing war between Russia and Ukraine, the importance of procuring loitering munitions has significantly increased. Given the at the geopolitical location of India and the threat perception from adversaries like China and Pakistan, it is high time that India focuses on manufacturing and inducting such technologies into its armed forces in order to not only enhance its offensive systems against enemy attacks but also protect its national security.

It is quintessential for India to meet the challenges posed by its adversaries, hence, capital expenditure in the defence sector becomes crucial. The Finance Minister of India, Nirmala Sitharaman recently increased the allocation to defence budget with almost Rs. 69 lakhs as compared to last year. Additionally, India's defence exports have significantly increased and reached an all-time high of almost ₹ 16,000 crores in the financial year 2022-23, compared to a mere ₹ 460.97 crores in FY 2012-13, and have brought a positive difference of approximately 2300 per cent, in the last nine years.[6] A blend of weapons such as the Akash missiles, radar simulators, avionic components, and even BrahMos missiles reached a market of 85 countries.

The primary reason behind the significant boost in exports is not only the increased production through capital outlays in the defence sector but also the streamlining of sales according to policy reforms. It was announced by the government of India that it aims to attract ₹ 1,75,000 crore in investment by the year 2024-25 to achieve the vision of *Aatmanirbhar Bharat* in defence.[7] When it comes to the ALS-50, the defence economic infrastructure of India is likely to profit at greater rates because, apart from being a cost-friendly drone, it is equally precise at hitting targets. Moreover, the fact that these loitering munitions can be called off mid-air provides a unique advantage.

Loitering munitions fall in between drones and missiles, and they cannot be purely defined as a missile or a drone separately. When compared to traditional missiles, mortars, and rockets, loitering munitions can be fired from either land, sea, or air. These weapons can be launched from man-portable systems, combat vehicles, and even rotary and fixed-wing aircraft. Cost-wise, these munitions are much cheaper than anti-tank guided missiles (ATGMs). These munitions can also return to the launch positions if the target is not found, thus saving good amounts of money, thanks to artificial intelligence (AI).

Additionally, the loitering munitions have a low radar cross-section (RCS), unlike the traditional cruise missiles, which makes them less detectable in the eyes of radars and sensors. These types of weapon systems are finding their way onto the battlefield and will certainly have applications in future military operations. With India procuring these systems, it will enhance its overall security architecture and combat readiness in the future.

NOTES:

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