

MP-IDSA *Commentary*

Drones in Israel-US-Iran War: Key Takeaways

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S*ummary*

In the ongoing US-Israel-Iran war, drones created multiple operational options for Iran.

In the ongoing US–Israel–Iran war, there was an asymmetry of air power between Iran and the US–Israel combined forces. Yet, drones created multiple operational options for Iran. Iran deployed various types of drones for Intelligence, Surveillance and Reconnaissance (ISR) and for undertaking air strike missions against air defence systems, critical military and civil infrastructure, oil refineries and airports.

Iranian drones destroyed oil fields and refineries of Gulf partners of the US, as well as those of Israel. Air traffic was disrupted. High-value military targets like radars, etc., were also found to be vulnerable to drone attacks. Defence installations and critical energy, aviation and other infrastructure of the Gulf countries equipped with advanced US and Israeli weapons were found vulnerable to Iranian drone attacks, and most of them suffered heavy losses.

The Gulf countries sought Ukrainian help in countering Iranian drone attacks. Iran has so far destroyed 12 MQ-9B and 12 Hermes-900, Hermes-450 and Heron UAVs. Iran was able to leverage vulnerabilities to land/crash-land the Hermes-900 UAV of Israel with full weapon and sensor load. Iran has done a similar takeover of US drones in the past. Three F-15 fighter aircraft of the US were shot down by Kuwaiti F-18 fighters in friendly fire, highlighting gaps in Unmanned Traffic Management and airspace integration technologies.

Iranian drones provided Iran with a capability that no other technology could have granted it. Iran’s ability to achieve this stalemate comes from the following:

- Iran’s single-minded approach to technology sovereignty.
- Shahed and many other indigenously developed drones are now being imitated by the US and other countries.
- The narrative that Iran was dependent on Western suppliers, too, does not seem to be proven, as Iran continues to launch thousands of drones without the disruption of suppliers.
- The Iranian military played a key role in drone technology development, which took ownership and took the lead in the development of operationally useful drone technologies.
- Iranian military and technology developers have been audacious in hijacking US and Israeli drones and were pragmatic in adopting them for their development.

- The Iranian military did not believe in collaborations or licensed manufacturing of Chinese drones, as was done by Saudi Arabia and others.
- Iran war-gamed counter-drone technology gaps and penetrated supposedly the most advanced air defences with continuous upgradation of drone, cyber and electronic warfare technologies associated with drone development and drone hacking.
- The poorly guarded oil refineries, airports, vulnerable Hormuz Strait, and vulnerabilities of economically progressing Arab States were ably exploited by Iran.
- The establishment of the Islamic Republic of Iran Ministry of Defence Export Centre (Mindex) in 1989 and the Ministry of Defence and Armed Forces Logistics leading the defence exports ensured continuity and technology development, upgradation and their export, which seems to be the critical pillar of technology ownership by defence forces and accounts for the success of their drone programme, among others.

The US deployed drones through Task Force Scorpion, including LUCAS loitering drones (influenced by the Iranian Shahed design) and MQ-9B turboprop Medium Altitude Long Endurance (MALE) UAVs, against Iran. Israel deployed ISR and one-way loitering drones, including Hermes-900 turboprop MALE UAVs. Counter-drone systems in the US and Israel were expensive and had gaps in their capabilities. The US, Israel and its Gulf partners deployed fighter aircraft and attack helicopters equipped with counter-drone systems against the Iranian UAVs.

Some Takeaways

Review the Procurement of Turbo-Prop UAVs

The US's MQ-9B turboprop UAV, Israel's Hermes-900 (Drishti-10) class of UAVs, and similar turboprop UAVs of Iran were found vulnerable under combat conditions. Thus, the operational viability, survivability and utilisation of turboprop UAVs in an intense air-defence environment need to be re-examined.

Indigenous turboprop MALE UAV development programme and import of similar systems need to be reviewed accordingly. The indigenous Tapas/Archer-NG class of UAVs, despite the above developments, may be operationalised and inducted in limited numbers for peacetime use to validate development capabilities and address

India's peacetime challenges. In future, the development of stealth MALE UAVs may be examined.

Review HALE UAV Development and Procurement

The proposed turboprop High Altitude Long Endurance (HALE) UAV development programme at the Aeronautical Development Establishment (ADE), DRDO, may be reviewed, and the development of a stealth HALE UAV could be examined instead. Also, the import of turboprop MQ-9B-class HALE UAVs may be re-examined, given their high cost and combat vulnerabilities.

Low RCS UAVs

Development of Low Radar Cross Section (RCS), small size, small to medium payload, medium to long range loiter, armed and ISR drones, including in swarms configuration, may be examined.

Combat MUMT UAVs

Indigenous stealth, low-RCS UAV programmes such as the Stealth Wing Flying Test Bed (SWIFT), the flying-wing stealth Ghatak Unmanned Combat Aerial Vehicle (UCAV), and the Combat Aerial Teaming System (CATS) manned–unmanned teaming (MUMT) programmes may be reviewed to develop variants for envisaged operational scenarios. The approvals for the Ghatak, CATS and SWIFT variants should be expedited.

Civil–Military UTM

The lack of a Civil UTM (Unmanned Aircraft Systems Traffic Management) and its integration with the air defence networks of India's defence forces could create vulnerabilities, such as to attacks on India's airports, refineries and other critical infrastructure.

Drone-Manned Aircraft Integration

The integrated operation of drones, helicopters and fighter aircraft during intense combat would require the development and operationalisation of onboard technologies for real-time tracking and the maintenance of separation between manned and unmanned aircraft.

Counter Drone Capability Enhancement

The development of a hybrid mobile counter-drone system comprising indigenous Air Defence (AD) guns and a short-range surface-to-air missile with an 8–10 km range may be examined. It will help neutralise low- and high-flying targets at short ranges.

Development and upgradation of existing indigenous counter-drone systems to neutralise Shahed-class drones may be undertaken through the Aditi scheme of the Defence Innovation Organisation (DIO), the Department of Defence Production (DDP), the Ministry of Defence (MoD), or the Technology Development Fund (TDF) scheme of DRDO.

Electronics Systems and Camera Vulnerabilities

Indian companies can develop most electronic systems, except for a few. They can also develop cameras and associated systems if given appropriate incentives, user ownership, and procurement assurance for Indigenously Designed, Developed and Manufactured (IDDM) systems. Therefore, the development of suitable electronic systems and cameras, with the joint ownership/leadership of DDP, Secretary DRDO, and the Department of Military Affairs (DMA), should be undertaken through Acing Development of Innovative Technologies with IDEX (ADITI) or TDF, with assurance of procurement.

Drone Technology Ownership and Other Challenges

The technology ownership has been a challenge for both civil and military drones in India. Several indigenous UAV development programmes, such as Short Range UAV (SRUAV), Tapas, Archer-NG, Ghatak and CATS, are facing challenges varying from indecisions, slow progress, lack of approvals, lack of ownership, lack of accountability, lack of/paucity of funding, financial constraints, financial audit challenges, etc.

A holistic review of all unmanned systems development programmes undertaken by Hindustan Aeronautics Limited (HAL), DRDO and private-sector entities should be conducted, and the roadmap for developing the IDDM UAV and UCAVs should be developed. User participation and ownership can be ensured, enhancing the chances of success for IDDM UAV programmes.

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