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Leveraging drone technology in asymmetric conflict: Insights from Operation Sindhoor

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Abstract
This paper seeks to underscore the strategic transition in warfare from conventional methods to technologically driven approaches, with a focus on the deployment of Unmanned Aerial Systems (drones) in Operation Sindoor. Additionally, it examines the significance and impact of modern warfare technologies such as drones, artillery guns, and missiles, as force multipliers in military operations. Operation Sindhoor marks a significant moment in the use of drone technology in modern asymmetric warfare. This operation, conducted by the Indian Armed Forces along the Line of Control (LoC) from May 7 to May 10, showcased how drones can be used effectively to target enemy military positions with precision and minimal risk to soldiers. In this short but impactful campaign, drone strikes were used to destroy Pakistani military assets, leading to the reported death of some non-state actors. The operation highlights how drone technology can give a strategic advantage in conflicts where traditional warfare methods may be limited or risky. Drones allowed the Indian Army to gather real-time intelligence, conduct surveillance, and carry out precise attacks without crossing the border. This study uses Operation Sindhoor as a case example to explore the growing importance of Unmanned Aerial Systems (UAS) in low-intensity conflicts and cross-border military responses. The insights gained from this operation show how drone warfare is shaping the future of military strategy, especially in regions where conventional warfare might escalate tensions or lead to heavy casualties.

Keywords: Operation Sindoor, drone, asymmetric-warfare, armed force, precision strike

1. Introduction

A drone, also called an Unmanned Aerial System (UAS), is a machine that flies without a pilot onboard (Shokirov *et al*., 2020) [13]. It works using pre-set programs, allowing it to carry out tasks without putting a pilot's life at risk. Drones have become an important part of modern military operations, helping with things like spying and carrying out precise attacks (Mohsan *et al*., 2023). Because they provide real-time information and surveillance, drones have changed the way wars are fought. Over the past 20 years, they have become a common tool in warfare. The success of drones in conflicts like those in Syria, Libya, Nagorno-Karabakh, and Yemen has raised concerns among countries involved in wars. The Russia-Ukraine war is the first major conflict where both military and commercial drones have been widely used. Drones can be used for many purposes, including early warnings, surveillance, spying, and attacking targets on the ground or in the air. Similarly, India reportedly stopped a large drone intrusion by Pakistan, involving 300 to 400 Turkish-made Songer drones across 36 places in India during Operation Sindoor (PIB report, 2025b) [9]. Instead of risky and costly air battles, drone use now makes aerial attacks more careful and planned. As per the PIB report, India responded using SkyStriker Kamikaze drones, which helped check Pakistan's air defences, collect information, and carry out accurate attacks without putting soldiers in danger or causing much damage to civilians in the Operation Sindoor (PIB report, 2025b) [9].

On April 22, 2025, a deadly terrorist attack took place in the peaceful Pahalgam valley of Jammu and Kashmir, killing 26 innocent people from India and Nepal. The attack was carried out by terrorist groups like Lashkar-e-Taiba and Jaish-e-Mohammed, which are supported by Pakistan. To respond, India began Operation Sindoor on May 7, 2025, a focused mission to strike nine terrorist bases in Pakistan and Pakistan-occupied Kashmir (Krishna, 2025) [3]. It was a tri-service activity comprised of the Indian Army, Navy, and Air Force on May 6 and 7, 2025. It targeted nine terrorist bases connected to groups like Markaz Subhan Allah in Bahawalpur and Syedna Bilal Camp in Jaish-e-Mohammed (JeM), Lashkar-e-Taiba (LeT), and Hizbul Mujahideen. Important locations hit included Muzaffarabad. The

Ministry of Defence said the attacks were precise and limited, and they made sure not to hit any Pakistani military bases to avoid starting a larger conflict (MOE, 2025) [6]. Undoubtedly, this operation has changed the way threats are handled in South Asia by showing that India can carry out surprise attacks deep inside enemy areas. It also proved that India's military is well-prepared and works smoothly together, showing the country is strong, serious, and self-reliant. In this scenario, this paper tries to examine the strategic importance of Unmanned Aerial Systems in asymmetric warfare by taking into account the case of Operation Sindoor.

2. Background of Operation Sindoor

Operation Sindoor, which was tool place as a means of the 22nd April 2025 terrorist attack in Pahalgam district of Kashmir, marked a major shift in India's military strategy. Unlike past operations like the 2016 Uri strike or the 2019 Balakot airstrike, which were quick and limited, Operation Sindoor was a larger and more advanced attack using drones, fighter jets, artillery, and high-tech weapons. It targeted areas across Pakistan's Punjab province and Pakistan-occupied Jammu and Kashmir. Undoubtedly, Uri was a small ground operation, and Balakot was an airstrike, but Operation Sindoor combined air, land, and drone power in a well-planned and long-lasting mission. India also used suicide drones and multiple types of weapons to hit different places at the same time (Sareen, n.d.).

A major part of the mission was the Indian Air Force attacking Bahawalpur, which holds a key Pakistani Army base. This showed India's readiness to strike places used by both terrorists and the military. Advanced fighter jets like Rafales were used with long-range missiles, showing how far India's air force can now reach. The Indian Army also played a strong role using accurate artillery, lightweight guns, and drone-based targeting. The attack was precise and powerful, and it was one of the rare times India openly used missiles across the border since 1971. The timing of the attack was also important. It happened between 1:05 and 1:30 a.m., giving Indian forces time to adjust during the operation. Pakistan's delayed response showed how effective and surprising the strike was. India also identified future targets, showing stronger intelligence and planning (Shankar, 2025) [12]. In short, Operation Sindoor wasn't just a response to terrorism; it showed that India is now ready to take bold, smart, and deep attacks using modern technology against both terrorists and their supporters.

2.1 Key outcomes of Operation Sindoor

2.1.1 Destroying the terrorist camp

India used advanced weapons like Rafale jets, Sukhoi-30MKIs, BrahMos and Scalp missiles, and smart bombs, and most prominently Unmanned Aerial Systems to carry out the operation accurately. Importantly, India destroyed nine terrorist sites of Pakistan without any civilian casualties.

2.1.2 New war policy

Operation Sindoor changed India's approach by treating terrorism as an act of war. It showed that India could strike back quickly and accurately, even deep inside enemy territory, using strong intelligence and modern weapons like drones, Sophisticated missiles, etc.

2.1.3 Non-contact warfare

For the first time, India is following the idea of fighting a war without direct physical contact. In this kind of warfare, five advanced weapons are being used: Rafale fighter jets, SCALP missiles, Hammer missiles, Kamikaze drones that can stay in the air before striking, and the BrahMos missile that makes the operation successful without contact and violation of any international and intergovernmental rules.

2.1.4 A mostly air-based operation

The four days (7th May, 2025- 10th May, 2025) of military action were mainly carried out through the air. Unlike Western air forces that operated in uncontested airspaces in places like Iraq, Afghanistan, and Syria, or Israeli forces in Gaza and Lebanon, this operation happened in a heavily defended airspace, with both sides actively involved

2.1.5 Relay on indigenous technology

While the S-400 Surface to Air Missile system got most of the media attention, it was our homegrown radars, missiles, and anti-drone systems that formed the core of our ground-based air defence. This shows the importance of locally developed weapons, and it's encouraging that these systems were made through collaboration between DRDO and private companies.

2.1.6 Doctrine of deterrence by punishment

The operation started as a reaction to the 22nd April, 2025, Pahalgam terrorist attack and concluded with the heavy retaliation from both sides and the destruction of 9 terrorists' sides in Pakistan. On the other side, Pakistan increased its drone and missile strikes, hitting 26 locations and cities near its western border. India responded quickly and forcefully, launching large-scale attacks across both the International Border and the Line of Control. By the morning of May 10, the Indian Air Force had destroyed key Pakistani air bases, including important sites like Nur Khan (only 10 km from Islamabad) and Sargodha, which was believed to hold nuclear-capable F-16 jets. With this, India moved from a limited response to a much stronger one, effectively challenging Pakistan's nuclear strategy.

2.1.7 Act on terrorism as new normal

India has made it clear that any terrorist attack will now be seen as an act of war. This stronger stance could help discourage such attacks by making the consequences more serious.

3. Consequences of the attack: A chain of retaliation and rising tensions

After Operation Sindoor, Pakistan accused India of attacking civilians and said 26 people were killed and 46 injured (Krishna, 2025) [3]. Pakistan said it had the right to strike back under UN rules. In response, Pakistan carried out heavy shelling near the border (LoC), which killed 12 Indian civilians, one soldier, and injured 51 people (IDRAW, 2025) [2]. A gurdwara in Poonch was also hit. On the night of May 7-8, 2025, Pakistan tried to attack several military targets in Northern and Western India, including places in Jammu & Kashmir, Punjab, Rajasthan, and Gujarat. India stopped these attacks using special drone defence and air defence systems. In response, on May 8, India attacked air defence sites in Pakistani cities like Rawalpindi, Lahore, and Karachi, and reportedly destroyed Lahore's air defence system using Israeli drones called

Harop (Kumar Santosh, n.d.). After that, Pakistan launched drone attacks on several places along the western border. India used its air defence systems, like the S-400 and Akash missiles, to stop these attacks. Following this, Pakistan fired heavy shelling along the Line of Control, killing 12 Indian civilians and one soldier, and injuring 51 people. One of the targets hit was a gurdwara in Poonch.

4. Role of the drone in Operation Sindoor

In this operation, for the first time, full-fledged use of UAS or drones by both sides has been witnessed. While IAI Heron, Rustom, Skyright, Searcher, Harpy drone plays a key role in ISR operations from the India Side, on the other hand, Pakistan conducted ISRT operation by using Barraq, Rainbow, Byraktar UAS (PIB report, 2025b) [9]. As per the PIB report, around 700 drones were deployed by Pakistan in this operation. India carried out a successful attack using loitering munitions, also known as 'suicide drones', to hit important Pakistani targets, including airbases at Noor Khan and Rahimyar Khan (PIB report, 2025a) [8]. The operation was completed in just 23 minutes, showing the strength of India's surveillance, planning, and electronic jamming technologies, which managed to bypass Pakistan's Chinese-made air defence systems. After the attack, Indian forces collected remains of destroyed equipment, including Chinese-made PL-15 missiles, Turkish drones, long-range rockets, quadcopters, and commercial drones. This demonstrated India's capability to defeat advanced foreign weapons using its own air defence and electronic warfare systems.

Operation Sindoor's success shows that India's drone industry is becoming stronger. The Drone Federation of India (DFI) has helped grow local drone development, production, and use. Indian companies like Alpha Design, Tata Advanced Systems, Paras Defence, and IG Drones are leading in making drones for defence.

4.1 Tactical and strategic importance of drones

The use of drones in Operation Sindoor has shown how important they are both in short-term tactics and long-term strategy. First, drones act as a "force multiplier," meaning they help smaller or less advanced forces stand up to stronger enemies. This was clear when drones helped India hit nine terrorist bases in Pakistan and cause major damage, even without having bigger casualties. Second, drones give better information before and during battles. Their real-time surveillance helps commanders see enemy movements, understand battlefield conditions, and make quick, smart decisions. This played a big role in India's success during the operation. Third, drones also affect the enemy's mindset. Seeing or hearing drones constantly in the sky makes enemies nervous and lowers their morale. In this operation, both India's drones and anti-drone systems had a psychological effect on Pakistan's forces, which was mentioned in Pakistan's press briefing. Finally, drones can strike with great accuracy, hitting important targets with fewer risks and fewer casualties. This ability sends a strong message and acts as a warning to others, as seen in India's precise drone attacks during the operation.

5. Conclusion and policy recommendation

India's main goal in Operation Sindoor was to defend its sovereignty and protect civilians without starting a larger war. It only targeted terrorist sites, showing it didn't want to escalate conflict and was respecting global rules. India has repeatedly linked Pakistan to international terrorism, providing evidence after attacks like Mumbai (2008), Pathankot (2016), and Pulwama (2019). It also submitted a report to the UN showing Pakistan's support for terrorists. Despite India sharing detailed proof, Pakistan has delayed investigations, showing its calls for joint probes are just stalling tactics. So, India strongly condemns terrorism in its region, and any activities of terror are a result of an act of war that is the new normal for India.

India's approach to warfare has evolved under the 'new normal,' marked by the integration of advanced Intelligence, Surveillance, and Reconnaissance (ISR) systems, precision-guided weapons, and the use of drones and loitering munitions. These technologies have reshaped how India responds to terrorist attacks, such as the one from Pakistan. To meet the armed forces' demands, deeper collaboration between the defence industry and the military is essential. Another critical point is that India's battle against terrorism is a self-reliant one. Relying on external support is uncertain and subject to changing global dynamics. Therefore, the nation must remain resilient and unified in facing this threat. India has used a smart and flexible strategy to stay strong and strike its enemies both physically and mentally. Controlling information and public opinion is very important, and India must keep shaping the story to weaken its enemies psychologically. Operation Sindoor shows how crucial technology is in modern war, especially for precise attacks and gaining an edge. As warfare changes, military technology will become even more important. India must keep an eye on Pakistan's growing capabilities, as they could upset the current military balance. In the end, the true effect of Operation Sindoor on stopping Pakistan's support for terrorism will only be known over time.

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