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Low-Cost Gerbera Drones: The Key Player in Russia-Ukraine Conflict

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Source: https://commons.wikimedia.org/wiki/File:Russian_drone_Gerbera,_downed_in_Ukraine_(2025-01-07).jpg

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On September 10, 2025, more than a dozen Russian Gerbera drones, as decoy entered Polish airspace. One of the drones struck a residential structure, causing damage to the roof. This Polish incident is indicated to have been diverted by electronic warfare (EW) with the aid of Ukrainian Defence Intelligence reports. The Gerbera drones are playing a pivotal role in the Russia-Ukraine conflict. Russia has designed and deployed various kinds of decoy drones to assist in missile and drone strikes against Ukraine. The Gerbera (also known as Gerber) is a multi-role version of Geran-2s. The Geran-2 is a local Russian version of the Iranian Shahed-136 loitering munition.

In July 2024, a Gerbera drone was deployed for the first time for operations. The Gerbera drone airspace violations in Lithuania (July 2025) were reported to be a hybrid warfare, which the analysts supported, and the claim has been challenged by Russia, as the tensions between Russia and Poland are on the rise.[1]

The Gerbera drone is optimised as a low-cost, multi-purpose platform to act as a decoy in swarms of drones. This design philosophy is capable of saturating enemy air defences by forcing adversaries to allocate resources to low-cost targets.

Design and Construction

The Gerbera is designed using low-cost materials commonly found in packaging, such as – plywood, foam plastics (Styrofoam), and crude composites, which reduce production costs to approximately USD10,000 per unit. This makes the Gerbera roughly ten times cheaper than a Shahed-136.[2] It is designed to be lightweight to facilitate mass production quickly, and Ukrainian intelligence estimates a possible production of up to 24,000 units by end of 2025.[3] The drone is delta-winged like the Shahed, which enables it to mimic radar signatures, but it is a little smaller and lacks sophisticated stealth systems. Certain models have a 3D-printed Luneberg lens (a sphere wrapped in foil) to increase their radar cross section, which effectively increases the perceived threat to enemy radar systems.[4]

The Gerbera drone is powered by a Skywalker Technology engine, which is produced in China, highlighting Russia's reliance on foreign-made parts in the current sanctions situation. The design allows for the use of fuel tanks in both the tail, as in the standard design, and sometimes in the nose, providing modularity to achieve an extended operational range. The incorporation of a mesh network system makes it easy to relay signals between various units effectively, which increases the resilience of swarm tactics to electronic jamming.[5]

Key Specifications

The Gerbera is mainly used in loitering or one-way missions, and its performance metrics will vary depending on the purpose of operation, such as serving as a decoy, reconnaissance platform, or strike (with 5k payload) platform. The primary enhancement of loitering munitions such as the Geran-2 or Gerbera is their effectiveness. They are so inexpensive that Russia can send them in large swarms simultaneously. The vital design parameters are: [6] [7]

(a) Weight: 18 kg (dry)

(b) Length: It is about 2.5 to 3 metres, making it a smaller substitute of the Shahed.

(c) Wingspan: Delta-wing, approximately 2 metres.

(d) Speed:

(i) Cruise: 97 km/h (60 mph)

(ii) Max: 160 km/h (99 mph)

(e) Range: This is up to 600 km (370 miles) in a non-payload configuration; range is dependent on the quantum of the warhead.

(f) Altitude: It is designed to operate at a low level in order to enhance evasion capabilities.

(g) Payload Capacity: Accommodates a maximum payload of 5 kg (11 lb) warhead.

(h) Cost: It costs about USD 10,000 per unit.

The Gerbera, although inexpensive to operate, is rather slow, which makes it vulnerable to interception, and thus a particularly easy target for air defence systems and FPV (First-Person View) drones.

Operational Capabilities

Although its main purpose is to serve as a decoy, the Gerbera, due to its multi- functionality, may be employed for various missions. Using its affordability to saturate the battlefield, especially in the current conflict between Russia and Ukraine, these drones are observed regularly. Various operational roles which may be assigned to Gerbera are appended below:

(a) Decoy Role: The key objective of this system is to saturate air defence systems. Gerberas are used in swarms with armed drones, including the Shaheds, which force air defenders to use expensive missiles (e.g., the AIM-9X, costing USD 2.8 million) against cheap decoys. Finally, a good number of these decoys are made to land safely after their fuel is depleted.[8]

(b) Reconnaissance: These units feature a high-resolution camera and 4G modem, enabling real-time video transmission over cellular networks. There are also some variants that have Controlled Reception Pattern Antennas (CRPA) to improve anti-jamming capabilities. They can recognise air defence positions well and transmit vital electronic signals.

(c) Kamikaze/Strike: Some are designed to be equipped with small explosive charges, enabling precision strikes, but this feature comes at the expense of a shorter range.

(d) Electronic Warfare: The system boasts advanced signal intelligence and mesh networking capabilities, enabling it to enhance the range of operation of other drones and disrupt enemy communications.

With such improvements, the platform has limited autonomous capability, and it is dependent on pre-programmed GPS/INS (Global Positioning System/Inertial Navigation System) navigation. Such dependency exposes it to electronic warfare methods, including jamming, that can significantly change its flight path.[9]

Take Aways for India

Considering the urgent need to examine the operational performance of the Gerbera drone and the dynamic nature of drone warfare, as demonstrated by the current conflict between Russia and Ukraine, the Indian Air Force (IAF) can learn valuable strategic and tactical lessons. These lessons play a vital role in optimising the Unmanned Force Plan-a strategic plan aimed at increasing combat readiness. This edge is especially relevant to the operational theatres bordering China and Pakistan, as well as in the Indian Ocean Region (IOR). Building the experience of existing drone operations, and with manned platforms, the IAF will be a better equipped to address with emerging threats and ensure air superiority in contested airspace.

The Gerbera may act as a pathfinder for India, as it is gearing up to dominate in air warfare with Drones. The need to develop indigenous electronic warfare (EW)-capable UAVs (Unmanned Aerial Vehicle) or incorporate existing systems, including the Indian-designed Samyukta EW suite, into UAV platforms, is essential. In line with this, specific attention should be paid to training pilots and ground staff to respond effectively to EW-diverted drones. This professional commitment to

continuous education and tactical adjustment is essential in the dynamic nature of contemporary warfare.

Investment in modular designs and the exploitation of 3D printing technologies, as in the case of the Gerbera programme, are suggested as a way of maximising performance and cost efficiency. This is a way not only to minimise the costs of production but also to enable quick scalability as the mission requirements change.

Conclusion

The Gerbera symbolises a low-cost decoy option in the drone warfare, and it entails low-tech, high-volume strategies to penetrate advanced air defence systems. Gerbara drones are used for reconnaissance, attack, drones, as well as decoy purposes. Its basic form and the model of functioning, however, restrict its independent functioning and demand the integration into other systems to become operationally feasible. The IAF may plan to induct a similar class of drones to make it a formidable force to reckon with.

Notes:

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[4] Simplicius, Tweet, Simpatico771, October 20, 2024, https://x.com/simpatico771/status/1847795054896615558. Accessed on September 11, 2025.

[5] "They Can't Even Make a Foam Drone Without China: Skywalker Technology Developed Gerbera Killer Drones for Russia", Defense Express, November 18, 2024,https://en.defence-ua.com/weapon_and_tech/they_cant_even_make_a_foam_drone_without_china_skywalker_technology_developed_gerbera_killer_drones_for_russia-12574.html. Accessed on September 11, 2025.

[6] "What are the Gerbera drones used in Poland incursion?", Reuters, September 10, 2025, https://www.reuters.com/business/aerospace-defense/what-are-gerbera-drones-used-poland-incursion-2025-09-10/. Accessed on September 11, 2025.

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[8] Ibid Reuters.

[9] Henri-Jean Bardon, Renewable works, Tweet, September 10, 2025, https://x.com/renewableworks/status/1965835900283453450. Accessed on September 11, 2025.