

Iran's major achievements in drone

Tufan

Tufan locates and destroys the enemy using an optical tracker. Also known as Chamran-2, the drone is made of lightweight and radar-absorbing materials, with the lowest radar cross-section. The forward-looking camera, located in the nose of this aerial vehicle, sends real-time images until the last moment to complete the targeting task. Tufan has a maximum speed of 250 km/h, a flight radius of 100km, a flight ceiling of 14,000 feet (4,267m), and a flight endurance of 21-22 hours. A 100-kilometer range provides it with acceptable operational value, allowing sufficient time for target search and attack during its flight endurance. By utilizing ground station guidance and navigation, Tufan can be upgraded to have a range of 200km to 400km. Its launching mechanism is JATO (Jet-Assisted Take-Off), a type of auxiliary rocket engine used in the aviation industry to provide additional thrust during takeoff. If necessary, the drone performs a gentle landing on the ground for recovery, allowing the launch of these small drones near the frontlines, or in urban combat areas as an immediate and rapid response solution for destroying a significant target.

Sa'eqeh

Equipped with a 10-km warhead, the drone is used for suicide missions with a range of 100km. It transmits images up to the point of impact, allowing the user to stay informed about the target's latest status. Manufactured in two types: 1 and 2, with somewhat different specifications:

Sa'eqeh-1

With high agility in terms of maneuverability, Saeqeh-1 is among the fastest Iranian propeller-driven UAVs, making it a suitable tool for practicing artillery techniques. The JATO-launched drone does not need a runway to obtain the necessary initial speed for flight. Saeqeh-1 is used in the practical training of air defense operations as a target for non-radar air defense systems, as well as to deceive the enemy on the battlefield. The execution of maneuvers in the Saeqeh-1 is carried out through a radio-controlled device with an optical tracking system by the pilot, and the flight stability is ensured by an automatic stability system. It is recovered through a parachute, and in emergency situations, it can gently land on the runway by the pilot. The maximum speed is 250km/h, the flight radius is 10km, the flight ceiling is 11,000 feet (about 3,300m) and its flight duration is about 60 minutes.

Sa'eqeh-2

Sa'eqeh-2, in addition to its educational and personnel training purposes in radar and missile defense, can also be used to deceive the enemy on the battlefield. This drone can fly at an altitude of 10,000 to 12,000 feet (3,000 to 3,600m). It has a length of 2.81m, a wingspan of 2.60m, a maximum launch weight of 60kg, a maximum speed of 230 to 250km/h, a flight endurance of 45 to 60 minutes, and a range of 50km. The ground control station for this drone serves as a system for sending necessary information and commands to guide and control the drone, manipulated by the pilot. It has the capability for establishing uplink and downlink communication, receiving flight data, storing, and displaying received information. After following its planned route, Saeqeh-2 automatically returns to its takeoff point, or any predefined location. The recovery of this drone, like Saeqeh-1, is also carried out through a parachute, and in emergency situations, it can gently land on the runway by the pilot. This combat drone has a range of 100km and is designed for rapid attacks in less than 30 minutes. Sa'eqeh-2 is equipped to send images and carry explosive payloads for effective destruction.

Ababil

The Ababil drone group, including types S, B, and T, is another domestically-designed drone family. Its first-generation design dates back to the mid-years of the Iraqi-imposed war (1980-1988). The drone uses a four-cylinder piston engine with a propeller blade. The dimensional and flight specifications of different models within the Ababil family vary, including the capability to reach speeds of 300km/h, an operational identification range of 150km, a flight ceiling of approximately 4,200m, and the capacity to carry identification or explosive payloads ranging from 30kg to 40kg. In addition to a reconnaissance mission, where Ababil demonstrated its capabilities by capturing images of the US aircraft carriers in October 2023, this drone is also used as an aerial defense target for anti-aircraft exercises. Ababil is a low-wing aircraft with a canard (foreplane), and this characteristic contributes to its high maneuverability due to the inherent instability or low stability feature, especially at high altitudes. General features: suitable aerodynamic design, quick disassembly and assembly, ease of use and repair, good maneuverability and flexibility, usability in both sea and land environments, recoverability and reuse, and reasonable total cost.

Kian-1

Built in 2014, the Kian-1 drone has a mission to assess air defense equipment. It is a small-scale suicide and target drone with a microjet engine capable of reaching a maximum speed of 480km/h. This drone, with a 2-m wingspan, can carry a payload of 30kg. It has a ceiling of nearly 5,500m, and flies at a cruising speed of 350km/h.

