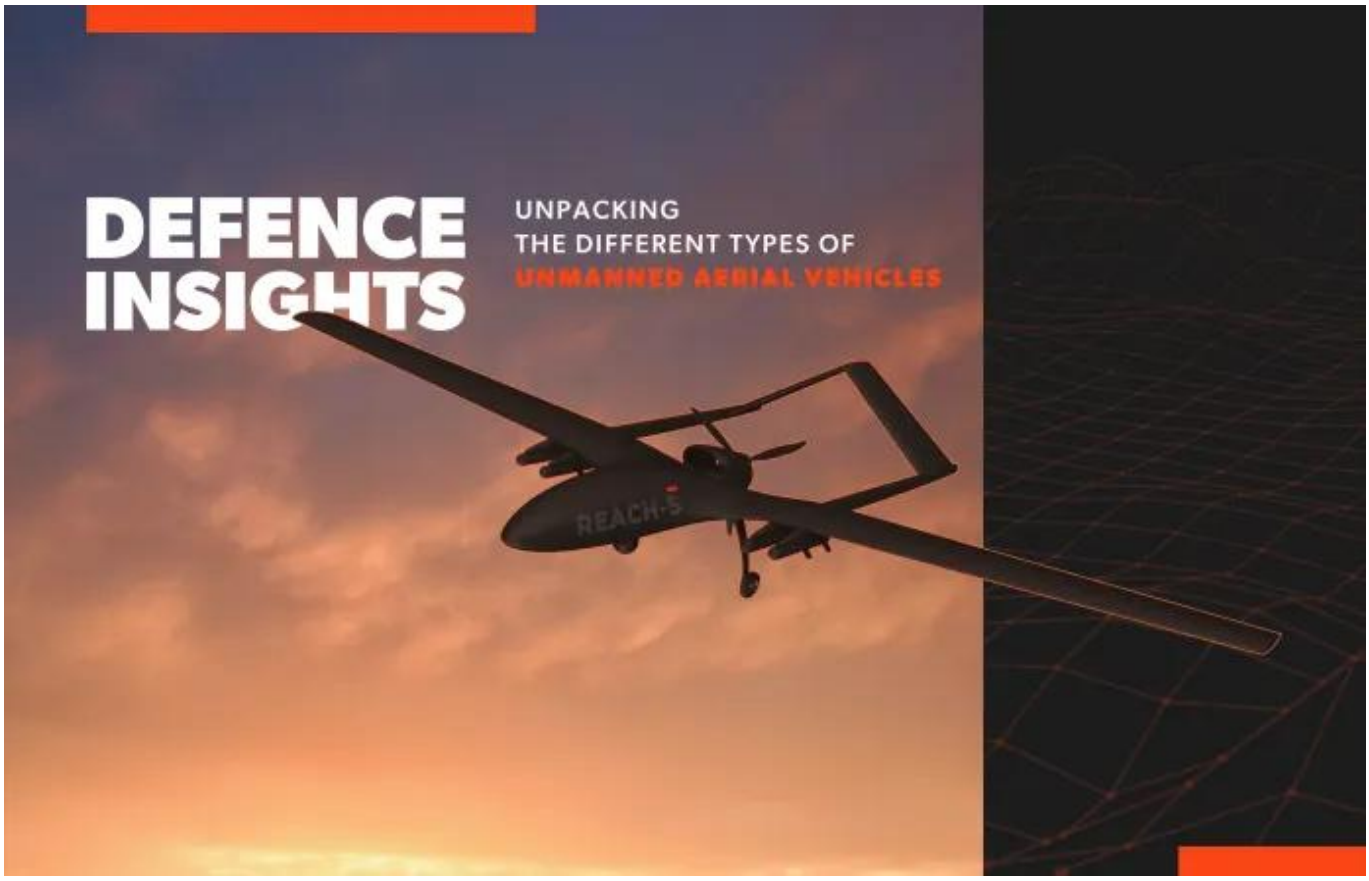
Making Big Waves in the Sky: Unpacking the Different Types of Unmanned Aerial Vehicles



Unmanned aerial vehicle (UAV or drone) use by militaries has proliferated over the past decade. First used on reconnaissance missions in the 1960s, UAVs have since been developed to also conduct precision air strikes and close air support missions. Different types of drones will have characteristics favorable to certain mission requirements. Listed below are different types of UAVs as well as the different categories of drones used by .militaries around the globe

Different types of drones

UAVs are commonly differentiated by their propulsion system and airframe. The four basic types are fixed-wing, rotary-wing/single-rotor, multirotor, and vertical take-off and landing (VTOL). Fixed-wing, rotary-wing, and VTOL UAVs are virtually the same as their manned counterparts. Fixed-wing is a heavier-than-air flying machine, capable of flight using wings that generate lift caused by the aircraft's forward airspeed and the shape of its wings. .Propulsion systems are usually a fuel or electric propeller engine, or a jet engine



The HUNTER 5, a fixed-wing, propeller engine UAV



The SHADOW 25, a fixed-wing, turbojet UAV

A single-rotor/rotary-wing UAV, similar to a helicopter, is a type of drone that is a heavier-
.than-air aircraft with rotary blades that generate lift by rotating around a vertical mast



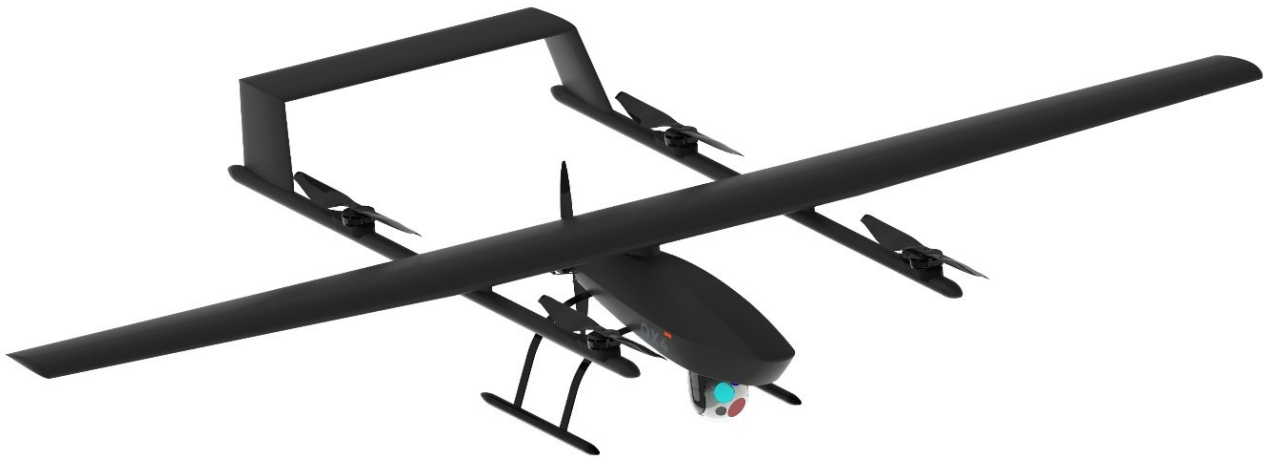
The GARMOOSHA, a rotary-wing UAV

.A multirotor drone is a type of UAV with more than two lift-generating rotors



The QX-3, a multirotor UAV

The first VTOL aircraft was invented in 1958. However, designs have been largely impractical up until recent decades. VTOL aircraft can hover, take-off, and land vertically without relying on a runway. While the same is true for rotary wing aircraft, VTOL aircraft typically, feature a combination of fixed-wing aircraft principles for flying and rotary-wing .principles for take-off and landing



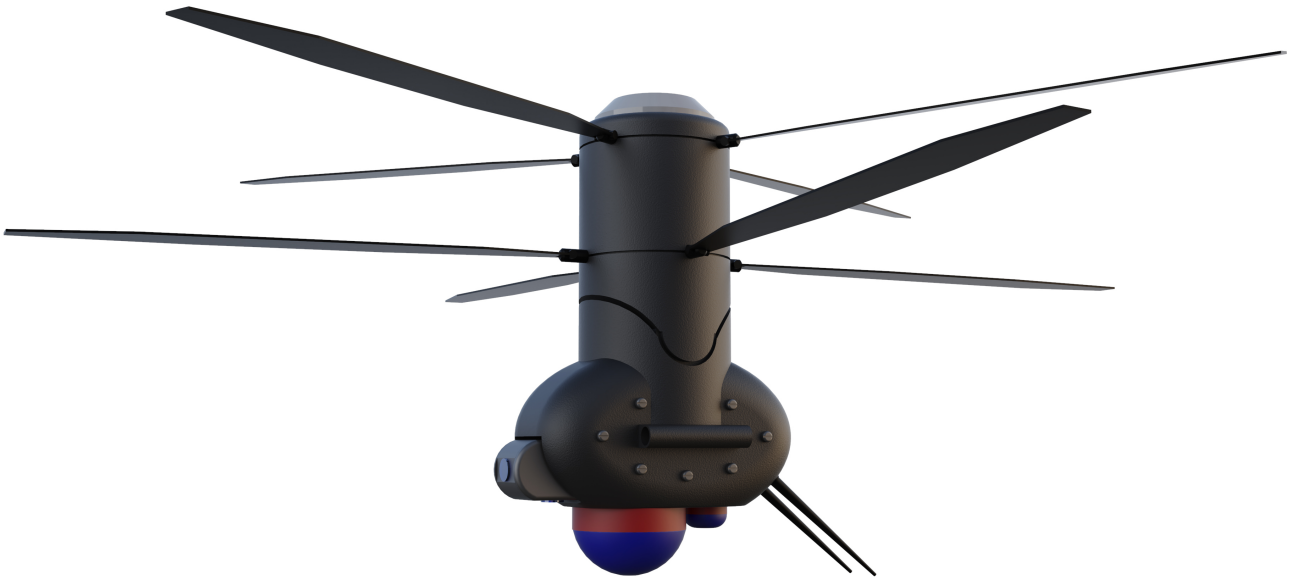
The QX-4, a VTOL UAV

Categories of drones

Military categories for drones differ based on size, range and endurance, weight, altitude, and degree of autonomy. Based on weight, UAVs can be classified into five basic .categories

Nano UAVs are extremely small, lightweight, usually man-portable and commonly hand-launched. Weighing up to 250g, their range, speed, and altitude are very limited and militaries would usually use this UAV for close ground situational awareness in tight .spaces

Micro UAVs or Micro Air Vehicles (MAVs) weigh between 250g-2kg. No true MAV are currently in use with militaries due to practical limitations. A ground control pilot cannot see a MAV beyond 100 metres and MAVs cannot carry on-board transmitters powerful enough to allow for teleoperation. Given these limitations, fully autonomous MAVs are being .developed



The HUNTER, a hand-launched drone

Small UAVs (SUAVs) weigh between 2-25kg and find use in mainly Special Forces operations. Capable of carrying a payload, SUAVs can conduct intelligence, reconnaissance and surveillance (ISR) missions, and strike a target. Hand-held and man-portable are usual .characteristics of this type of drone





The HUNTER SP, a tube-launched UAV

Medium UAVs weigh between 25-150kg and are typically fixed-wing. This type of UAV has more advanced strike capabilities, with a longer range and endurance than SUAVs for ISR missions. EDGE Group, one of the world’s leading advanced technology companies for .defence and beyond, has a range of UAVs that fall under this type of UAV



The HUNTER 10, a fixed-wing, tube launched UAV



The SHADOW 50, a fixed-wing, turbojet UAV

The large UAVs weigh over 150kg. Medium-altitude, long-endurance (MALE) and high-altitude, long-endurance (HALE) UAVs typically fall into this category. This type of drone has become prolific with militaries for their long range and long endurance capabilities on ISR missions. They are also capable of striking targets from long standoff distances with relatively large payloads. They have seen extensive use in recent theatres of operation and .have proven to be a vital tool for militaries



The REACH-S, a fixed-wing, MALE UAV

The future of UAVs for military use will largely be influenced by artificial intelligence (AI). Drones capable of full autonomy with advanced target recognition and decision-making capabilities are set to play a decisive role in future aerial operations. An example of this is the HUNTER 2-S, a tube-launched, swarming drone with advanced AI capabilities. Using AI, the drones are able to track and maintain their relative positions to perform coordinated missions. Target recognition and assignment of drones in the swarm to targets are also .strong AI features of the HUNTER 2-S



The HUNTER 2-S, a fixed-wing, swarming UAV