

## 1.4 TYPES OF CURRENT GENERATION OF DRONES BASED ON THEIR METHOD OF PROPULSION:

The current generation of drones, also known as Unmanned Aerial Vehicles (UAVs), can be categorized based on their method of propulsion. Here are the main types:

### 1. Fixed-Wing Drones

- **Description:** These drones resemble traditional airplanes with a fixed wing structure.
- **Propulsion Method:** They usually rely on one or more propellers powered by internal combustion engines or electric motors.
- **Advantages:** Efficient for long-distance flights and can cover large areas.
- **Examples:** SenseFly eBee, Parrot Disco.



### 2. Multi-Rotor Drones

- **Description:** These drones have multiple rotors, with the most common configurations being quadcopters (4 rotors), hexacopters (6 rotors), and octocopters (8 rotors).
- **Propulsion Method:** Each rotor is powered by its own electric motor.
- **Advantages:** Highly maneuverable, capable of vertical takeoff and landing (VTOL), and stable hovering.
- **Examples:** DJI Phantom, Yuneec Typhoon.



### 3. Single-Rotor Helicopters

- **Description:** These drones operate similarly to traditional helicopters, with one main rotor and a smaller tail rotor for stability.
- **Propulsion Method:** Powered by either internal combustion engines or electric motors.
- **Advantages:** Longer flight times and the ability to carry heavier payloads compared to multi-rotor drones.

- **Examples:** Align T-Rex, DJI Ace One.



#### 4. Hybrid VTOL Drones

- **Description:** These drones combine the features of fixed-wing and multi-rotor drones, allowing for vertical takeoff and landing as well as efficient forward flight.
- **Propulsion Method:** Typically equipped with both rotors and fixed wings, with rotors providing lift for takeoff and landing and fixed wings for forward flight.
- **Advantages:** Versatility in various flight conditions and missions.
- **Examples:** Quantum Systems Trinity F90+, WingtraOne.



#### 5. Ducted Fan Drones

- **Description:** These drones use ducted fans, which are propellers enclosed within a cylindrical duct.
- **Propulsion Method:** The ducted fans are usually powered by electric motors.
- **Advantages:** Enhanced safety and efficiency, reduced noise, and better performance in confined spaces.
- **Examples:** Teal One, Vayu UAV.



## 6. Tethered Drones

- **Description:** These drones are connected to the ground via a physical tether.
- **Propulsion Method:** Powered through the tether, which supplies continuous power from the ground.
- **Advantages:** Extended flight times as they are not limited by battery life, and stable positioning due to the tether.
- **Examples:** Elistair Safe-T, Hoverfly LiveSky.

