



# *Press Release*

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## **Vertical Flight Society Publishes Study on One-Way Attack Drones Increasing number of VTOL drones used for attack missions**

**Fairfax, Virginia, USA, May 4, 2023** — The Vertical Flight Society (VFS), the world’s oldest and largest technical society dedicated to enhancing the understanding of vertical flight technology, published an expansive report on one-way attack drones, also known as loitering munitions. The study, “One-Way Attack Drones: Loitering Munitions of Past and Present,” finds that the origins of these weapons are more complex than often understood and that the market for one-way attack (OWA) drones has grown larger than expected.

The study traces the evolution of one-way attack drones from military programs in the early 1970s to the present day. In the 1970s and 1980s, the advent of new fabrication materials and lightweight sensors facilitated the development of low-cost drones to target adversary radar sites. In time, the military applications of OWA drones broadened beyond the suppression of enemy air defenses (SEAD) role. In the early 2000s, the emergence of the Switchblade drone provided the infantry with its own portable loitering munition, while the spread of Iranian drones enabled a host of non-state and, increasingly, state actors to use low-cost drones to conduct long-range precision strikes.

“The development of one-way attack drones formed a critical part of the transition from the era of jet-powered target drones to that of remotely pilot vehicles, which resulted in the burgeoning market for drones of all types that exists today,” said Dan Gettinger, VFS Director of Communications and Publications, and the author of the study. “Once thought of as designed for a specialized task, one-way attack drones are increasingly assuming a broader role on the battlefield.”

The market for one-way attack drones is growing dramatically, with as many new models of aircraft revealed in the past two years as those unveiled in the previous five decades combined. Drawing on an original database of over 200 types of one-way attack drones, the study finds that more than 120 entities in over 30 countries are developing or producing these weapons or have done so previously. Vertical take-off and landing (VTOL) one-way attack drones represent a rapidly emerging segment of the market and currently comprise more than one-in-four models of OWA drones, a reflection of a broader trend towards lightweight, hand-carried models.

The consequences of this transformation are evident in the host of ongoing military research and acquisition programs worldwide. The adoption of one-way attack drones in greater numbers and variety has the potential to lead to changes in force structures, training and operations. The dominance of drones, including one-way attack drones, in recent armed conflicts such as in Ukraine and Nagorno-Karabakh have underscored the vulnerabilities of current air defenses. For crewed rotorcraft, one-way attack drones are seen as offering the possibility of increasing the lethality and survivability of Future Vertical Lift platforms.

The VFS report “One-Way Attack Drones: Loitering Munitions of Past and Present” can be downloaded by the public for free through the month of May at [www.vtol.org/drone-report](http://www.vtol.org/drone-report), after which it will be available for purchase from the VFS Vertical Flight Library at [www.vtol.org/library](http://www.vtol.org/library), along with the dataset of aircraft on which the analysis is based.

Founded as the American Helicopter Society in 1943, the Vertical Flight Society is the global non-profit society for engineers, scientists and others working on vertical flight technology, including helicopters, VTOL drones and electric VTOL aircraft. For more than 80 years, the Society has led technical, safety, advocacy and other important initiatives, and has been the primary forum for interchange of information on vertical flight technology. Information on VFS drone safety initiatives is found at [www.vtol.org/drones](http://www.vtol.org/drones).

VFS can be found at [@VTOLsociety](https://twitter.com/VTOLsociety) on social media: [Facebook](https://www.facebook.com/VTOLsociety), [Instagram](https://www.instagram.com/VTOLsociety), [LinkedIn](https://www.linkedin.com/company/VTOLsociety), [Mastodon](https://mastodon.social/@VTOLsociety), [Twitter](https://www.youtube.com/channel/UCqj8K8K8K8K8K8K8K8K8K8K), [Vimeo](https://www.vimeo.com/VTOLsociety) and [YouTube](https://www.youtube.com/channel/UCqj8K8K8K8K8K8K8K8K8K8K).

**The Vertical Flight Society**

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