



Press Release

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The Vertical Flight Society Announces the Winners of the 40th Annual Student Design Competition

*University of Maryland and
Georgia Institute of Technology/US Military Academy take top honors*

Fairfax, Virginia, USA — The Vertical Flight Society (VFS) today announces the winners of its 40th Annual Student Design Competition. The team of **University of Maryland** took first place in the Graduate category and **Georgia Institute of Technology/US Military Academy** in the Undergraduate category. In addition, the **Military Institute of Science & Technology (Bangladesh)** took Best New Undergraduate Entrant honors. [Sikorsky, a Lockheed Martin Co.](#) was the sponsor of this year's competition, supporting a total of \$12,500 in prize money.

Each year, the VFS competition challenges students to design a vertical takeoff and landing (VTOL) aircraft that meets specified requirements, providing a practical exercise for engineering students at colleges and universities to promote student interest in VTOL engineering and technology.

Academic teams from around the world submitted entries in this year's competition, with a total of 13 proposals from four different countries. Executive summaries for the top-winning entries from the 40th Student Design Competition are available at www.vtol.org/sdc, along with past winners.

The 40th (2022-2023) Student Design Competition was entitled, "High-Speed Vertical Takeoff and Landing (HSVTOL) Aircraft." The goal of this year's Request for Proposals (RFP) was to design a large VTOL aircraft that would balance sustained hover operations with high-speed and high-altitude cruise capabilities.

Students had to design an aircraft capable of carrying a payload of 5,000 lb (2,268 kg) within an internal cargo bay with dimensions of 6.5 ft (1.98 m) high, 8 ft (2.43 m) wide and 30 ft (9.14 m) long at a mission radius of action of 500 nm (926 km) and a cruise speed of no less than 450 kt (833 km/h) at a threat-avoidance altitude greater than 20,000 ft (6,096 m) mean sea level (MSL). The vehicle design also



*Arion: University of Maryland
1st Place Graduate Category*



*The Harpy: Georgia Institute of Technology /
US Military Academy
1st Place Undergraduate Category*

needed to include features to mitigate the severity of the outwash/downwash environment on ground personnel, as well as minimize the susceptibility of the propulsion system to Foreign Object Debris (FOD) ingestion during VTOL operations.

The winning teams for the graduate category are as follows:

<u>Place</u>	<u>University (Graduate)</u>	<u>City, Country</u>	<u>Design Team</u>
1 st	University of Maryland	College Park, Maryland, USA	Arion
2 nd	Georgia Institute of Technology / Sapienza University	Atlanta, Georgia, USA Rome, Italy	Soteria
3 rd	Politenico di Milano	Milan, Italy	Raven 4

The winning entry in the graduate category was **University of Maryland’s “Arion”** — named for the immortal mythical horse that was known for his extraordinary speed and bravery. The team’s design is a 48,000-lb (21,800-kg) mixed-power tiltrotor with two 39-ft (11.9-m) proprotors. Arion is powered by two inboard turboshaft engines plus two turbofans on the base of the tail for additional forward thrust.

The winning teams for the undergraduate category are as follows:

<u>Place</u>	<u>University (Undergraduate)</u>	<u>City, Country</u>	<u>Design Team</u>
1 st	Georgia Institute of Technology / US Military Academy	Atlanta, Georgia, USA / West Point, New York, USA	The Harpy
2 nd	University of Maryland	College Park, Maryland, USA	Karfi
3 rd	Pennsylvania State University	State College, Pennsylvania, USA	Night Fury
Best New Entrant	Military Institute of Science & Technology	Mirpur Cantonment, Dhaka, Bangladesh	MIST AVRO

The team of **Georgia Institute of Technology** and **The US Military Academy** was the winning undergraduate team with its “Harpy” concept. The name was inspired by harpy eagles known for carrying heavy weights and harpies from mythology which are half-human and half-bird — much like the team’s design, which is half-VTOL and half-jet. The 51,500-lb (23,350-kg) vehicle leverages a novel configuration of its two 36-ft (20-m) diameter, two-bladed rotors mounted on the wingtips: for high-speed forward flight, the rotors are stopped and its retracting blades are stored in the wings. This method allows the drag to be minimized while still allowing the advancing blades to remain as useful lifting surfaces in the flow. The aircraft is powered by two convertible engine system technology (CEST) turbofan/turboshaft engines to drive the rotors and provide cruise thrust.

Two members of each of the first-place winning teams are invited to the 80th Annual Forum & Technology Display (www.vtol.org/forum) — scheduled for May 7–9, 2024 in Montreal, Canada — to present the details of their designs.

The Annual Student Design Competition sponsorship rotates between Airbus Helicopters, Bell, The Boeing Co., Bell, Leonardo, Sikorsky, a Lockheed Martin Co. and the DEVCOM Army Research Lab.

As announced previously, the 2023–2024 RFP for the 41st Annual Student Design Competition, sponsored by [DEVCOM Army Research Laboratory](#), is also now available at www.vtol.org/sdc. A total of \$12,500 in cash prizes is again available to the winning student teams. University teams must submit a letter of intent to participate no later than Feb. 1, 2024.

This new RFP is entitled, “Multi-Mission Modular UAS for Disaster Relief,” and challenges students with designing a multi-mission, modular, VTOL uncrewed aircraft system (UAS) that can: take off and land vertically from the deck of a ship in high-winds and gusty conditions; cruise to and from the site of a disaster; and serve as a long-endurance communications relay or land vertically to deliver relief supplies.

The Vertical Flight Society is the world’s premier vertical flight technical society. Since it was founded as the American Helicopter Society in 1943, the Society has been a major force in the advancement of vertical flight. VFS is the global resource for information on vertical flight technology. For nearly 80 years, it has provided global leadership for scientific, technical, educational and legislative initiatives that advance the state of the art of vertical flight.

VFS is @VTOLsociety on social media: [Facebook](#), [Instagram](#), [LinkedIn](#), [Mastodon](#), [TikTok](#), [Threads](#), [Twitter](#), [Vimeo](#) and [YouTube](#), and also has @ElectricVTOL channels on [Facebook](#), [Mastodon](#) and [Twitter](#).

The Vertical Flight Society

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