

TEAM CUET



ENGINEERS BOUND BY FLIGHT

OUR VISION

To become CUET's leading UAV team, advancing drone innovation through engineering excellence and global competition. We aim to contribute to Bangladesh's technological progress by developing high-performance UAV systems and inspiring the next generation of engineers to push the boundaries of what is possible.

OUR VISION

Our mission is to design, build, and operate cutting-edge drones that meet international standards, represent CUET on global platforms, and address real-world challenges through practical UAV applications. We are committed to continuous learning, teamwork, and mentorship—creating a sustainable culture of innovation while contributing to national development through meaningful technological solutions.

OUR GLOBAL AIM



**METU VTOL UAV
COMPETITION**

**SAE AERODESIGN
/ DESIGN-BUILD-
FLY (DBF)**



**VFS DESIGN-
BUILD-VERTICAL
FLIGHT (DBVF)**

ABOUT METU VTOL COMPETITION

The METU VTOL Competition is hosted by the Middle East Technical University (METU). It focuses on:

- Designing and constructing a VTOL aircraft under strict engineering and safety rules.
- Executing mission-based tasks, including payload delivery, autonomous navigation, and efficient flight performance.
- Encouraging innovation in drones that combine vertical takeoff/landing with fixed-wing forward flight.



Participants are evaluated on:

- Engineering design quality
- Technical documentation
- Flight mission performance
- Safety and reliability
- Innovation and optimization

This competition is internationally recognized and serves as a launchpad for young engineers pursuing aerospace, robotics, and UAV careers.

TIMELINE

- **PROPOSAL SUBMISSION:**
JULY 18 AUGUST 8, 2026
- **NOTIFICATION OF CONDITIONAL ACCEPTANCE:**
JULY 27 AUGUST 16, 2026
- **DESIGN REPORT & PROOF-OF-FLIGHT VIDEO SUBMISSION:**
SEPTEMBER 5 SEPTEMBER 26, 2026
- **NOTIFICATION OF ACCEPTANCE:**
SEPTEMBER 14 OCTOBER 4, 2026
- **COMPETITION:**
OCTOBER 3-4 OCTOBER 18-19, 2026

Project Overview

The Staraptor

We are building a Quadplane VTOL, a hybrid aircraft that uses rotors for vertical lift and a fixed-wing setup for forward flight.

This configuration offers:

- High stability
- Excellent endurance
- Reliable mission execution
- Simpler mechanical structure compared to tilt-rotor mechanisms

Planned Drone Capabilities:



STARAPTOR VTOL CONCEPT

**AIRMOBI V25 FULL
ELECTRIC VTOL DRONE**



**AIRMOBI V21 FULL
ELECTRIC VTOL**



YANGDA SKY WHALE



Project Overview

The Staraptor

Feature	Specification
VTOL Type	Quadplane configuration
Wingspan	~1.5–1.8 meters
Payload Capacity	1.0–2.0 kg (according to mission requirements)
Endurance	12–20 minutes depending on mission load
Materials	Carbon fiber, balsa, composite sheet
Electronics	High-efficiency BLDC motors, ESCs, flight controller, GPS
Mission Systems	Navigation, payload drop mechanism, telemetry

This drone will be fully compliant with METU VTOL guidelines regarding weight constraints, safety requirements, payload handling, flight envelope, and mission execution rules.

BUDGET

Item	Specification	Unit BDT
3D Design & printing	SolidWorks CAD	10,000.00
Flight Controller	Pixhawk PX4 2.4.8	12,500.00
Vertical Motor	T-Motor VELOX V2207 V3 Motor – 1750KV/1950KV/2550KV	2,300.00
Pusher Motor	EDF Motor 3400KV	4,500.00
ESCs	EMAX BLHeli 40A Brushless ESC	1,400.00
Propellers	VTOL quad + pusher props	1,300.00
Battery	Lion Power 4S 4000 maH 14.8V 40C LiPo Battery for RC Drone Plane Car Boat	4,900.00
Airspeed Sensor	Airspeed Sensor+Differential Airspeed Pitot Tube MS4525DO Plastic+Metal for PX4 Controller	5,100.00
Telemetry	Holybro SiK Telemetry RC Radio V3 (100 mW, 433 / 915 MHz)	9,200.00
RC TX / RX	FlySky FS-CT6B 2.4G 6CH Radio Set System RC 6CH Transmitter + 6CH Receiver	4,900.00
Frame Rods / Mounting	Carbon rods, spars, hardware	3,500.00
3D Printing	Outsourced / print service	2,500.00
Drop Servo	TD-8120MG Digital High Torque Servo Motor Metal Gear 20kg 360° Continuous Rotation	1,290.00
Power Distro	Matek Systems PDB XT60 with BEC 5V & 12V 2oz Copper Power Distribution Board	550.00
Spares / Contingency		
Total		63,940.00

ADVISOR REQUEST

To

Radheshyam Nath Jisu

Department of Mechanical Engineering

CUET

Subject: Request to Serve as moderator for Team Staraptor

Dear Sir,

We, the members of Team Staraptor, respectfully request your guidance as the Faculty moderator for our METU VTOL UAV project. We aim to design and build a competition-grade VTOL drone to represent CUET internationally, and your expertise would greatly strengthen our technical direction and overall project execution.

We would be grateful if you kindly agree to moderate our team. We are ready to meet at your convenience to present our initial plan and progress.

With respect,

Rashid Abrar Ajmain

Team Staraptor CUET

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