



March at-a-Glance

During the month of March, our team continued manufacturing, assembling, and testing our various subsystems as we approach the final stages of our rocket and payload development.

We also had two very exciting events occur: our HPRC Project Presentation Night and the launch of last year's Sirius rocket in St. Albans, Vermont this past weekend.

The HPRC Project Presentation Night was a delight for us as we got to share our work with YOU, our sponsors, contributors and supporters. We thank everyone both in-person and virtual for their attendance and hope you found the experience just as fun and inspiring as we did!

Our launch of Sirius at St. Albans also proved very successful, reaching an altitude of 5,700 ft and landing safely for recovery by our team. Valuable testing was also conducted for current systems on project Aquila during the launch, and overall the team had a great time experiencing the launch process!



HPRC team photo after an exciting Project Presentation Night!



The avionics subteam presenting on their progress at the HPRC Project Presentation Night.



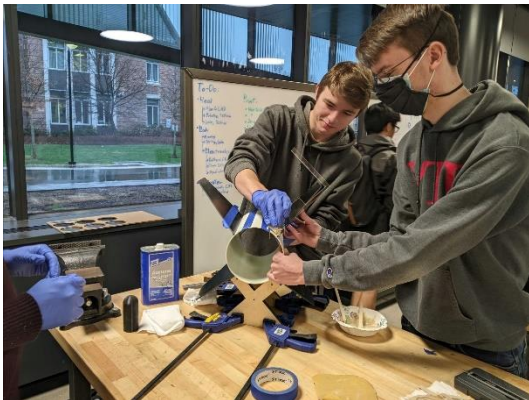
An action shot of a successful launch of last year's Sirius rocket at St. Albans, VT.



Team photo with the safely recovered, albeit muddy, Sirius rocket after launch.

Rocket Division

Altair



Aerostructures

The aerostructures subteam has been working on the final components for the rocket. We finished the layups for the final tail cone and are currently working on the fin can layups. We were also able to make a new fin alignment jig to make sure the fins were perfectly vertical, and we will soon start assembling the components with the couplings subteam.

Airbrakes

The airbrakes subteam completed manufacturing of all their aluminum parts this past month, with students learning how to use the CNC mills in Washburn to machine the actuator plate, rail mounting plate, and fins. The team got together around the end of the month to assemble the airbrakes and program the central servo motor to test the actuation of the entire mechanism. The team has created a jig and is now preparing to test the airbrakes under loads of up to 7 lbs per fin.



Couplings

The Couplings subteam has recently finished manufacturing our coupling joints and motor retention parts. We are in the final stages of assembly and are preparing to mount the couplings onto the airframes!

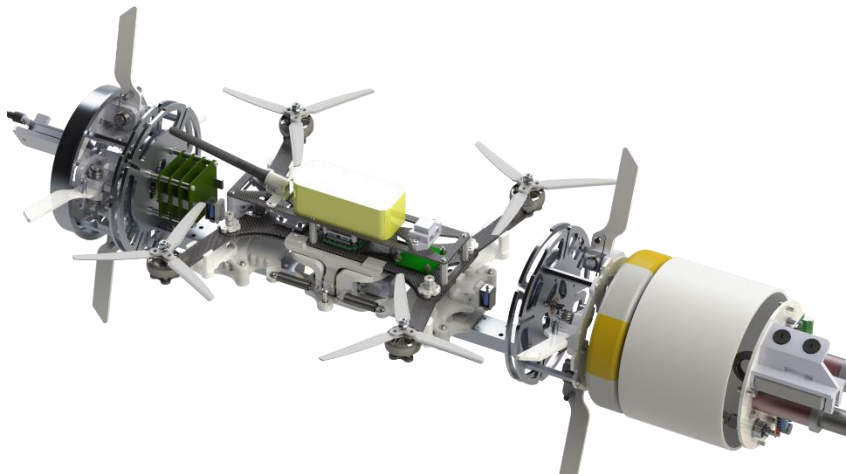
Recovery

The recovery subteam has completed the assembly of the final recovery bay by assembling the 3D-printed sled, aluminum plate, and the final electronics. The electronics were tested using a vacuum chamber to confirm the readings were correct. We also had a successful deployment test with last year's Sirius rocket. Both parachutes were deployed with the new single-end deployment system and landed the rocket safely for recovery.



Payload Division

Tarazed



Payload Mechanical

The payload mechanical team created a fully prototyped quadcopter and have entered the machining stage to fabricate its final parts. The quadcopter has taken its first flight and will be undergoing tune ups from the flight testing.

Electronics and Programming Team



Avionics & Ground station

The software avionics and ground station subteams collected flight data and tested their systems at the St. Albans launch using PCBs from last year's system and a new custom antenna created by an electrical engineering professor on campus. The ground station team also utilized their custom-built QFH antenna on the ground to receive the data. On the electrical side, the custom electronics boards have arrived and the team has begun assembling them. In addition, the avionics team continues to develop the state machine for the avionics stack and the ground station team will continue to fine-tune their system in preparation for IREC.

Payload EnP

The payload electronics and programming subteam has switched to using the MAVlink library to communicate between the Arduino and flight controller on the drone. In addition, the power budget for the retention electronics has been completed. The team looks to develop state diagrams for both the retention and drone systems in the coming weeks, as well as continue drone testing.

