



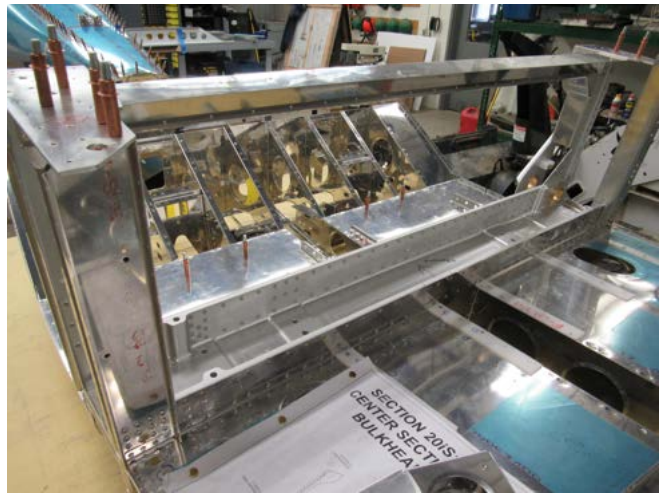
## RV-12iS STUDENT PLANE BUILD PARTNERSHIP



## 2020 CONTRIBUTORS PROGRESS REPORT



# **BUILDING TOMORROW'S WORKFORCE: A HANDS-ON LEARNING PROGRAM**





## RV-12iS STUDENT PLANE BUILD PARTNERSHIP



January, 2021

To: All plane-build supporters and potential supporters

Dear Friends,

Thank you for your interest in the ongoing student plane-building program at the Manchester School of Technology. This project is a partnership between the school, the non-profit Aviation Museum of N.H., and Tango Flight, a Texas-based educational non-profit.

Please accept this progress report. The project has continued to move ahead during a challenging year. The closure of schools due to Covid-19 in the spring of 2020 did cause us to adjust the build schedule, delaying completion of Plane #1 to the 2020-21 school year. But the year also saw substantial progress on the aircraft, plus several other milestones outlined in this report.

A highlight of 2020 was the construction of a dedicated hangar/workshop for the program, which is nearing completion at the school. The cost of this much-needed structure to house the plane-build program was covered by state Department of Education grant funds obtained by the school. This underlines the long-term commitment to this program by the DOE and the Aviation Museum of NH.

Throughout the year, we've kept pushing forward with our vision of local high school students building an actual airplane: a hands-on learning experience guided by experienced aviation professionals volunteering their time.

And we remain on track to achieve our larger goal—to sell the first two completed aircraft on the open market, using the proceeds to fund subsequent aircraft builds at no cost to the school district or local taxpayers.

We have been able to accomplish this because of support from community-minded businesses and organizations such as yours. We're proud to submit this brief update of our progress in 2020. Thank you for believing in our vision. We'd be delighted to answer any questions you have about the program, and also arrange for a tour of the workshop.

One important element of our program has *not* been affected by Covid-19: the urgent need for young people to choose aviation and aerospace careers in order to meet anticipated future needs. This may seem counter-intuitive due to current headlines, which focus on airline layoffs due to the pandemic.

Given these circumstances, it's important that young people and the stakeholders supporting our program understand that the pandemic's effects, although significant, are *temporary*. The fact is, our nation's aviation and aerospace industries will continue to demand a steady stream of skilled young people to maintain its world leadership, competitive edge, and ability to innovate.

If anything, recent layoffs and early retirements will actually *increase* the need for young people to enter aviation. A coming shortage of pilots, mechanics, and other trained professionals is what airline executives are talking about right now:

*“And that shortage is probably now five years out not two years or three years out. ... It takes five years to train up the pilot. So if you think the industry is going to be recovered by 2025 ... we need to start to think about how to attract those pilots of the future today.”*

**Michael Leskinen**, Head of Corporate Development and Investor Relations, United Airlines  
Investor conference on Nov. 17, 2020.

Thank you for your support of the plane-build partnership. We hope to continue to report progress in 2021 and beyond. For now, best wishes for the holiday season and a Happy New Year!

**Jeff Rapsis**  
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**Karen Hannigan Machado, M.Ed, CAGS**  
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Congratulations to workshop/build manager Jack Barry, who was named New Hampshire's "Outstanding Senior Volunteer of the Year" for 2020 by VolunteerNH, a volunteer advocacy group. Jack, a Bedford resident and longtime Aviation Museum volunteer, brings more than 50 years of experience as an airplane mechanic, educator, FAA licensed inspector, and pilot to the plane-build partnership.

## RV-12iS STUDENT PLANE BUILD PARTNERSHIP

### 2020 financial status

Total budget for construction of first two airplanes: **\$350,000**

Total amount raised as of Dec. 31, 2020: **\$299,550**

Balance still to be raised: **\$50,450**

**Notes:** Fundraising for the RV-12iS student plane-build partnership was originally targeted for completion during 2020. However, beginning in March, the Covid-19 pandemic disrupted plans to obtain grant funding, as resources were directed to front-line pandemic needs. The Aviation Museum now intends to complete remaining funding in 2021 via a combination of business sponsorships, grant funding, and donations. Our most recent major donations were a \$5,000 contribution in November 2020 from NBT Bank of Manchester and a \$5,000 award in December 2020 from the Arthur Getz Trust.

### **Major contributors:**

#### **Thomas W. Haas Charitable Foundation**

*Through the N.H. Charitable Foundation*



**ANAGNOST COMPANIES**

**BRADY SULLIVAN**  
P R O P E R T I E S



The five companies above all purchased substantial tax credits in support of our project through the **N.H. Community Development Finance Authority**, which altogether made available \$150,000 in funding for the first two cycles of our plane-building project.

### **Additional major support:**

NBT Bank, Elbit Systems of America, Harvard Pilgrim Healthcare

The David M. and Sally DeVries Family Charitable Fund, The Arthur Getz Trust

New England Document Systems, ProStar Aviation

Robert Fulton, The Saul Sidore Foundation, Eversource

Granite State Airport Management Association

The Aviation Museum Board of Directors...and many individual donors. *Thank you!*

## RV-12iS STUDENT PLANE BUILD PARTNERSHIP

### Current build status

Plane #1 as of December 2020:

**65 percent complete**

Plane #2 as of December 2020:

**First kits to arrive January 2021**

**Notes:** In this project, rigorous schedules and hard deadlines are difficult to impose. Our build team and the students *must* take the time needed to assemble the RV-12iS aircraft step by step, with each stage subject to rigorous inspection and reworking when needed. There is simply no other way to complete an aircraft intended to be certified as airworthy and sold on the open market. It must be done right.

Assembly of Plane #1 began in September 2019, with the aim of completing as much as possible during the 2019-20 school year. However, in mid-March 2020, the spread of the coronavirus and the advent of Covid-19 led to the closure of local schools through the end of the school year. The project was suspended during this time, as our hands-on plane-building program could not operate via remote learning. In June, several students in the first-year program graduated, receiving full academic credit for working on the project as well as certificates signed by N.H. Gov. Chris Sununu.

In July 2020, our team returned to the workshop under a specialized Covid-19 safety plan approved by the Manchester Board of School Committee. This allowed faculty, students, and volunteer mentors to restart assembly of Plane #1. Work began on July 24, 2020. In September, the project welcomed its second group of new students to work alongside returning students. Progress has continued into the 2020-21 school year, even while the Manchester School District was subject to several remote learning orders during the fall.

As of December, structural and external elements of Plane #1 are largely complete. The engine (the last major component) was delivered in December 2020 and will be installed in early 2021. Substantial work remains on fitting out interior components as well as mechanical and electrical systems, which will continue into the spring of 2021. Painting of some components is also expected to start in early 2021.

To provide a steady flow of student workshop projects, tasks, and experiences, components of Plane #2 are being ordered for delivery in early 2021, when assembly of the program's second RV-12iS is expected to commence. Overall, the plane-building project continues to see steady, firm progress despite unexpected pandemic-related interruptions.

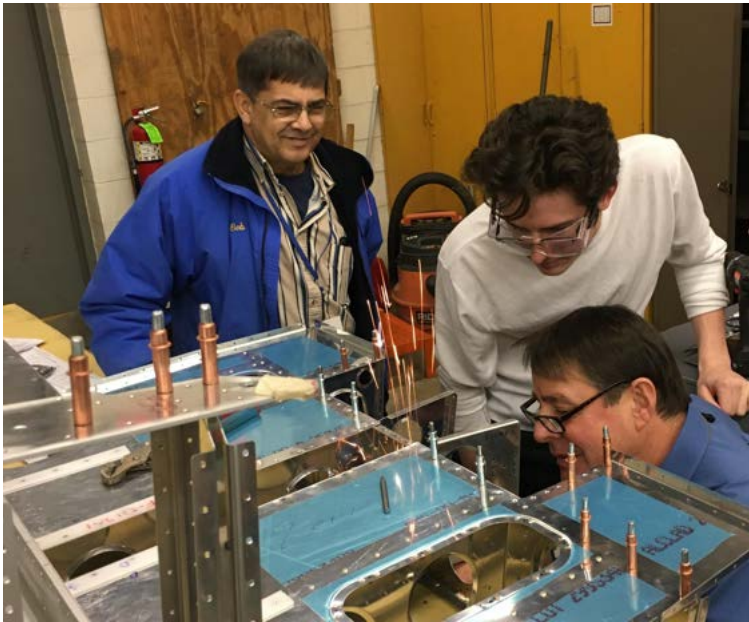


Students, mentors, and faculty returned to the workshop on July 22, 2020, posing in front of the construction site of the new workshop/hangar being built for the program.



## RV-12iS STUDENT PLANE BUILD PARTNERSHIP

### Education / curriculum update



The Manchester School of Technology has 17 students (11 boys and 6 girls) in the Aviation Program. The Manufacturing career and technical education curriculum offered at MST has strong alignment with the mechanical engineering aspects in aviation, and focuses on aviation maintenance, airframe and powerplant related topics, along with the RV-12 airplane assembly.

The educators have been collaborating with experienced mentors, local colleges and Tango Flight Inc., to develop a one of a kind curriculum geared towards the mechanical engineering aspects of aviation that are aligned to AOPA competencies. (Aircraft Owners & Pilots Assoc)

The Aviation curriculum and course is unique due to the opportunities provided by a team of experienced mentors working with MST. The students are learning the principles of the physics of aviation along with the mechanical skills to apply this training to the plane build.

They develop their engineering understanding working as a team alongside highly experienced mentors and educators training them to become problem-solvers and skilled in manufacturing aviation training. Students have the opportunity to earn additional credits in Physics and Geometry.

The students complete a series of additional training modules and projects within manufacturing that complement this training and become more independent in their mechanical skills and roles in the program as their time in the program grows.

This year, the Aviation program also received two advanced flight simulators for flight training skills, and will be utilizing the training with direct guidance of experienced mentors.

By being in this program, these students have also been given the opportunity to learn about the careers within aviation, the opportunities to work within their community by partnering with the aviation museum mentors, and build mechanical skills that prepare them for the opportunities ahead.

The public-private partnership and highly qualified background by all has created a powerful model of learning for these students.

**Dan Cassidy**  
*Manufacturing Technology Instructor*  
*Manchester School of Technology*

**Athanasia Robinson**  
*Mathematics & Aviation Physics*  
*Manchester School of Technology*

## RV-12iS STUDENT PLANE BUILD PARTNERSHIP

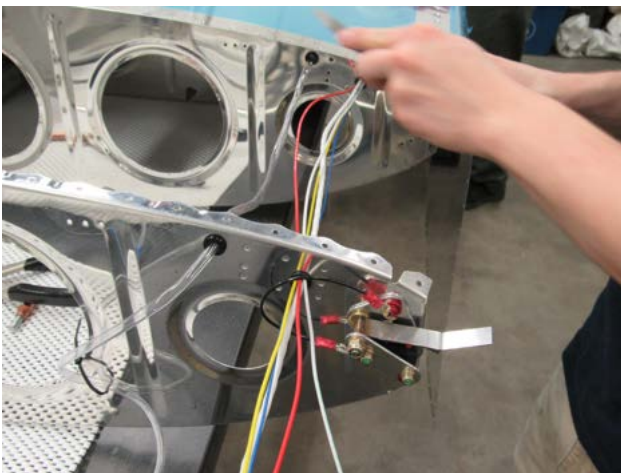
### Timeline of significant milestones

**January 2020:** WMUR's Erin Fehlau hosts a N.H. Chronicle segment focusing on the plane-building partnership, interviewing participants and even trying her hand at riveting. The segment re-airs several times during the year.



Student Alyssa Barron poses with WMUR-TV's Erin Fehlau, who filmed a segment for 'New Hampshire Chronicle' about the plane-building partnership.

**February 2020:** Work continues on wings and other major assemblies.





**April 2020:** Students in the plane-build program and Principal Karen Hannigan Machado travel to Georgetown, Texas to visit Georgetown High School, home of partner Tango Flight's original student plane-building program. The trip includes flight time in a student-built RV-12 aircraft.



**April-June 2020:** With schools closed and work suspended by Covid-19, the team continues to meet via video conference to keep momentum going and plan for a return to the workshop as soon as possible.





**July 2020:** Students, faculty, and volunteer mentors return to the workshop following approval of a strict Covid-19 safety plan approved by the Manchester Board of School Committee.



**August 2020:** Excavation and foundation work is completed for the new “workshop / hangar” being built as a permanent home for the plane-building partnership. The structure will be completed in the fall.



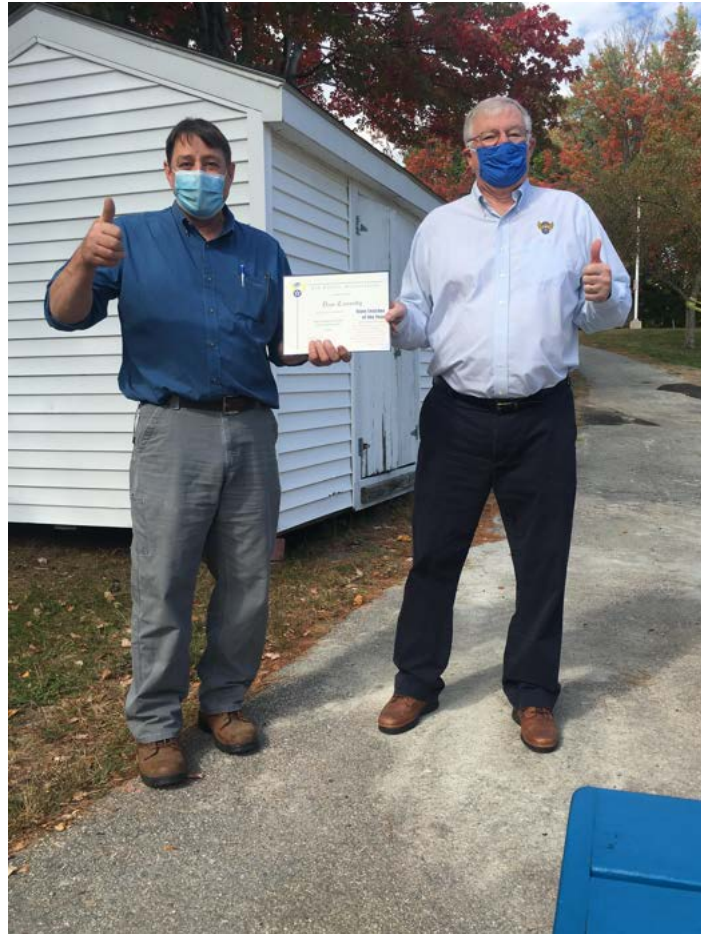


**August:** MST students take part in a Young Eagles program at the Aviation Museum, in which local pilots donate their time and aircraft to give young people age 8 to 17 the experience of flight free of charge. The event is part of the Aviation Museum's annual 'PlaneFest' celebration, which includes a vintage DC-3 airliner and a chance to meet Angus Douglas, grandson of Donald Douglas, legendary aircraft builder whose company produced the DC-3.





**September:** MST mechanical engineering teacher Dan Cassidy, one of two faculty members dedicated to the plane-build, is honored as New Hampshire's U.S. Air Force Association Teacher of the Year.



**September 2020:** New students join the plane-build project for the 2020-21 school year.





**November 2020:** Tiffany Eddy interviews students and mentors about the plane-building program for a promotional video for the Community Development Finance Authority, which authorized \$150,000 in New Hampshire tax credits in support of the plane-building program.



**November 2020:** Construction begins on the structure of the workshop / hangar.

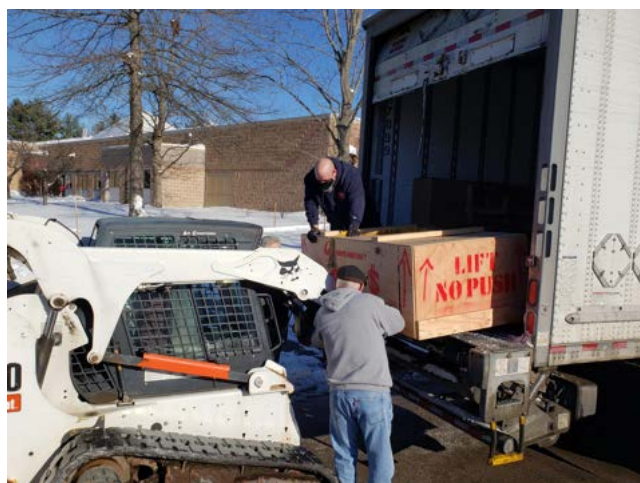




**November 2020:** Construction continues, with exterior completed late in the month followed by interior fit-up in December. Occupancy anticipated in January 2021.



**December 2020:** Delivery of engine, last major component of Plane #1.



**THANKS TO ALL OUR SUPPORTERS FOR A HIGH-FLYING 2020!**