**Wainbee's Recommendation of Haskel's Gas Boosters Leads to First-ever Student-built Liquid Rocket Created to Cross the Kármán Line!**

In partnership with Haskel, Wainbee helped students at Concordia University with their StarSailor Project, the first student-built, liquid-propellant rocket to pass the Kármán line and reach space.

Few things are as awe-inspiring as watching a rocket blast off into the sky. Even more so if you helped build it—and, you're still in college with shrinking access to already-limited resources.

For the students in Concordia University's StarSailor project, that moment will be especially memorable—not just because their rocket will be the first student-built liquid-propellant rocket to pass the Karman line (thus officially reaching space), but also because of the challenge they face in filling up their nitrogen tank for testing and launch preparation.

The StarSailor rocket, currently scheduled for launch in summer 2023, is propelled by the combustion of liquid oxygen and kerosene. Both the propellants are pushed into the rocket engine by pressurized nitrogen, an affordable and inert gas. The nitrogen tank, a COPV, is roughly 100 L in volume and needs to be filled to 3,600 psi. The highest-rated pressurized gas cylinders that they can obtain are 4,500 psi.

With such a gap, it means the team would have to procure and open a multitude of cylinders and leave unused nitrogen in those cylinders. Not only would that be a drain on limited resources, but it presents a logistical nightmare to transport such a large number of cylinders to a remote launch site. Not to mention extremely wasteful and time-consuming. To attain the needed result the right way, they concluded they would need a high-pressure system that could fill the tank quickly and efficiently.

**Enter Haskel's Gas Booster**

Thankfully, the future rocket scientists know how to research and conduct due diligence to solve problems. Their efforts led them to Haskel and Haskel gas boosters as the expert choice. At the same time, students were recommended to Haskel by channel partner, Wainbee in Canada, who was helping support this project by donating some equipment to control the booster, filter, regulator, lockout valve, transducers, and the like. Wainbee recommended the students reach out to Haskel for some advice and possibly a donation. Haskel representatives responded immediately, listened to the students' goals and challenges, and took action. As previous sponsors of a similar project, the Base11 Space Challenge, Haskel decided to also sponsor this team and donate a fully functional ADG-32 gas booster.

Haskel's gas boosters are designed for applications just like this one—where high pressure is needed to fill tanks quickly and efficiently. The boosters allow you to draw the gas cylinder down to the minimum return pressure, even if that pressure is below what's needed for the application.

For example, if you need your gas to be at 1,000 psi, without the use of a booster, you would have to return that cylinder—with unused gas still inside—when the pressure inside it dropped below 1,000 psi. By using a Haskel booster, you can go all the way down to the minimum and still use almost all of the gas stored inside.

**Results That Are Ready for Launch**

In the case of the StarSailor rocket, the booster will draw down and amplify the pressure of the 4,500 psi cylinders so that they can fill the nitrogen tank at 3,600 psi—the pressure required for launch—and allow for up to 95% of the gas in the cylinder to be used, while still maintaining process pressure.

Haskel's gas booster makes it possible to fill the tank using just five cylinders instead of the nine that would otherwise be required for each run. That's roughly half and represents a substantial savings in money, time, and the hassle of transportation and logistics. The StarSailor team agrees that Haskel's gas booster is an invaluable tool for Concordia University's StarSailor project.

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