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## Innovative rocket makes use of composites from Composite One, Lattice Composite Support and Prodigm.

31 May 2019

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A team from the Colorado State University (CSU) has developed a composite rocket for the 2019 Intercollegiate Rocket Competition (IREC) competition.

With a payload size of 8.8 lbs and target altitudes of either 10,000 or 30,000 feet above ground level, competing rockets are typically 4 to 8 inches in diameter and 8 to 20 ft long. Multistage rockets and all chemical propulsion types (solid, liquid, and hybrid) are allowed.

As a part of improving the rocket design, the student team replaced the current glass fiber fuselage with one made using filament winding and carbon fiber. The team wound the rocket fuselage using LCWR-1.2 (a two-component epoxy winding resin) donated by Lattice Composites, and carbon fibers donated by Composites One.

Jeff Bassler, Prodigm's president, had engaged one of the team members for one of his company's projects. During their discussions a team member mentioned their challenge of finding an option to replace the current fiberglass fuselage. He explained the advantages of a filament winding for their fuselage application. Prodigm also offered the CSU rocket students his lab facilities, connections for composite materials and industry knowledge. The CSU team quickly agreed to take Prodigm up on the offer.

Working in the Prodigm lab, CSU team members were educated on the filament winding process and the



Prodigm Lab complete with hardware and software to build the CSU rocket fuselage.

designed an intensely hands-on-lab experience so ng technology that would inspire the production of ure aerospace roles.

a suitable manufacturing process for the CSU rocket of the tube to produce parts with high strength. e very long continuous fibers to add additional strength reprep composite options.

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According to Composites One, filament winding is a suitable manufacturing process for the CSU rocket because it places fibers around the circumference of the tube to produce parts with high strength.

A lightweight rail passenger seat support made from a fire-resistant bio-resin prepreg has been nominated as a finalist at the 2019 JEC World Awards.

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