

ABSTRACT

Fixture for Carbon Fiber Spar of Human Powered Helicopter

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The following report describes our contribution to Cal Poly Human Powered Helicopter for the 2012 competition for the Sikorsky Prize offered by the American Helicopter Society. In order to win this prize the team needs to build and fly a human powered helicopter for more than 60 seconds reaching an altitude of 3 meters while staying in a 10 meter square box. Our team was created to support the integration of Carbon Fiber parts, specifically the carbon fiber spars with rotor and landing gears. Precise cutting and accurate drilling was needed and our team was tasked with creating a fixture and to assist with both operations.

After the requirements were taken into consideration, we successfully created fixtures that meet those requirements in the prototype stage. It was found that some of the requirements were over calculated, such as using cooling fluid, and others overlooked, like choosing the proper cutting tooling. Unfortunately the prize was granted over the summer of 2013 and the HPH project was shut down, but the fixture was still completed and selection of cutting tools was recommended.