The 3D Printed Drone Combines Embedded Electronics with Extreme Heat Resistance

By Kerrick Sanders | Dec 1, 2016 | 3D Printers, 3D Printing, ULTEM 9085 material

For almost a year, Dr. Phillip Keane has been working on the creation of a drone that can survive in high temperatures using Stratasys ULTEM 9085 material. As mentioned earlier, this could potentially, in the future, help drones survive while completing projects.

Drone prototypes are typically not heat resistant, so they would actually survive the 3D printing process. Due to the high demand for drones, especially in a military environment, drone prototypes must be constructed from materials that can survive in high temperatures. The motor of a drone is about 100°C. They also had to remove some of the temperature rated neodymium magnets, which are good up to 180°C. But the drone is only as heatproof as its weakest link, which in this case was the drone's printer. Since the ULTEM material is so strong, Keane was curious to see just how strong he could make his drone.

As mentioned earlier, the ULTEM material was embedded in the 3D printer. Upon testing, we showed a difference of around 15% between the simulations and the actual tests. In other words, each drone arm could carry 20kg before failing in simulation, compared to 17kg in real life.

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