A rocket-powered spaceplane completes a successful test flight

April 13 2023, by Andy Tomaswick

The Mk II in flight. Credit: Dawn Aerospace

Access to space is getting easier and more accessible as more and more platforms are coming online that can significantly decrease the cost of getting into Earth's orbit or even beyond. Now, another company has taken a step forward in making inexpensive, reusable access to space a

reality. Dawn Aerospace, which operates out of the U.S., New Zealand, and the Netherlands, has successfully tested a prototype spaceplane.

This isn't Dawn's first success, as the company already has satellite propulsion systems in orbit on 15 different satellites. It isn't even its first successful space plane test—they had previously completed some testing using jet engines. However, it is the first time the company has successfully tested a rocket-powered plane.

The series of three tests happened at the end of March at the Glentanner Aerodrome in New Zealand, where the plane successfully fired its rocket engine. Clocking it at over 170 knots and 6,000 ft of altitude may not seem like much, but it is a first step for the technology. And it allowed the company to make a video with very catchy music they could share for their marketing campaign.

The Mk II is a drone with no direct pilot in the cockpit, which has plenty of advantages, mainly due to decreases in the project's physical weight and the testing necessary to certify a vehicle for crewed flight. Unfortunately, that also means that Dawn will only be able to launch cargo rather than taking people into orbit, at least with the current iteration.

Like many companies, Dawn has a phased approach to starting their commercial launch operations. These tests represent the beginning of the Mk II Aurora, which will eventually be able to fly up to 100 km to deposit payloads, then return to its runway, and repeat the process the same day. It hopes to be the first vehicle to be able to do so.

On the other hand, Mk III will include a non-reusable second stage that will help lift payloads of up to a ton into suborbital flight and 250kg into orbit itself. Its plane-based first stage will again be reusable, but the second stage will be lost.

If that business model sounds suspiciously like the recently bankrupted Virgin Orbit, that's because it is. Using a plane (which in Virgin Orbit's case was air-launched) to get relatively small payloads into orbit has been a common goal of several companies as they attempt to make access to space cheaper by making the vehicles that get there reusable. In this case, Dawn has succeeded where Virgin Orbit failed.

It still has plenty of testing and development left to go before it can hit either the Mk II or III milestone, but this first rocket-powered test is a step in the right direction. And with this success, the country of New Zealand seems to be moving up in the list of the most consequential global powers in the race to decrease the cost of access to space.

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