

# REACHING THE RED PLANET



NASA/JPL-CALTECH

In this artist's concept from NASA, the autonomous helicopter Ingenuity stands on the surface of Mars, with the rover Perseverance in the background. Mount Vernon company Goodwinds Composites manufactured the wrapped carbon fiber tubes that are the legs of the helicopter.

## Mount Vernon company plays role in latest Mars mission

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**MOUNT VERNON** — A product of Goodwinds Composites has landed on Mars.

The Mount Vernon manufacturer made the wrapped carbon fiber tubes that are the legs of Ingenuity, the small, autonomous helicopter that will be used to determine if flight is possible on the red planet.

The helicopter was attached to the belly of NASA's Mars Perseverance Rover, which landed Thursday on Mars.

"It was an incredible feeling, we were ecstatic here," said Goodwinds Composites co-owner Amelia Cook. "We had the livestream up on our computers, took a long lunch break, and had red velvet cupcakes from Indulge Bakery for the red planet."

The purpose of Ingenuity is to test powered flight in the thin Martian atmosphere for the first time, according to a NASA fact sheet. The helicopter's mission is separate from the science mission of the rover, which will search for signs of ancient life and collect rock and sediment samples for a potential return to Earth, NASA states.

Since the atmosphere of Mars is 99% less dense than that of Earth, Ingenuity had to be lightweight. The aircraft weighs 4 pounds.



SKAGIT VALLEY HERALD FILE

Goodwinds Composites co-founder Amelia Cook shows a rendering of the NASA Mars helicopter in June 2019 at the company in Mount Vernon.



GOODWINDS COMPOSITES

A close-up of a wrapped carbon fiber tube, like the ones used on the Mars helicopter and manufactured by Goodwinds Composites.



GODWINDS COMPOSITES

The Goodwinds Composites team is shown during a live viewing party Thursday of NASA's Mars Perseverance Rover landing on Mars.

## Mars/ from A1

The tubes that are the legs of the helicopter are both lightweight and strong, Cook said. Carbon is five times lighter than steel and almost two times lighter than aluminum, according to Goodwinds Composites.

Cook said the other important factor is that the carbon fiber helicopter legs are able to withstand extreme hot and cold, and keep their form. (Mars can reach negative 130 degrees degrees at night, according to NASA.)

Now that the helicopter has landed on Mars,

the next step is to safely deploy it from the belly of the rover to the planet's surface, according to NASA.

The helicopter must autonomously keep itself warm through cold nights and charge itself with solar power. After these milestones are reached, the helicopter will be ready to fly, NASA states.

Cook said when the helicopter reached the first milestone Thursday, all of the employees at Goodwinds Composites felt proud, not just those who had a direct hand in making the tubes for the project.

"NASA chose to work

with us because they could find us online, we pack things well, and we work with them," Cook said. "We have people who keep machines running and we can't do jobs without machines running, and can't do the job without inventory ... It's the overall business philosophy of excellence that makes it possible to work with high-profile customers like NASA."

Goodwinds Composites employs eight people and was founded by Cook and brother Leland Holeman in 2008. Aside from its work for NASA, the company manufactures carbon fiber and fiberglass tubes and rods

for musical instruments, industrial machinery and equipment, and sports and outdoor goods.

Cook said she has started sharing with students what the company has been building for NASA.

"I'm able to join some Zoom classrooms and talk to kids about business and STEM (science, technology, engineering and mathematics), about how (small companies) can make some really cool differences in this world and out of this world," she said.

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