

# NASA space copter ready for first Mars flight

April 10 2021

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This NASA illustration depicts Mars Helicopter Ingenuity during a test flight on the Red Planet

The helicopter that NASA has placed on Mars could make its first flight over the Red Planet within two days after a successful initial test of its

rotors, the US space agency said Friday.

The current plan for the first-ever attempt at powered, controlled [flight](#) on another planet is for the four-pound (1.8 kilogram) helicopter, dubbed the Ingenuity, to take off from Mars' Jezero Crater on Sunday at 10:54 pm US eastern time (0254 GMT Monday) and hover 10 feet (3 meters) above the surface for a half-minute, NASA said.

"The helicopter is good, it's looking healthy," said Tim Canham, Ingenuity operations lead, in a press conference.

"Last night, we did our 50 RPM spin, where we spun the blades very slowly and carefully," he said.

The plan for Sunday is to have it rise, flying only vertically, hover and rotate for 30 seconds to take a picture of the Perseverance rover, which touched down on Mars on February 18 with the helicopter attached to its underside.

Then the Ingenuity will be lowered back down onto the surface.

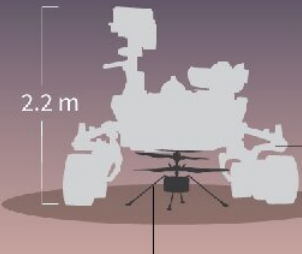
The flight will be autonomous, pre-programmed into the aircraft because of the 15 minutes it takes for signals to travel from Earth to Mars, and also due to the demanding environment of the distant planet.

"Mars is hard not only when you land, but when you try to take off from it and fly around, too," said MiMi Aung, Ingenuity project manager.

She explained that the planet has significantly less gravity than Earth, but less than one percent the pressure of Earth's atmosphere at the surface.

## Ingenuity helicopter: first powered flight on Mars

Expected to make its first flight attempt no earlier than April 11



**PERSEVERANCE ROVER**

**MAIN MISSION**  
First test of a powered flight on another planet

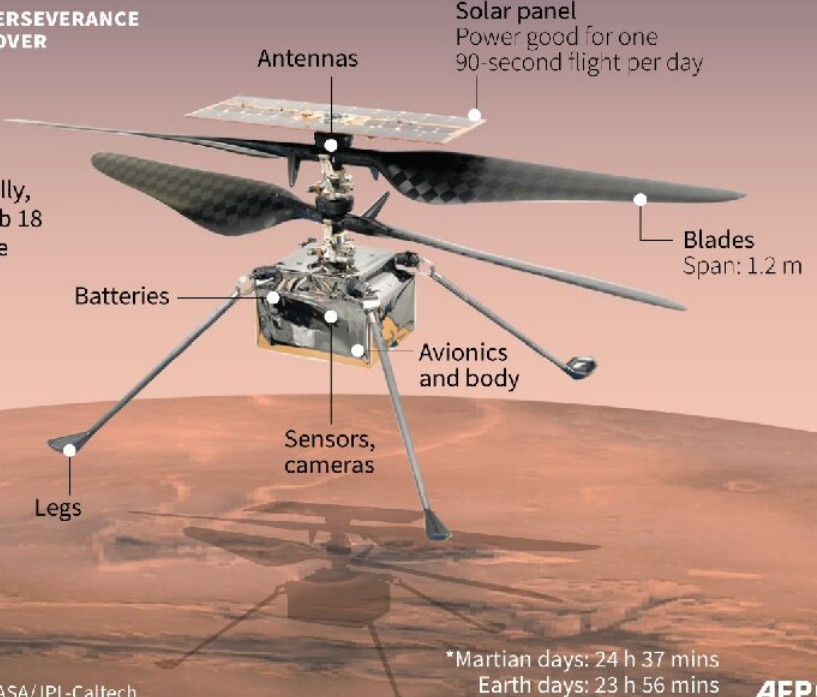
Test flights during a 30-Martian-day\* experimental window

Take off, fly, and land with minimal commands from Earth sent in advance


**INGENUITY:**

- 1 hitched a ride on rover's belly, which touched down on Feb 18
- 2 deployed to Martian surface on Apr 3

- **FLIGHT ALTITUDE:** up to 5 m
- **RANGE:** up to 300 m
- **MARS ENVIRONMENT:** Very thin atmosphere, less than 1% the density of Earth's
- **HELICOPTER WEIGHT:** 1.8 KG on Earth, 0.68 KG on Mars



\*Martian days: 24 h 37 mins  
Earth days: 23 h 56 mins



Sources (including helicopter image): NASA/JPL-Caltech

Graphic on Ingenuity, the helicopter that hitched a ride on the Perseverance rover, which is scheduled to make its first flight attempt no earlier than April 11.

The makes it necessary for the Ingenuity to be able to spin its [rotor blades](#) much faster than a helicopter on Earth in order to fly.

"Put those things together, and you have a vehicle that demands every input be right," said Aung.

NASA captured the test of the rotors in a short video shot from the rover

just a few meters away, showing what looks like a small drone.

Aung said a second test would be conducted today, with the rotors running at high speed.

"The only uncertainty remains the actual environment of Mars," she said, mentioning possible winds.

NASA calls the unprecedented helicopter operation highly risky, but says it could reap invaluable data about the conditions on Mars.

NASA plans up to five flights, each successively more difficult, in a period of a month.

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