BBC NEWS

Space tourism closer as Virgin Galactic nears lift off

By Richard Scott Transport correspondent, BBC News, in the Mojave Desert

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In the Mojave Desert, a hundred miles north of Los Angeles, engineers are working on a project which could bring space travel to the general public a little bit closer.

In a non-descript beige hangar sits the Virgin Galactic spaceship.

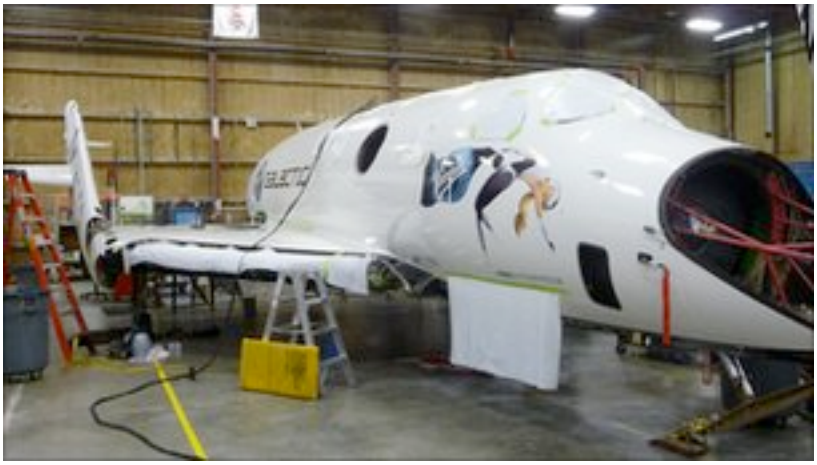
The company is hoping it will be ready to take paying customers into space within a couple of years.

I visited to see how the work was going - and to be the first journalist to report from inside the spaceship.

After climbing through a small hole almost underneath the spaceship, it's clear there's still work to be done.

There are bare walls with wires and there aren't any seats yet. But it does provide a sense of what it will be like for the six passengers on each trip.

All along the spaceship's cabin are windows - some to the sides, others in the roof. The windows will let the passengers see the blue sky of earth first turn purple, and then into the blackness of space.



The spaceships will fly up to 360,000ft high

The roar of the rocket motor behind them will disappear, as will the rush of the atmosphere outside.

And when all they can hear is silence the passengers will know they're in space. They'll be able to see the curvature of the earth and the thin band of atmosphere above.

Passengers will then get around five minutes of weightlessness to float around the cabin - which will probably mean them bumping into each other, as the cabin is only seven-and-a-half feet in diameter.

'Tremendously exciting'

"The biggest challenge, because we're in a test flight programme, is not the actual flying of the vehicle. It is anticipating what could go wrong, because it's a-one-of-a-kind airplane so we're very focused on the test at hand," Pete Siebold, one of the spaceship's test pilots, told me.

"Seeing a new vehicle that will someday be taking commercial passengers into space, and allowing the population at large to experience space travel, is just tremendously exciting."

Everybody will know somebody who has been into space in the next 20 years”

End Quote Matt Stinemetze Spaceship builder
The astronauts will be given three days of training in the terminal to check their mental and physical fitness. Virgin says it is expecting most people to pass these tests.

The 5,000 square mile site in the middle of the desert has a unique combination of advantages.

"The site is important because of its remote location. We are about a mile above sea level," explained Dave Wilson from Spaceport America. That altitude means they're slightly closer to space.

"We've got restricted airspace above us which is being shared with White Sands Missile Test Facility. And this beautiful, stable weather we have above us; this blue sky, it's like this 340 days out of the year. So it's a very conducive place to conduct a commercial space operation like this," he said.

Being neighbours with the US Army means they not only avoid having to share airspace with commercial jets, but that they can use the army's tracking equipment.

Richard Scott gets a rare behind-the-scenes tour of Virgin's Spaceport

Despite all those advantages the spaceship still needs help to get off the ground. So it's carried down the runway and up to around 50,000ft by a specially made plane.

2,500 miles per hour

This is much higher than a normal plane flies, but nowhere near the 360,000ft (110km) that the spaceship is aiming for.

So, at 50,000ft, the spaceship will be released in mid-air. It will then fire its rocket motor and accelerate to 2,500mph in less than a minute as it leaves the atmosphere.

The current spaceship has not been into space yet, even in testing. But it's gradually being released at higher and higher altitudes.

Virgin claims the trips into space will have lower carbon emissions per passenger than a flight across the Atlantic. But it's still a lot of energy to use on a very short trip.

Fuel consumption is reduced, though, because both vehicles are made entirely of carbon composite, which make them very strong and very light.

Releasing the spaceship at altitude also means it does not have to use rocket fuel to get through the lower, denser regions of the atmosphere. That saves fuel and makes it safer.

"Our one and only goal is to carry people to space over and over and over and over again," said Matt Stinemetze, from Scaled Composites, which is building the vehicles.

"In the past 50 years there has been a little over 400, maybe close to 500, people go to space," he said.

"I think that in the first year or two, the goal of this program is to carry maybe thousands of people into space. So, it's just a game changer. Everybody will know somebody who has been into space in the next 20 years," Mr Stinemetze said.

After a trip into space the ship has a trick to get back to earth. It folds its wings to create extra drag and make it extremely stable.

This, together with its low weight and the fact that it's not going higher, means it can avoid the need for heat-shields on re-entry. That again saves weight, fuel and money.

The spaceship then returns its wings to their normal position and glides back to earth.

At the moment there are no competitors on the horizon. If this venture becomes a success, though, investors are likely to pour money into rival projects.

Why? Because, despite flights being two years away and costing £125,000 ($200,000) a ticket, more than 400 people have already booked their seats.