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UAE launches Venus, asteroid belt mission

PLAN TO LAND SPACECRAFT ON AN ASTEROID BY 2033

WAM

■ Shaikh Mohammad Bin Rashid and Shaikh Mohammad Bin Zayed during the launch of the interplanetary mission at Qasr Al Watan yesterday. Shaikh Hamdan Bin Mohammad, Shaikh Maktoum Bin Mohammad, Shaikh Saif Bin Zayed, Shaikh Mansour Bin Zayed, Mohammad Abdullah Al Gergawi and Sarah Al Amiri also attended the ceremony.

DUBAI

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The UAE yesterday launched an Emirati interplanetary mission under the Projects of the 50 initiative, which will involve orbiting Venus and exploring the asteroid belt between Mars and Jupiter.

The announcement was made during a ceremony at Qasr Al Watan in Abu Dhabi attended by His Highness Shaikh Mohammmad Bin Rashid Al Maktoum, Vice-President and Prime Minister of UAE and Ruler of Dubai, and His Highness Shaikh Mohammad Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces.

Built on the knowledge gained from the Emirates Mars Mission (EMM), the new mission scheduled for launch in 2028 will involve Emirati private sector companies.

Spacecraft to undertake 3.6b km, five-year journey

The five-year mission from 2028 to 2033 includes developing a spacecraft in the next seven years. The spacecraft will undertake a 3.6 billion-km, five-year journey.

> **We have set our eyes to the stars because our journey to development and progress has no boundaries, no borders and no limitations. Today we are investing in the generations to come."**
>
> **Shaikh Mohammad Bin Rashid Al Maktoum**

"We have set our eyes to the stars because our journey to development and progress has no boundaries, no borders and no limitations. Today we are investing in the generations to come," Shaikh Mohammad Bin Rashid said.

"With each new advancement we make in space, we create opportunities for young people here on Earth."

It will make its first close planetary approach orbiting Venus in mid-2028, followed by a close orbit of Earth in mid-2029. The spacecraft will make its first fly-by of a main asteroid belt object in 2030, going on to observe a total of seven main belt asteroids before its final landing on an asteroid 560 million km from Earth in 2033. This will make the UAE the fourth nation to land a spacecraft on an asteroid.

'Emirati youth equipped to take on new challenge'

Hailing the mission, Shaikh Mohammad Bin Zayed said: "This new mission tests and extends the capabilities of Emirati youth... We are certain that our talented local engineers, academic and research institutions, which have made quantum leaps in developing our space sector, are well equipped to take on this daring new challenge."

Five initiatives

The mission to be developed in partnership with the Laboratory for Atmospheric Science and Physics (LASP) at the University of Colorado, involves five initiatives: A fully funded programme to establish Emirati space sector businesses, priority access to contracts for Emirati companies, a vocational training programme for young Emiratis, and a programme to bring local and international universities and research centres together to work on the mission, including LASP and Emirates University.

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UAE space journey to drive engineering, research

NEW MISSION SEEKS TO GET THE PRIVATE SECTOR ON BOARD IN A BIG WAY

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WAM

■ The UAE Space Agency announced the start of a new interplanetary mission. Sarah Al Amiri, Chair of the Agency, rated the new mission as five times more complex than the Emirates Mars Mission.

The UAE Space Agency yesterday announced the commencement of a new Emirati interplanetary mission, designed to further accelerate the young nation's space engineering, scientific research and exploration capabilities and drive innovation and opportunity in the country's private sector.

"We have set our eyes to the stars because our journey to development and progress has no boundaries, no borders and no limitations. Today we are investing in the generations to come." said His Highnes Shaikh Mohammad Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai. "With each new advancement we make in space, we create opportunities for young people here on earth."

Built on the knowledge and experience gained from the Emirates Mars Mission (EMM), the new mission will involve significant participation from Emirati private sector firms. It is scheduled for launch in 2028, with the primary goal of exploring the asteroid belt between Mars and Jupiter, the source of most meteorites that impact earth.

His Highness Shaikh Mohammad Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, said: "This new mission tests and extends the capabilities of Emirati youth in achieving Zayed's ambition to explore space. We are certain that our talented local engineers, academic and research institutions, which have so far made quantum leaps in developing our space sector, are well equipped to take on this daring new challenge."

NEW INITIATIVES FOR SPACE SECTOR

A number of initiatives are being launched around the new mission by the UAE Space Agency to accelerate the development of the UAE's space sector:

- A fully funded programme to establish Emirati space sector businesses.
- Priority access to contracts and procurement for the mission by Emirati companies.
- A vocational training programme to train young Emiratis on component assembly and space subsystems engineering.
- A programme to bring local and international universities and research centres together to work on the mission, including LASP and Emirates University.

The spacecraft will undertake a 3.6 billion km, five-year journey, which will see it perform gravity assist manoeuvres to build the velocity required in order to reach the main asteroid belt.

Technical challenges

The spacecraft will undertake a 3.6-billion-km, five-year journey, which will see it perform gravity assist manoeuvres by orbiting first Venus, then Earth in order to build the velocity required in order to reach the main asteroid belt, located beyond Mars. Its trajectory around Venus will see it reaching a solar proximity of 109 million km, requiring substantial thermal protection and a furthest distance from the sun of 448 million km, requiring high levels of insulation and spacecraft operation with minimal levels of solar energy.

Through its journey, it will study seven main asteroid belts. It will be built using the substantial heritage and intellectual property (IP) acquired during the development of the Emirates Mars Mission and its Hope Probe, currently orbiting Mars and gathering unique data on Mars' atmospheric composition and interactions.

Sarah Al Amiri, Chair of the UAE Space Agency, said: "Our goal is clear: to accelerate the development of innovation and knowledge-based enterprises in the Emirates. This can't be done by going steady-state, this requires leaps in imagination, in faith and the pursuit of goals that go beyond prudent or methodical. When we embarked on the Emirates Mars Mission, we took on a six-year task that was in the order of five times more complex than the earth observation satellites we were developing. This mission is in the order of five times more complex than EMM."

Ambitious targets

The mission will make its first close planetary approach orbiting Venus in mid-2028, followed by a close orbit of Earth in mid-2029. It will make its first fly-by of a main asteroid belt object in 2030, going on to observe a total of seven main belt asteroids before its final landing on an asteroid 560 million kilometres from Earth in 2033. This will make the Emirates the fourth nation to land a spacecraft on an asteroid.

The mission brings extensive challenges that go beyond EMM in terms of spacecraft design and engineering, interplanetary navigation and complex systems integration, requiring new levels of performance from its communications, power and propulsion systems as well as demanding intensive mission control.

The mission is to be developed in partnership with the Laboratory for Atmospheric Science and Physics (LASP) at the University of Colorado. LASP was the primary knowledge transfer partner for EMM, bringing over 70 years of experience in spacecraft and instrumentation design and development and helping train and develop the team of Emirati engineers, software developers and scientists who worked on EMM.

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