

Close encounters

of the
drone kind

How vulnerable
are airliners? [page 18](#)

**21st century
spacesuits/10**

**Fuel-efficient
fighter jets/14**

**Mastering design
complexity/32**

Europe struggles to keep 2018 rover launch date

The European Space Agency and its industrial partners are having trouble agreeing on the price to complete the planned ExoMars spacecraft and rover in time for the planned launch in 2018 on a mission to search for chemical evidence of life on Mars.

If ESA were to miss the 2018 date, scientists would have to wait two years for Mars and Earth to move into position again for the journey, a delay that could cost up to 200 million euros. Neither side wants things to come to that, but as of October, ESA and the industrial team led by Thales Alenia Space and Airbus of France remained far apart in their bargaining, according to ESA officials.

ESA views the negotiations as a high priority and aims to complete them by December, says Rolf de Groot, the exploration program coordinator at ESA's European Space and Technology Centre in the Netherlands, which leads the ExoMars program. "It is going to be very challenging to reach the 2018 launch date, but we still think it is possible if there is flexibility on both sides," he says.

Francis Rocard, the head of solar system programs at the French Space Agency, CNES, says "ESA is pushing very hard" to keep the 2018 launch date. "We know that we are late in respect to the overall schedule, but we will do our best to comply," Rocard adds.

Walter Cugno, the ExoMars project manager at Thales Alenia Space in Italy, said that if there is a funding gap, "in the end, it is only a small gap com-

paring to what this project costs, so I don't believe that because of it, we will not complete the program."

Development of ExoMars, which includes an aeroshell, lander and rover, is spread across several locations in Europe, plus the U.K. and Russia, where NPO Lavochkin is building the lander. The components are scheduled to be delivered to the Thales Alenia Space facility in Cannes, France, where engineers and technicians will assemble them for launch. In May, ESA approved the ExoMars design (about six months behind the original schedule) after resolving an array of technical issues. This cleared the way for construction to begin with existing funds.

ESA says it has enough money to keep the work going until December 2016, when European ministers responsible for space budgets are scheduled to meet to consider a wide range of topics, including funding to complete ExoMars in time for its 2018 launch. It is unusual to have costs unsettled so late in a development program.

The financial uncertainty is a backdrop to a tight schedule that has included a multitude of engineering challenges, from testing a supersonic parachute and the rocket-propelled landing system to choosing a safe but promising landing site on Mars.

Anatoly Zak

agzak@russianspaceweb.com



Schiaparelli, the ExoMars entry, descent and landing demonstrator module (foreground) is shown next to the Trace Gas Orbiter. A possible funding shortfall is threatening ExoMars' 2018 launch date.