

More DC motors on Mars - in the 2020 Rover.

Maxon motor have supplied DC motor and gearhead combinations for NASA's fifth Rover mission - the 2020 Mars Rover.

NASA's Jet Propulsion Laboratory is building a Rover that will travel to Mars in 2020. The purpose of this operation is to collect dozens of soil samples, seal them and leave them on Mars for future pick-up. Nine brushless (flat) pancake DC motors and gearhead combinations from maxon's standard range – that have been heavily customised to withstand the harsh conditions on Mars – are used in the sample handling arm, specifically developed for this mission.

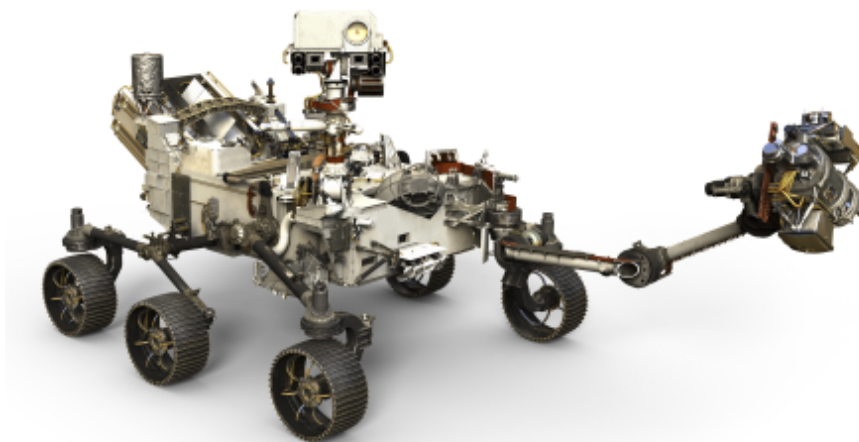
The sample handling arm moves the containers from station to station within the sampling system. Additional DC motors are also in the Rover and assist with obtaining the samples and sealing the containers. Maxon's brushless DC motors and gearheads need to survive the powerful entry, descent and landing sequence as well as the harsh daily conditions on Mars with sandstorms and temperatures ranging from -130 to +70°C.

From the outside, the Mars 2020 rover looks similar to its precursor Curiosity, that is still operating on Mars. The 2020 mission will have several new instruments on board to deliver unique new data. A key objective will be to search Mars for bio-signatures. Another instrument on board will test whether it's possible to generate oxygen from the atmosphere for possible future human visits. However, the most significant innovation is the ability to take rock samples in several locations and prepare them for return to Earth.

For assistance on customised DC motor technology for applications in harsh environments please contact maxon motor Australia tel. +61 2 9457 7477.

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The media release is available on the internet at: www.maxonmotor.com.au



*The 2020 Mars Rover
Courtesy NASA/JPL-
Caltech*

Maxon's involvement in NASA's missions to Mars

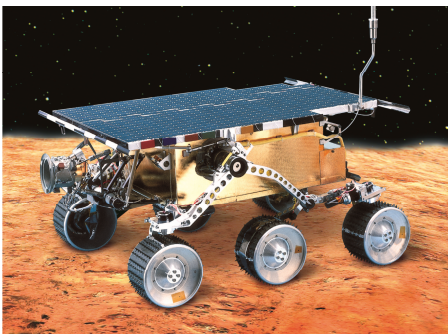
maxon motor is currently involved in several projects destined for Mars. NASA's InSight Lander is scheduled to fly to the Red Planet in 2018 to measure its seismic activities and temperature. A maxon DC motor will power the mole that hammers the measuring sensor into the ground.

In 2020, both NASA and the European Space Agency (ESA) will send rovers to Mars. More than 50 maxon DC motor combinations are installed in ESA's ExoMars vehicle, including some complex actuator systems that were assembled in maxon's high tech manufacturing facilities. These actuators provide the main drive and steering systems for the vehicle. Additional precision motors are used in the drill head, the on-board laboratory, and the camera mast.

Previous Mars missions with maxon motors on board

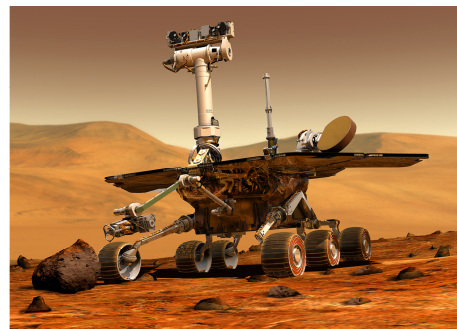
Sojourner

The first Mars rover landed on July 4, 1997. Mission duration: three months. maxon supplied eleven DC motors with a diameter of 16 mm for the drives, the steering, and the scientific devices.



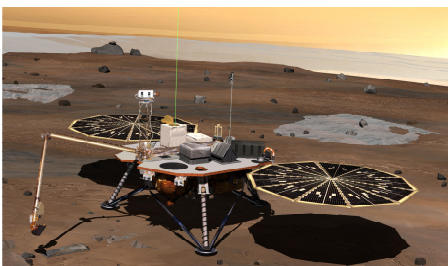
Spirit/Opportunity

The twin rovers landed on Mars in January 2004. Spirit collected data for six years; Opportunity is still active today. The rovers were equipped with 35 maxon DC motors each.



Phoenix

A stationary Mars probe that landed on Mars on May 25, 2008. With its robotic arm, it took rock samples from the ground for analysis. Mission duration: five months. maxon supplied nine RE 25 brushed DC motors with special ball bearings for aligning the solar panels.



Curiosity

The star of the rover squad landed on Mars in August 2012. It surpasses its predecessors not only technologically: Curiosity is the size of a small car, weighs 900 kg, and is powered by a radionuclide battery. maxon supplied the encoders controlling the drive.



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