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DLR develops wheels for the ExoMars mission rover

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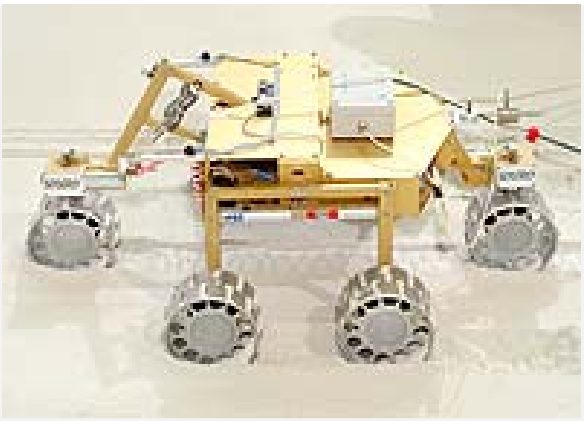
In the video, Dr Lutz Richter of the DLR Institute for Space Simulation talks about testing the wheels of a Mars rover vehicle.

To move about on Mars, you need wheels that can get optimum grip on the rocky, sandy terrain. The German Aerospace Center (DLR) has experienced experts in this very field, who are now developing the wheels for a Martian rover on behalf of the European Space Agency (ESA).

DLR's Institute for Space Simulation at Cologne-Porz is already involved in development for the European mission ExoMars, due to lift off in 2011, which will study Martian geology with the aid of a rover. The seven instruments onboard the rover will take samples from the area around the landing site and core samples from up to two metres deep before analysing their structure and also their mineralogical, geochemical and organic composition.



Rover during testing

For this task, DLR's Institute for Space Simulation has inaugurated two new test facilities that resemble sandpits. These test facilities will provide the controlled conditions the researchers need – a known, homogeneous ground material and a known load on the vehicle - to measure various parameters for checking the theoretical prediction model for driving resistance and traction on the rover's wheels.

The DLR Institute has had plenty of opportunities in the past to gather experience in the development of wheels, both for planetary missions and for applications on Earth. One example is the deep-sea exploration vehicle MOVE (Moving Lander). In 2002/2003, on behalf of the University of Bremen, the Institute designed a set of flexible wheels that function up to a maximum depth of 6000 metres. This underwater vehicle with the 'wheels from space' has already proved itself in practice.

MOVE (Moving Lander) with the DLR-developed wheels

In addition to developing the wheels for the ExoMars rover, DLR’s Institute for Space Simulation will be involved in certain aspects of the operation of the rover on Mars. The Institute is already gaining experience in this area, having been part of the science team for the American Mars Exploration Rover mission since 2002. For this mission the team has been involved in drawing up the rover’s activity schedules, which are used to plan the tasks to be carried out each day by the rover and its instruments.

The video clip shows tests being carried out in the new test facilities at DLR’s Institute for Space Simulation, with a commentary by Dr Lutz Richter.

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