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Press release  
German Research Center for Artificial Intelligence (DFKI)

**Pioneers of sustainable lunar missions: Team BREMEN wins the international Space Resources Challenge**

Bremen, December 9, 2025

**Team BREMEN (Beneficiation of REgolith and Mobile Excavation) has won the 2025 Space Resources Challenge initiated by the European Space Agency (ESA) and the European Space Resources Innovation Centre (ESRIC). With its innovative system for extracting and processing lunar regolith, the joint team from the German Research Center for Artificial Intelligence (DFKI) and the German Aerospace Center (DLR), supported by researchers from the University of Bremen, prevailed in the international competition against strong contenders from several countries. Team BREMEN will receive €500,000 to further develop their system.**

The Space Resources Challenge is an initiative launched in 2021 by ESA and ESRIC to promote innovation in the field of in-situ resource utilization (ISRU), i.e., the local extraction and use of extraterrestrial resources. This year, the challenge focused on the collection and processing of lunar regolith for oxygen extraction – a key technology for enabling sustainable crewed missions to the Moon.

Being nominated to participate was already considered a major achievement: out of numerous international applications, only eight teams were selected for the final round of the competition – including Team BREMEN.

**Mission scenario and field test**

The challenge simulated a future lunar mission in the 2040s, in which eight astronauts would be stationed at the lunar south pole for up to 30 days. Their survival depends on autonomous systems capable of extracting oxygen from lunar regolith. The task for the teams was therefore to develop systems able to collect regolith, sort it by particle size, and prepare it for oxygen extraction.

The teams had to demonstrate the functionality of their solutions during a multi-day field test at DLR/ESA’s LUNA analog facility in Cologne under highly realistic conditions. The newly opened facility faithfully replicates the lunar south pole, featuring real regolith, variable lighting conditions, uneven terrain, and intense dust exposure.

**Modular system from Bremen impresses**

Team BREMEN presented a modular system consisting of the mobile rover Coyote III and a stationary beneficiation unit. The rover was able to excavate, collect, and transport large quantities of lunar soil simulant to the facility, where a specially developed rotary sieve efficiently separated the regolith by particle size. Despite challenges such as dust clouds and temporary clogging of the sieve, the overall system impressed with its robustness, efficiency, and reliability.

Another component of the competition was the submission of a technical proposal based on the insights gained from the field tests. It outlined how the demonstrated system could be further developed and integrated into future ISRU lunar missions. In this area as well, Team BREMEN impressed with a clearly structured, technically sound, and realistically implementable concept.

The combination of outstanding performance in the LUNA test field and a forward-looking development concept ultimately earned the team the overall victory.

Dr. Mehmed Yüksel, head of the Space Robotics team at the DFKI Robotics Innovation Center:  
*"Robotic systems are crucial for a sustainable human presence on the Moon. Our rover 'Coyote III' has proven under extreme conditions that it has the reliability, endurance, and autonomy required to play a key role in future ISRU missions."*

Dr. Paul Zabel, project manager at the DLR Institute of Space Systems:  
*"The competition gave us the opportunity to demonstrate under realistic conditions how material processing on the Moon could work in the future. The combination of DLR’s expertise in regolith processing and DFKI’s competence in mobile robotics proved to be a strong foundation for this success."*

**Team BREMEN receives €500,000 development contract**

The Space Resources Challenge is part of Europe’s long-term strategy to develop technologies for the utilization of local resources on the moon. As the winning team, Team BREMEN has now been awarded a €500,000 development contract by ESA to further advance its concept for deployment in future lunar missions.

This achievement also highlights Bremen’s significance as a true “City of Space”. With its unique concentration of space companies, research institutes, and universities, Bremen is one of Europe’s leading hubs for space robotics and advanced technology systems.  
  
**More information:**  
Space Resources Challenge: <https://src.esa.int/>   
Team BREMEN: <https://src.esa.int/bremen/>   
DLR Institute of Space Systems: [Institute of Space Systems](https://www.dlr.de/en/irs)  
DFKI Robotics Innovation Center: <https://robotik.dfki-bremen.de/en/startpage>

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