Polish contribution to NASA InSight mission to Mars

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On behalf of colleagues from:

Astronika, Space Research Centre PAS, Warsaw University of Technology, Institute of Aviation, Lodz University of Technology
NASA InSight mission is the first mission to study the interior of Mars.
Heat Flow and Physical Properties Package (HP3)
PI: prof. T. Spohn
Scientific goal of HP³ experiment

Operational scenario for HP3 after deployment onto the ground by the robotic arm*


- Deliver heat probe below required 3m
- Determine the thermal gradient and heat flow of Martian surface
- Measurement supported with radiometer’s surface temperature measurement
Why Poland got involved?

Heritage and world recognized experience in space penetrometers development back to 90’s

MUPUS
(Rosetta mission)

MUPUS-TP on-board PHILAE lander (ESA/DLR)
How Poland contributed to the InSight mission?
How Poland contributed to the InSight mission?

Hammering Mechanism
design and integration ➔

Parts manufacturing ➔

Warsaw University of Technology
Coatings, tribology and surface engineering ➔

Non-destructive inspection
(Computer Tomography) ➔
The lander successfully landed on November 26th 2018

Credits: NASA/JPL/DLR
Instruments located on the lander’s platform

HP3 instrument (with Hammering Mechanism provided by Poland)

SEIS instrument

Credits: NASA/JPL/DLR
Hi Jurek
See enclosed. This is the first time that a NASA Lander carries more than the American flag. Take particular note of the Polish flag.
Best
Tilman (Primary Investigator of HP3 experiment, DLR)
HP3 touch down on February 12th 2019

Dr M. Grott and Prof. T. Spohn (PI, DLR) showing successful deployment of HP3 instrument on the surface of Mars

Commending a hammering action is scheduled for tomorrow!
Key message

• The first NASA mission with multinational instrumentation on-board
• The first mission to study interior of Mars
• Example of continuation of good cooperation between German and Poland in space penetrators and hammering mechanisms
• InSight mission as a good example of pushing the limits of space exploration by strong international cooperation
• Importance of generation continuity in space developments. The heritage and experience is built for tens of years (here for over 20 years). Make sure there are no generation gaps.
• Don’t forget: Commending a hammering action is scheduled for tomorrow!

Thank you for attention!
Questions?