NEWS – 24 July 2018

HB Cesic© Mirror on the way to ISS

With the DESIS spectrometer a HB-Cesic® Mirror has been launched to the ISS from Kennedy Space Center on 29 June 2018.

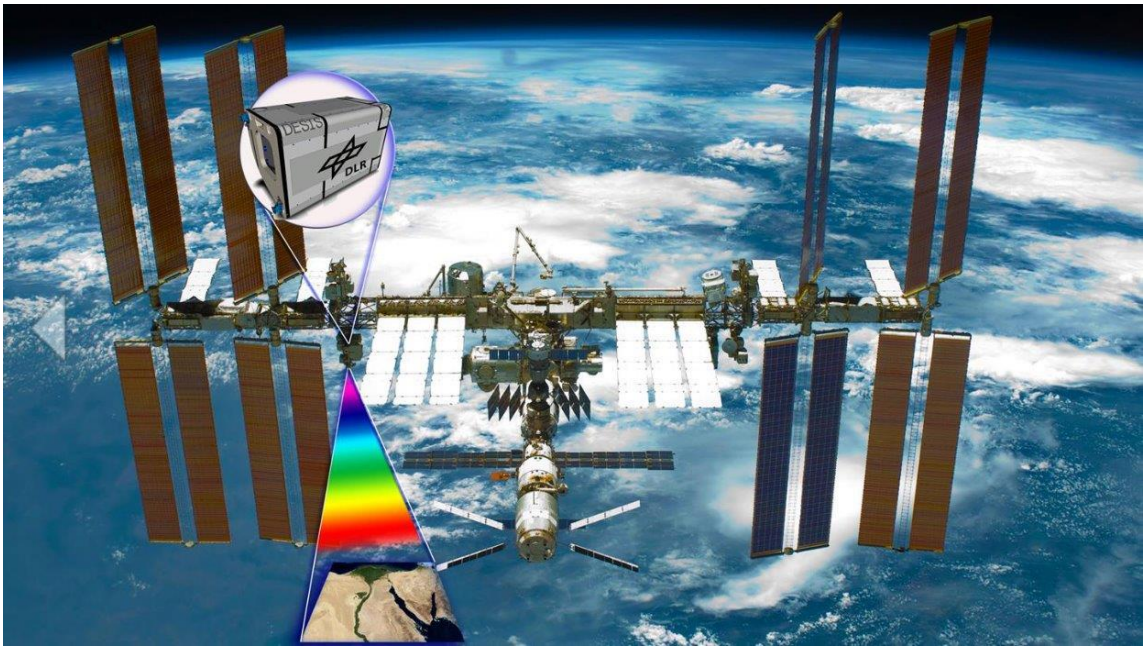

Fig 1. DESIS spectrometer docked on ISS (Image DLR)

The HB Cesic® mirror is part of the DESIS instrument (DLR Earth Sensing Imaging Spectrometer) which will be installed on the MUSES platform (Multiple User System for Earth Sensing) on ISS, from where it will observe the Earth and provide hyperspectral data.

ECM manufactured in close collaboration with the DLR the structure of the pointing mirror of its ceramic composite material Cesic© in order to achieve the required low coefficient of thermal expansion, high stiffness and low mass.

Fig.2 DESIS spectrometer in action
(Image DLR/Teledyne Brown Engineering)

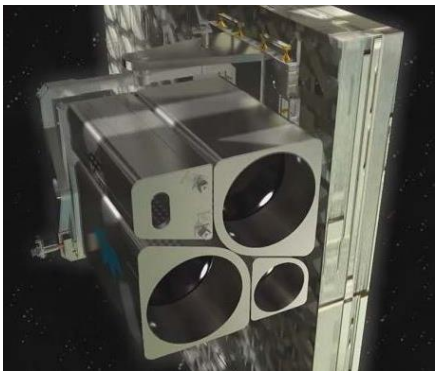

Fig. 3 DESIS untit on MUSES platform
(Image Teledyne Brown Engineering)

The hyperspectral sensor includes 235 closely spaced channels that are able to record image data from the visible and near-infrared regions of the spectrum (between 400 and 1000 nanometres). From the ISS orbit (400 km) it reaches a surface resolution of 30 m.

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The spectral imagery will allow scientists to detect changes in the Earth's ecosystems, asses the condition of forests and examine the state of agricultural land to secure and improve global food production.

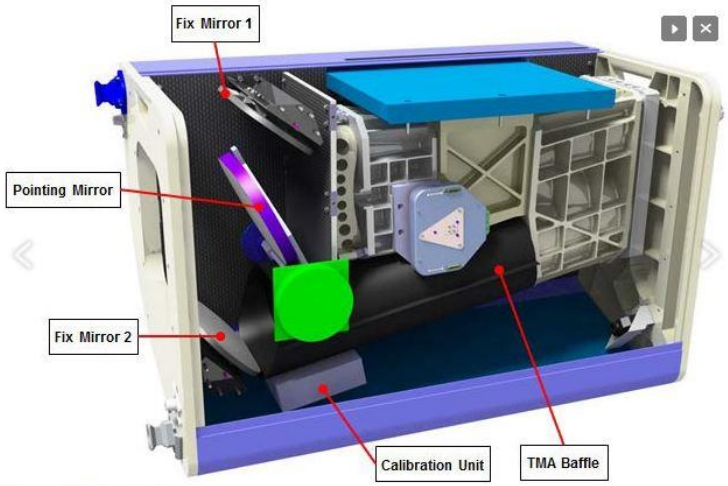

Fig. 4 Mirror set up of DESIS unit with moveable HB-Cesic ® pointing mirror (Image DLR)

ECM built a set of two 230 mm plane mirrors with a backwards lightweight structure. The mirrors interfaces where prepared in ECM's own workshop by high precision grinding followed by EDM machining. The mirror mounts were installed at DLR.

Fig 5. Backside of the mirror during integration with mounting clamps (Image DLR)

Prior to polishing the mirror surfaces were coated with 35 µm PECVD silicon layer. The polishing was performed at Frauenhofer IOF in Jena to the final specification of 14.5 Nm RMS with an achieved microroughness of around 1.5 nm.

Fig 6. Frontside of mirror during integratition - (Image DLR)

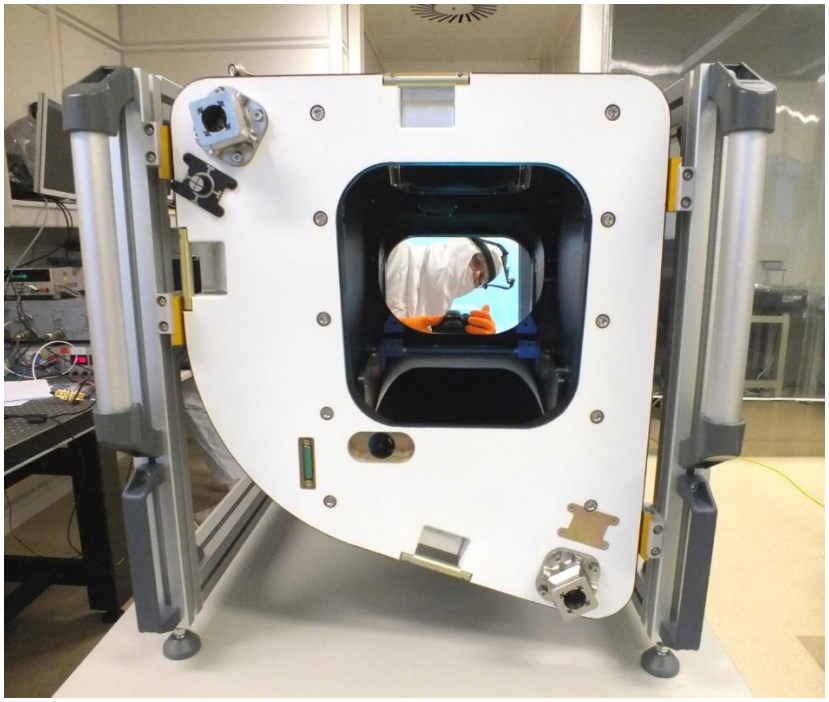

Fig 7. Integration of DESIS - Mirror already on its place - (Image DLR)