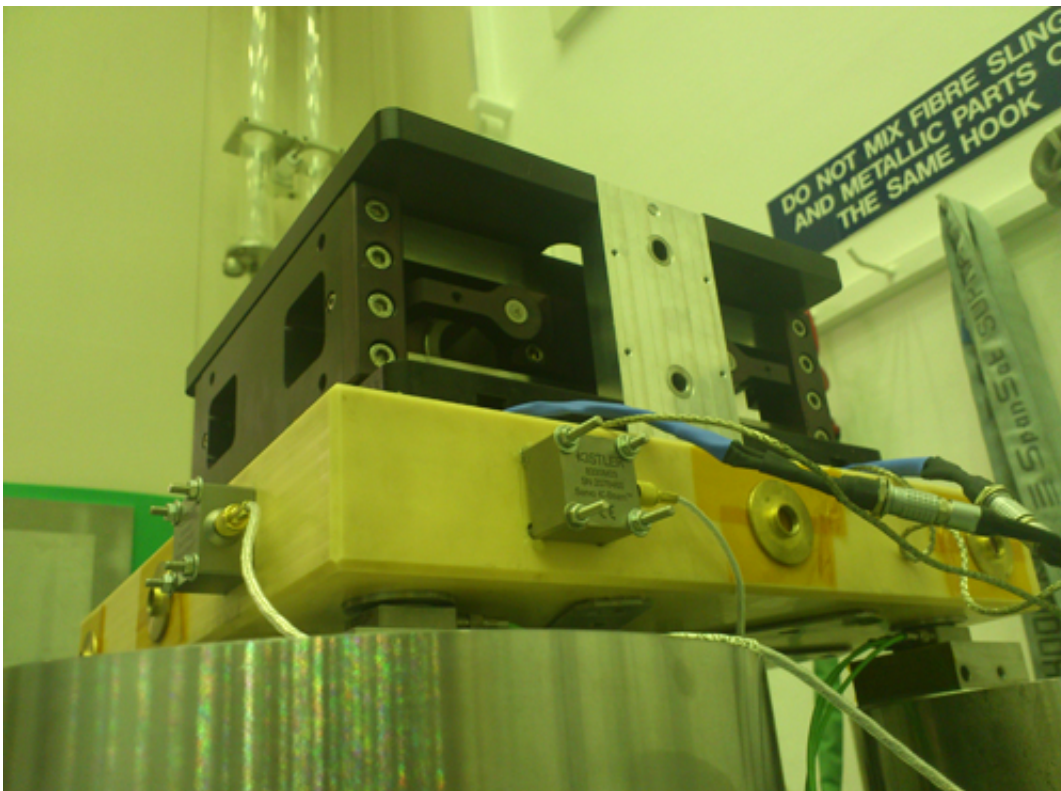


New microvibration excitation device currently being tested at European Space Agency space test centre

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The NPL excitation unit mounted on the ESA Reaction Wheel Characterisation Facility.

NPL scientists recently developed a new microvibration excitation device, which is currently under test at the European Space Agency

(ESA) space test centre at ESTEC in Noordwijk, Holland.

The 'little shaker' device was produced as part of a technology research project for ESA to develop a prototype universal reference excitation unit which can be used to validate the performance of all kind of microvibration test facilities, traceable to ISO17025 levels of confidence and which can be deployed to perform inter facility comparison measurements.

The device is about the size of a shoe-box and generates small forces and torques ($\mu\text{N}/\mu\text{Nm}$ to single digit N/Nm range) at relatively [low frequency](#) (0.05 Hz to 10 Hz) in a controlled manner via reaction force against a moving mass. It can create force and torque along or about a single axis, and be repositioned in any orientation, to allow six-degree-of-freedom forces to be generated. The device is unique because there are currently no comparable means of producing highly repeatable forces and torques of this low magnitude in such a small, compact and portable mechanism.

Testing at the ESTEC space [test centre](#) involved placing the device on Reaction Wheel Characterisation Facility platform, activating it to create sinusoidal forces and moments in various orientations, and comparing the generated forces with those measured by the ESTEC facility.

Preliminary results are excellent and ESA now has a [prototype device](#) it can take to other facilities that will produce an identical drive signal, to allow comparisons of measurement results between facilities.

NPL was a natural partner for ESA on this project due to previous successful collaborations with [challenging micro-thrust measurements](#). Additionally, NPL's role as the UK's National Measurement Institute provides confidence and experience in measurements traceable to primary standards and will be critical in allowing ESA to accredit their microvibration facility to the ISO 17025 standard in the future.

More information: www.npl.co.uk/science-technology/dimensional/

Provided by National Physical Laboratory

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