Achieving the unachievable

Vibration measurement and correlation on lightweight space structures

What is ASDEC?

Knowledge based consultancy

- Proven Industry experts
- Academic led research
- Training

Measurement

- Structural Dynamics
- Noise & Vibration
- Ultrasonic
- Strain Measurement

Laser Vibrometry

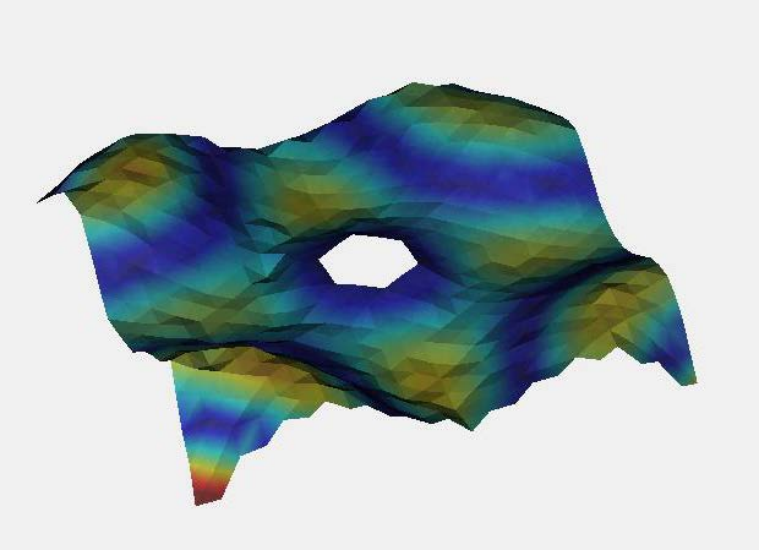
- Non-Contact
- 3D system
- Portable
- UK only Robotized System

Structural Dynamics

- How do we measure the response?
- Piezo Ceramic Crystals

Why Structural Dynamics

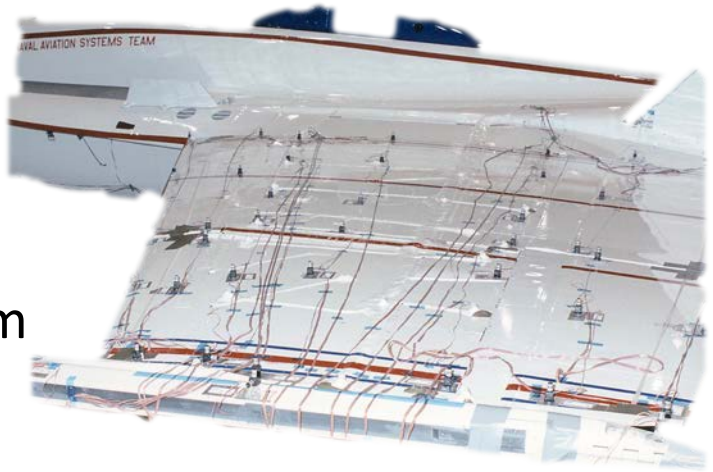
- How something vibrates
- What happens if something is vibrated.



Current technology

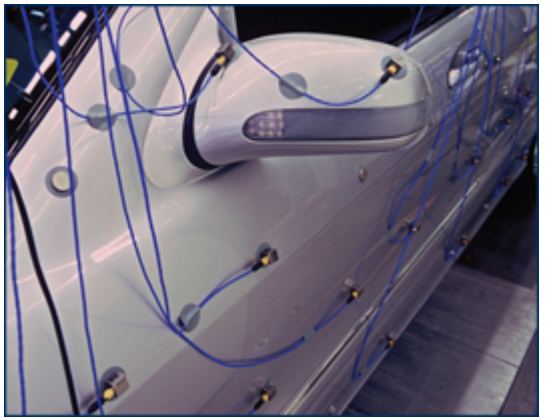
Contact transducers need:

- Additional mass
- Time consuming cabling
- Need to correct local coordinate system



Resulting in:

- Limited bandwidth
- Coarse spatial resolution
- The structure is changed



- Slow, cumbersome, low resolution

ASDEC Difference

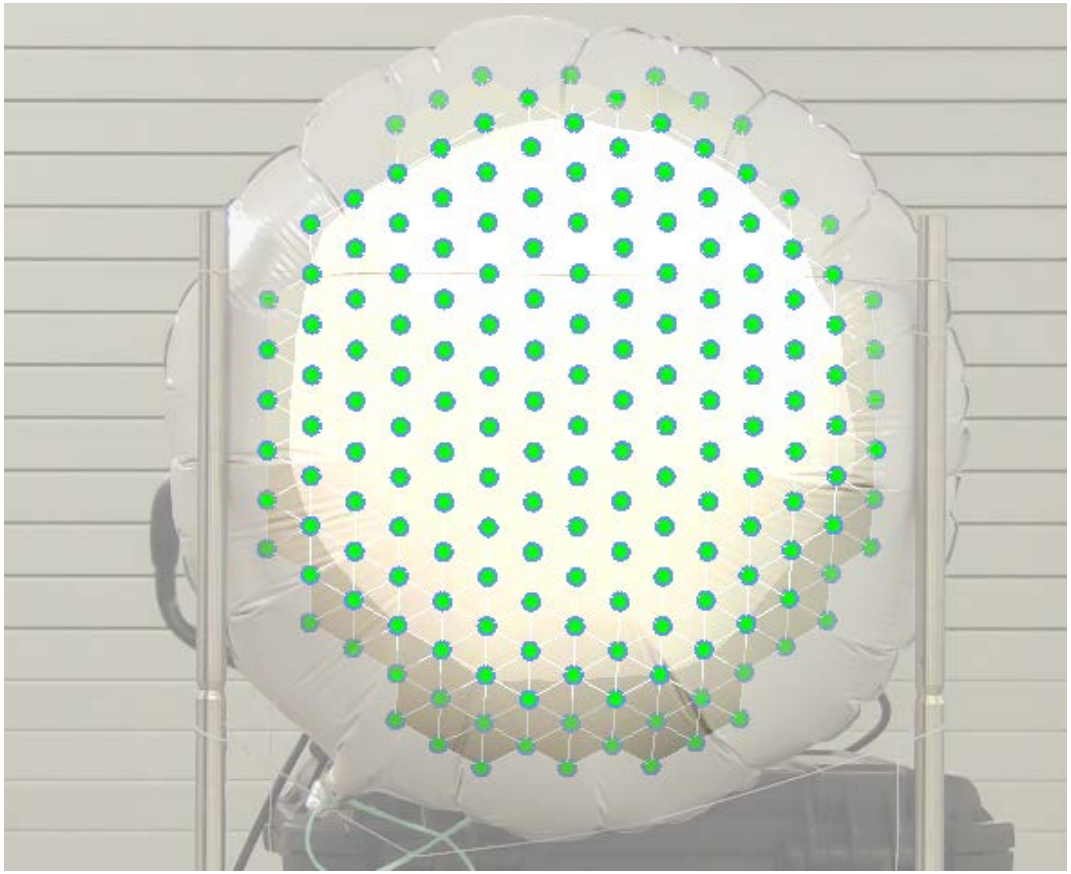
Lightweight Structures

- As materials and design evolves weight can be reduced
- Finite Element Analysis has revolutionised Engineering
- How do you check and correlate?
- How far can it go?

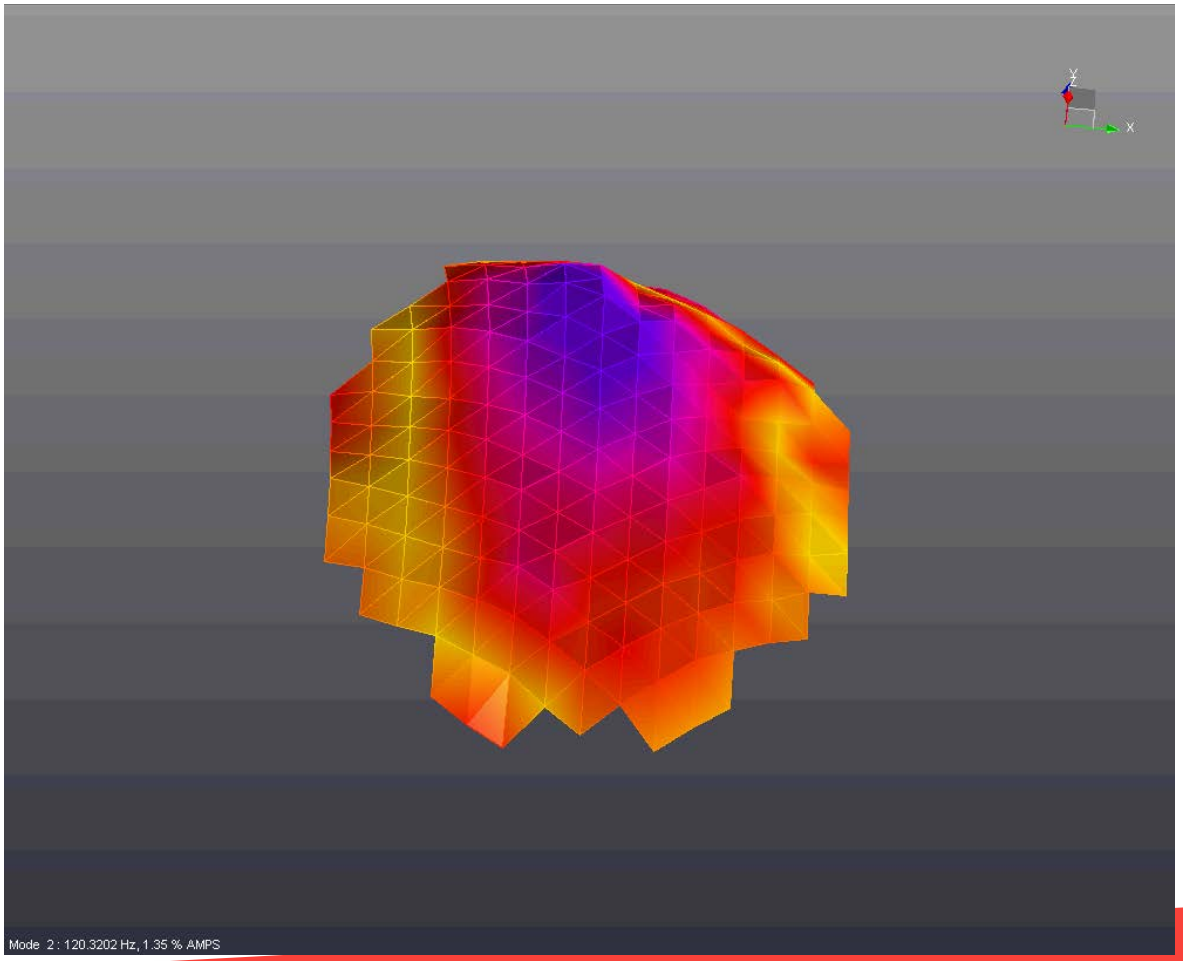
The ultimate lightweight structure demo

- Space relevant
- Extremely Lightweight
- Easy to transport
- Defies conventional techniques
- Cheap

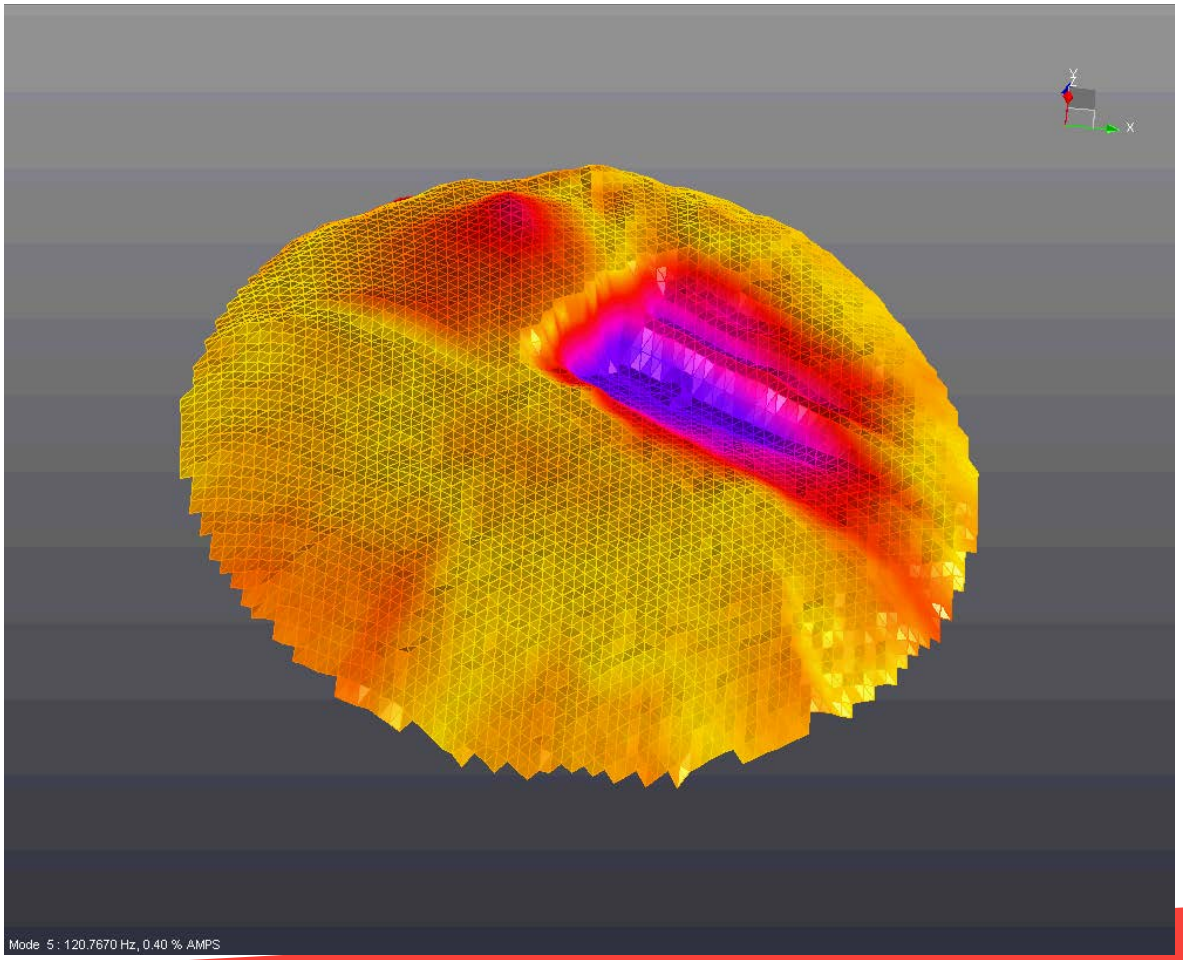
Testing



1st Mode Balloon



How far can you go?



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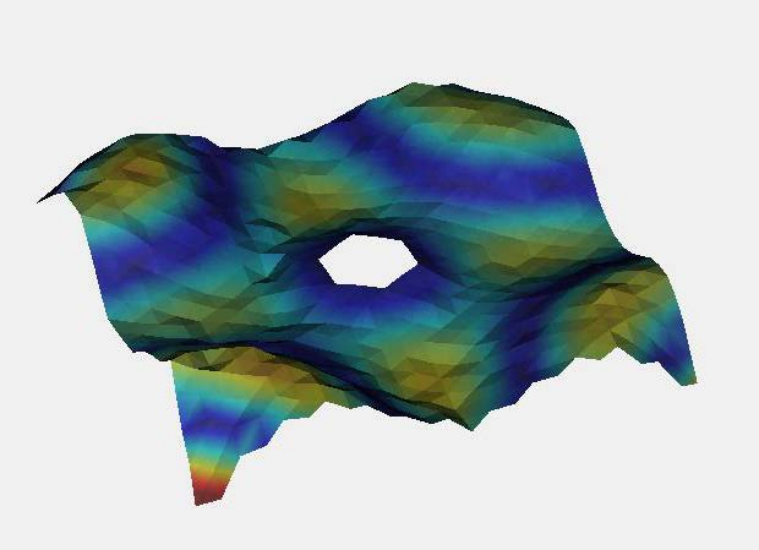
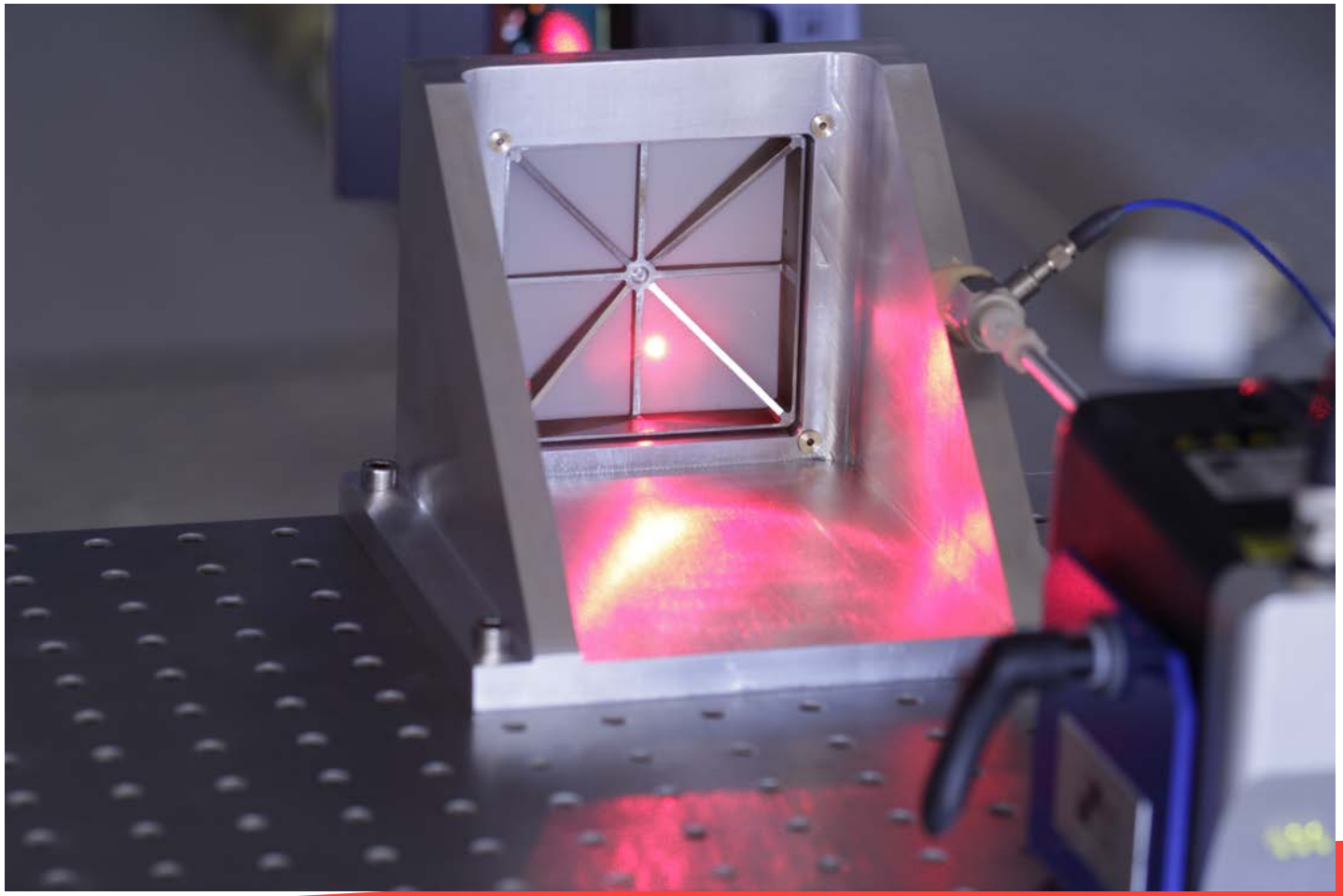


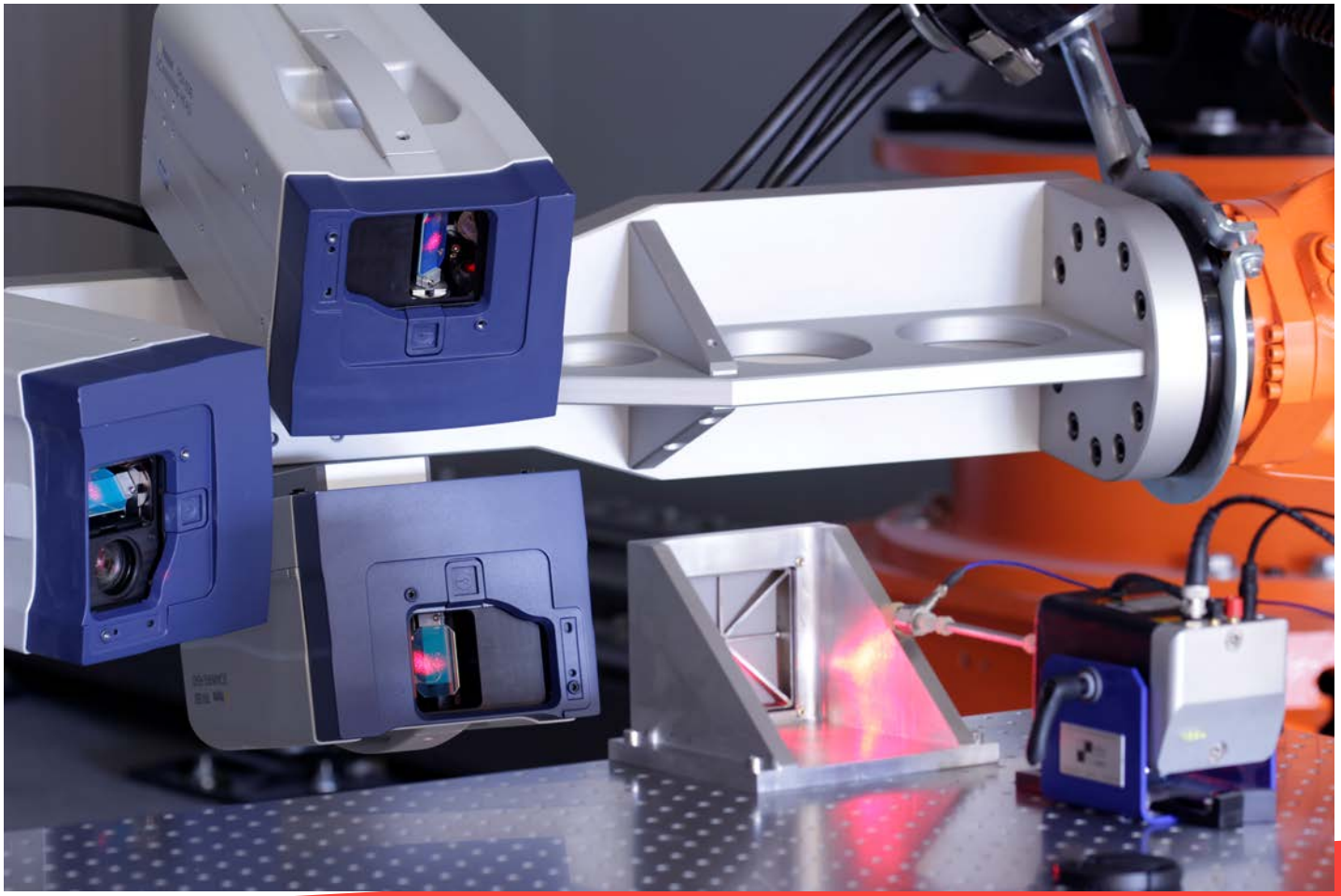
Out of this World Application

- BepiColombo – ESA Mission to Mercury
- Launch 2017
- Leicester produced Instrument
- Mercury Imaging X-ray spectrometer (MIXS)
- Micro-channel plate manufactured by Photonis SAS (France)

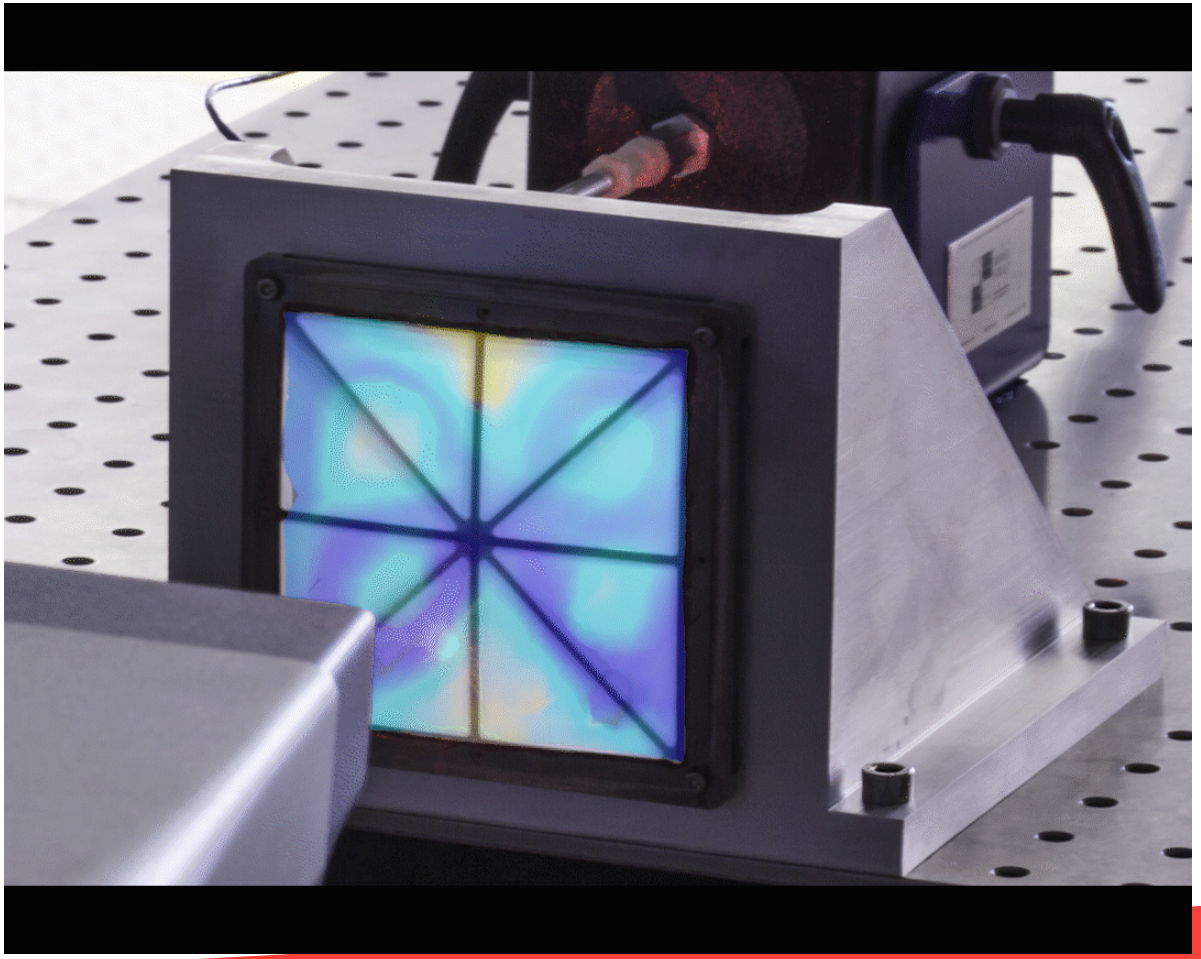
More MIXS Pics



MIXS testing



Mercury Imaging X-ray spectrometer (MIXS)



Thank You

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