Image: Mirror array in Large Space Simulator

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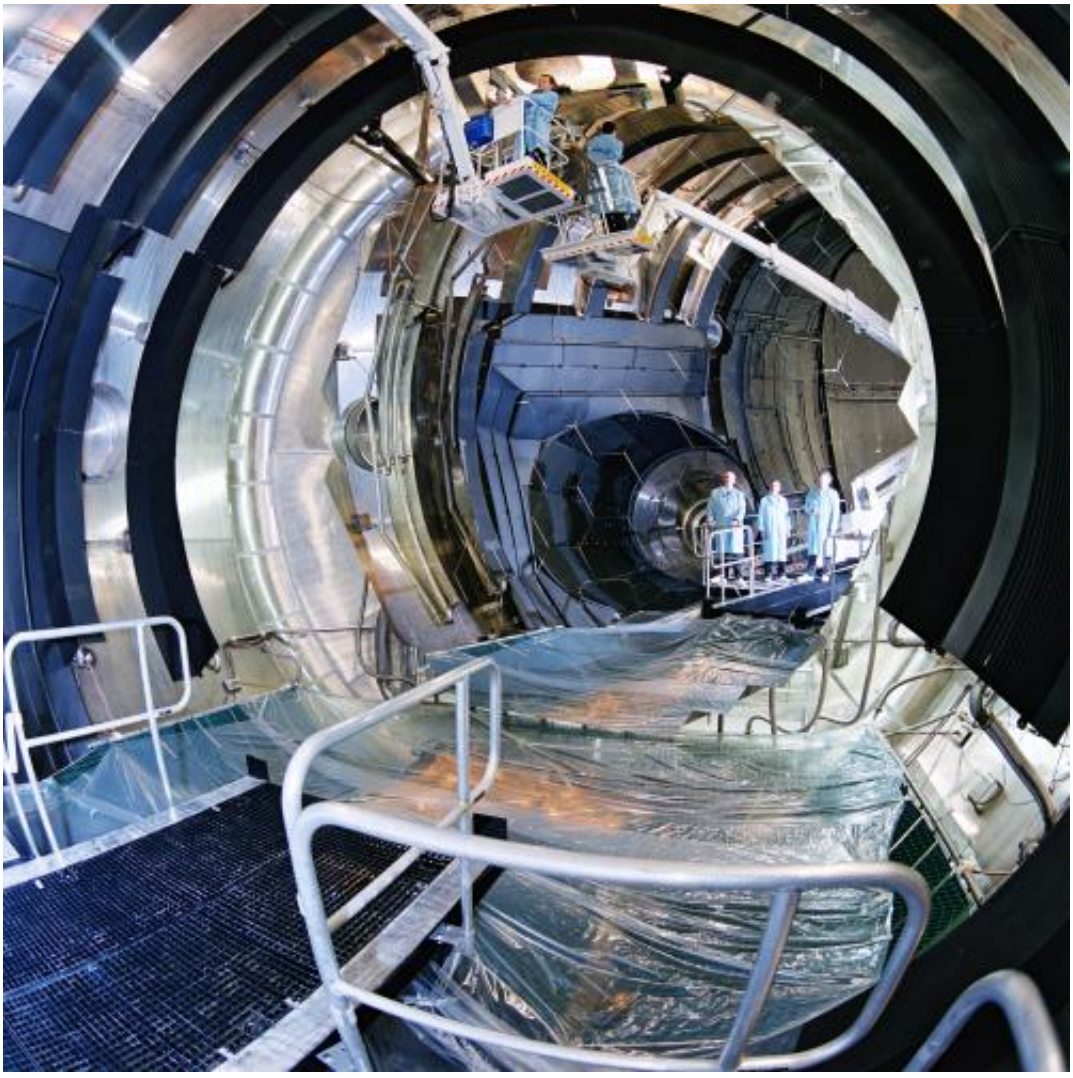

Credit: ESA-A. Le Floc'h

This vast enclosure, made to appear larger still by an array of mirrors at its end, is ESA's Large Space Simulator.

Europe's largest vacuum chamber, the LSS subjects entire satellites to space-like conditions ahead of launch.

This 15 m-high and 10 m-diameter chamber is cavernous enough to accommodate an upended double decker bus. Visitors to this year's ESTEC Open Day will have the chance to see it for themselves.

Satellites are lowered down through a topside hatch. Once the top and side hatches are sealed, high-performance pumps create a vacuum a billion times lower than standard sea level atmosphere, held for weeks at a time during test runs.

The 121-segment mirror array seen in the image reflects simulated sunlight into the chamber, at the same time as the walls are pumped full of –190°C liquid nitrogen, together recreating the extreme thermal conditions prevailing in orbit.

Embedded sensors and measurement devices check whether a mission's thermal engineers have done their job well, and if the test satellite maintains an acceptable internal temperature range without buckling or other unwanted temperature-driven effects.

The LSS – seen here during a past refurbishment– is an essential part of ESA's Test Centre in the Netherlands, the largest facility of its kind in Europe, providing a complete suite of equipment for all aspects of satellite testing under a single roof.

Provided by European Space Agency

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