

RECREATING THE COSMOS: SPACE SIMULATIONS

Interface
FORCE MEASUREMENT SOLUTIONS.

Interface understands why advanced sensor technologies and leveraging data-driven insights are critical for space simulation environments. Space innovators and aerospace companies turn to Interface to satisfy the growing demands for simulation test and measurement solutions. We are a proud supplier to some of the world's leading organizations, start-ups, and educational institutions that are driving a sustainable space economy. Interface load cells, torque transducers, and multi-axis sensors play a vital role in simulating space equipment, parts, and machine conditions by accurately measuring forces, torques, and stresses during testing.

The global space simulator market was valued at \$124 million in 2023 and is projected to reach \$291 million by 2033. This growth is driven by increasing commercial space activities and government investments in space programs.

Studies show high-fidelity space simulations significantly improve astronaut performance and reduce errors during actual missions. As space simulations continue to grow the role of force sensors becomes even more crucial. These sensors are key to simulating realistic training and mission planning into space. They measure the forces exerted by astronauts during spacewalks and other extravehicular activities, ensuring that the training scenarios are as close to reality as possible. Research indicates that astronauts who undergo extensive virtual reality spacewalk training perform tasks up to 30% faster and with fewer mistakes.

Space simulation labs recreate the harsh realities of the cosmos on Earth, subjecting spacecraft and equipment to extreme temperatures, vacuum conditions, and intense forces. Sensors are the eyes and ears of these simulations, capturing critical data that validates designs, predicts performance, and safeguards lives. Interface LowProfile and Mini load cells verify the structural integrity of spacecraft components. By accurately measuring forces and stresses during simulated launch and landing events, load cells ensure mechanisms can withstand the rigors of space travel.

It's estimated that for every dollar spent on early-stage simulation and modeling, space agencies and companies can save between \$4 and \$10 in later development and operational costs. Load cells measure the forces and stresses during simulated launch and landing conditions, ensuring the structural integrity of the spacecraft. These crucial tests, which include the ability of individual components like solar panels, antennas, and docking mechanisms to withstand forces in space, are made possible by sensor technologies provided by Interface.

