

NASA Selects Team and Data Physics to Build Vibration Test System for James Webb Space Telescope

The James Webb Space Telescope (JWST) is a giant step forward in the quest to understand our place in the universe. However, it will have to be tested at the NASA Goddard Space Flight Center in Greenbelt, MD to assess its ability to survive the vibration it will encounter during launch on the Ariane 5 rocket.

This is no small task. The size and weight of the optical telescope with the integrated science instrument module (OTIS) is such that a specially designed test system is required. Major aspects of the vibration test system are a guided head expander and a guided slip table, both capable of resisting large overturning moments, supplied by Team Corporation along with three 50,000 lbf electrodynamic shaker systems and vibration controllers supplied by Data Physics Corporation.

Shaking the OTIS in the vertical direction will require a specially designed guided head expander weighing approximately 25,000 lbs and standing approximately 8 feet tall. The entire moving mass comprising the payload and the head expander will require two shakers working in tandem to generate the required forces.

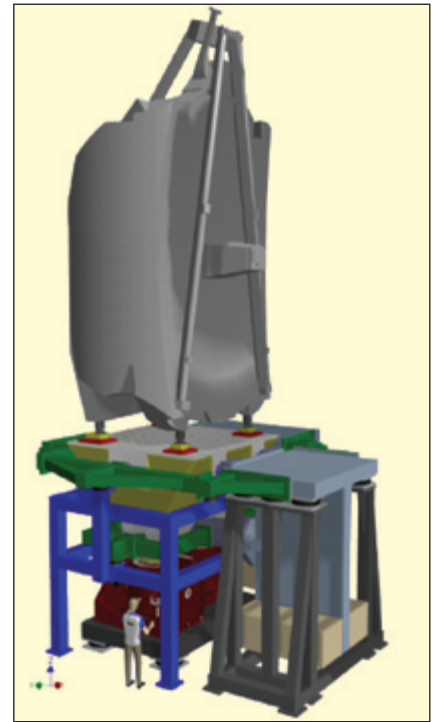
The JWST is NASA's highest priority

science mission in development. As you might imagine, the safety of the test item is of paramount importance. Consequently, one of the safety requirements is that any shutdown condition, such as excessive vibration level, or any of the shaker/amplifier limit conditions like over-travel, over-temperature or over-current, must not cause a sudden shutdown that could impart transient excitation to the payload.

Under all shutdown conditions, the system must safely bring the vibration levels down to zero over several hundred milliseconds. This requirement also extends to include sudden loss of power to the amplifier. Ensuring simultaneous safe shutdown of two 360 KVA amplifiers driving two 50,000 lbf shakers is also no small challenge.

QinetiQ North America (QNA) is the prime contractor for the project and collaborated with NASA to select Team Corporation as the supplier for the entire vibration test capability. Team Corporation is supplying a guided head expander system for vertical testing and a slip table system for horizontal testing.

Data Physics is a subcontractor, supplying two SignalForce 50,000-lbf shaker systems controlled by a SignalStar Matrix dual



shaker controller, powering the vertical test system and a SignalForce 50,000 lbf shaker controlled by a SignalStar Vector controller, driving the horizontal test system.

For more information on the JWST test system and products from Team and/or Data Physics, please visit: www.teamcorporation.com; www.dataphysics.com.