System of Work Platforms for Space Vehicle Assembly

SIERRA SPACE

SUMMARY

Sierra Space needed a system of platforms to provide access to the Cargo Module of the Dream Chaser during the installation processes. They selected Spika to design and manufacture the platforms in compliance with rigorous technical and administrative requirements.

Sierra Nevada Corporation is a privately held global aerospace and national security leader based in Sparks, Nevada. Their subsidiary, Sierra Space, is the creator of the Dream Chaser space vehicle, which can deliver up to 5,500 kg of pressurized and unpressurized cargo to the space station, including food, water, supplies, and science experiments and returns to Earth.

Sierra Space was looking for a partner to meet their complex custom access needs in a restrictive environment and on a tight timeline. Spika was introduced to Sierra Space through their tooling supplier, Models and Tools. Given the company's experience in the design and build of custom aerospace access equipment, Spika was awarded the contract for the work platform project.

The program required a system of platforms to provide access to the Cargo Module of the Dream Chaser during the installation process of internal and external details. The platforms had to meet the following scope:

- Allow for side, top, forward, and aft access.
- Provide personnel access to the Cargo Module from the forward and aft openings.
- Due to the clean manufacturing environment, FOD control and ESD control were critical.
- Ensure movement limitations (rigidness) of the platform and prevention of inadvertent space hardware contact.

In addition to the product deliverables, Sierra Space required extensive project management, design reviews, product testing and analysis, and quality management.

Spika designed and manufactured four unique systems to be used for specific locations and tasks on the space vehicle. They included:

- Side access platforms with extended slider reach and deflection restrictions
- Tall, partially prone tilt-out platforms with incorporated vacuum plumbing
- End access platforms with a diving board design protruding into inside areas of the space vehicle
- Platforms with a non-FOD-producing slide-out and extendable ladder.