

**AEROSPACE****ASSEMBLY
AUTOMATION**

MULTI-AXIS



HIGH SPEED



SMOOTH MOTION



FLEXIBILITY

Flexible Drilling System for Aircraft Fuselage

A world leader in design and manufacturing of aerospace tooling and assembly automation needed a motion solution for their flexible drilling system that rides a custom, bendable linear track made to follow the shape of an aircraft fuselage.

CHALLENGE

The manufacturer needed linear vee groove guide wheels with journals that could support the heavy machinery affixed to as many as three different carriages and provide smooth motion for circumference travel lengths, ranging from a business aircraft to that of a 747 airplane.

The portable drilling machine rides on a flexible primary axis track and a small span secondary axis which wraps around the surface of the fuselage. This rail system is held in place by multiple hydraulic suction cups, eliminating the need for a secondary machine tool frame to support the track. The flexibility of this axis allows for the discrete elimination of an axis of rotation by allowing the machine to conform to the curvature of the airframe. This innovative and simplified 3-axis drilling machine offers the same functionality of a traditional 5-axis machine, providing customers with a lean manufacturing alternative.

SOLUTION

DualVee® linear guide wheels and journals fit this manufacturer's needs to a vee. As many as three custom carriages ride on each track; two carriages utilize four DualVee guide wheels while one carriage utilizes two guide wheels. The wheels carry the weight of the drilling machine as it moves along the curved surface of the airframe. As a tough, long-lasting linear guide wheel, DualVee proved smooth, reliable motion at great lengths, even under the most unique circumstances.