

Aerospace Assembly Transporter



The Situation

The manufacture of aircraft has changed enormously in recent years. The main difference: Instead of being assembled in one spot, most aircraft today are built on moving assembly lines similar those used by automakers. Most aerospace manufacturers, however, still rely on outdated wheeled transporters and overhead cranes to move aircraft through the various manufacturing stages.

Bombardier Aerospace, the third-largest airplane manufacturer in the world, wanted to modernize and streamline work at its Toronto, Canada, factory. The company turned to Airfloat, with its decades of aerospace experience, for a custom air bearing solution.

The Solution

Airfloat engineers created a “floating” assembly line that utilizes custom-designed and custom-built air-bearing transporters, or APGVs (short for “automated pneumatic guided vehicles”). The bus-size machines harness the power of compressed air to literally float 12,000-lb. aircraft fuselages from assembly station to assembly station.

The Airfloat APGV is a fabricated steel structure built of structural tube and laser-cut steel plates. Pneumatic lifts raise the transporter off its wheels and onto four 20-inch air-bearing skids. Two hundred SCFM of air is forced through the air bearings at about 80 PSI, lifting both the transporter and its load a few millimeters off the ground.

A pair of built-in line-following robots automatically move the transporter from workstation to workstation, or it can be wirelessly steered by an operator via an RF controller. (Continued...)

Additionally, deployable wheels allow the Airfloat assembly transporter to be towed, while loaded, on rough surfaces or outdoors.

The Result

Bombardier has experienced significant productivity and ergonomic gains thanks to the new Airfloat equipment. Previously, workers wasted precious minutes preparing to move aircraft; hydraulic jacks had to be inserted and raised, lifting straps had to be secured, etc. Today, the aircraft are built from the ground up on Airfloat transporters, which automatically travel from workstation to workstation – without a driver.