



CONNECTING BIZLINERS

AMAC EXPERTS SHARE THEIR THOUGHTS WITH JANE STANBURY ON WHAT IT TAKES TO CONNECT EXECUTIVE AIRLINERS.

Connectivity for executive aircrafts

Connectivity on board VIP aircraft is a key topic in private aviation. When it comes to connectivity, customers always want the latest technology. Clients expect a seamless connection from the moment they depart until they land, ideally with the fastest speeds available, just as they would experience at home or anywhere else.

Choosing the right MRO partner is crucial, as installing new SATCOM systems requires not only compliance with regulatory requirements but also extensive expertise across various aviation disciplines to deliver a tailored solution and ensure seamless integration.

With the transition from Ka-band and Ku-band SATCOM systems to new, smaller, lighter, and more powerful solutions like Starlink or OneWeb, the demand for modern connectivity continues to grow. Selecting a trusted MRO partner throughout the entire process is essential.

Planning connectivity solutions

At AMAC Aerospace, the process begins with mapping out client requirements, analyzing the aircraft's current setup, and assessing operational needs to design a fully

customized solution. SATCOM installations are never performed on the fly; they are always integrated into a heavy base maintenance check or combined with other modifications the customer wishes to implement.

In many cases, major SATCOM installations are carried out alongside cabin refurbishments ranging from minor updates, such as carpet replacement, to full-scale projects involving complete cabin re-veneering and varnishing, seat refurbishment, and other potential upgrades.

For VIP and government aircraft, important considerations include global flight routes, regional satellite coverage, and regulatory or political restrictions on satellite services. Guaranteed bandwidth and service reliability are also critical factors, as these are regulated differently worldwide. Additionally, the size of the aircraft plays a vital role in determining the optimal connectivity solution.



SATCOM Evolution

In the past, Ka-band and Ku-band SATCOM systems required very large, mechanically controlled antennas, measuring up to two meters in length and with a substantial weight. Larger aircraft, such as the Airbus A320 or Boeing B737 series, offer greater flexibility for antenna installation due to the available space on the upper fuselage where relatively large antennas can be installed. On smaller VIP aircraft, such as the Bombardier Global Express Series or Gulfstream aircraft smaller antennas are installed.

The complexity of the installation process also varies. Larger antennas require more extensive modifications, including structural reinforcements and extensive sheet metal work. For example, installing a traditional Ka-band antenna can require drilling over 1,000 holes and over 1000 hours of sheet metal work. SATCOM next-generation solutions, such as Starlink or

OneWeb, however, use flat antennas that reduce complexity and allow for faster and easier installation. These antennas are significantly smaller and lighter and have no moving parts, making them less subject to mechanical failure and aerodynamically more efficient due to a lower profile than traditional Ka-band systems.



Starlink top mounted fuselage antenna installation

AMAC AEROSPACE | CONNECTIVITY FOR BIZLINERS

Nevertheless, installing connectivity systems remains a complex task. The sheer size of the aircraft requires extensive work, making the physical installation of connectivity systems particularly challenging. It involves more labor, working at greater heights with scaffolding installed around the aircraft and extensive cabin access work to cater for the long wire runs throughout the cabin.

These are some of the factors that AMAC Aerospace deals with on a daily basis, allowing it to assess and manage the complexity involved. Ultimately, the installation of SATCOM systems in large business aircraft presents significant logistical and technical challenges, requiring expertise across multiple disciplines to ensure successful integration.

Installation

The successful installation of SATCOM systems requires specialists from various disciplines. Skilled sheet metal workers and structural engineers are needed to perforate holes in the fuselage, attach brackets, and install the necessary retaining structures. Electricians handle the cabling and system integration, while engineers play a central role in the whole process.

Since each VIP aircraft is unique, experienced cabin technicians must remove ceilings and partitions to provide ac-

cess. Maintenance mechanics ensure the final clearance of the aircraft. Depending on the cabin layout, carpenters and upholsterers may also be required. Electrical engineers integrate the system into existing LAN networks, while a documentation team updates all technical records. In some cases, a stress analysis is also required to calculate and substantiate the structural reports.

Depending on the complexity of the project, almost any expertise may be required. The key success factor of AMAC Aerospace is that all the resources and disciplines are within one organization. This significantly accelerates project implementation, reduces downtime, and ensures high-quality execution.

Operation & System Management

When a SATCOM system is installed, the process involves installing the external antenna, which enables communication with satellites. The connectivity is then distributed throughout the cabin via a network, ensuring seamless coverage for passengers.

VIP customers often request a dedicated network accessible only to them. This allows them to manage bandwidth allocation-whether by increasing bandwidth, guaranteeing a specific bandwidth for the principal and their immediate environment, or using different SSID's for network segmentation.

