



# A380 Section 19

## Systems Integration and Assembly

**Airbus España:** Getafe, Spain



image: ©Airbus

The largest passenger airliner in the world, the A380 is a double-deck, wide-body, four-engine airliner manufactured by Airbus. Because of its size and to reduce its potential weight, the aircraft was constructed of 40% new composite materials, which also significantly improves the quality of the completed plane. These new materials mandated automated production, rather than the costly and time-consuming manual labor of the past, as well as innovative equipment. AIT was armed with both.

### Achievements

- Met composite and structure size challenges with redefined technology, integration, and tooling equipment
- Increased production and cost efficiencies with precision-engineered, multi-purpose, flexible tooling
- Maintained "just-in-time" schedule of transport for final assembly of the entire A380 aircraft



**SECTION 19** Over 32' long and 28' tall at the forward end, the largest carbon fiber section at the time.

In 2002, AIT was selected as the Prime Contractor to provide automated turnkey tooling to assemble the Airbus A380 rear fuselage section (Section 19) in Getafe, Spain. The tapered Section 19 is over 32 feet long and 28 feet tall at the forward end – the largest primary structure carbon fiber fuselage section constructed at that time.

With new automated production assemblies came a new plant floor layout and processes, which AIT defined for Airbus. Inherent efficiencies in AIT's deliverables resulted in faster cycle times to keep up with the demanding "just-in-time" scheduled transport of various components for final assembly in Hamburg, Germany.

### System Features

For the Project, AIT provided not only automated, flexible alignment and positioning equipment but also conventional tooling, including lifting fixtures, assem-

bly jigs, working platforms, and body fittings. The new flexible tooling helped increase production efficiencies by allowing equipment to work on various parts with minimal retooling.

AIT also created unique PC-based graphical interface software to control the positioning systems. Its ease of use has greatly reduced training and operating time.

In addition to the rear fuselage positioning systems, AIT engineered two circumferential drilling machines that automatically drilled the upper and lower shell assemblies. This new technology was developed to accommodate the enormity of the Section 19 composite structures as well as to speed drill time and accuracy. The driller, which is 6 meters in diameter and 9 meters long, was designed in AIT's Plano, TX, and Seattle, WA, facilities and manufactured in our facility in Vancouver, BC, Canada.



**FINAL ASSEMBLY** ⚡ AIT final assembly tooling was integral to the program's success.



**UPPER SHELL** ⚡ Manipulating the Section 19 shells required AIT shell assembly systems.



**HOOP DRILLING MACHINE** ⚡ For upper/lower shells

**Project Highlights**

- Prime Contractor/Integrator – Sole Supplier to Airbus
- Process and workflow definition
- Cycle time and rate analysis
- 6 conventional Panel Assembly Systems
- 2 automated Shell Assembly Systems
- 2 automated circular and longitudinal drill/fasten machines
- 1 automated Final Assembly System
- Shell rolover systems
- Pin installation jigs
- 50 positioning machines
- 100 axes of servo motion
- Work platforms
- Mechanical handling devices and lift fixtures
- Body fittings
- Transportation dollies ⚡



**PANEL JIG TOOL** ⚡ For Section 19 panels



**SHELL TOOL** ⚡ Lower shell unload



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**About AIT**

Advanced Integration Technology (AIT) is a leading industrial automation company delivering turnkey factory integrationsolutions to the Aerospace industry. Accustomed to managing multiple large, simultaneous, international projects, AIT has served as the full-scale integrator to some of the most prominent Aerospace companies' cutting edge projects. Relying on the strength of our diverse team of engineering pros, AIT has earned a leading position as the predominant turnkey integrator and prime contractor to the world's foremost Aerospace companies – including Airbus, The Boeing Company, Bombardier, Spirit AeroSystems, and Vought Aircraft Industries. Our precision-engineered technology and automation have enhanced the industry's ability to manufacture aircraft in less time and with greater exactness and flexibility. Learn more at [www.aint.com](http://www.aint.com)