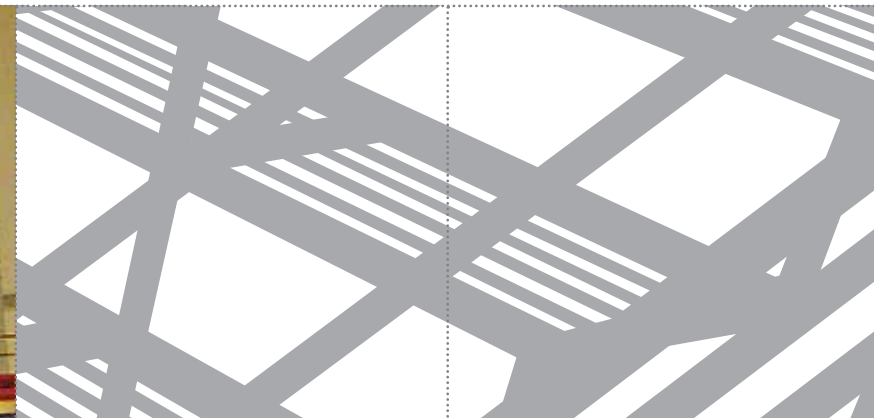


Turn Key Assembly Lines

MTORRES has developed and successfully implemented at the Aerospace Industry worldwide, after carefully listening customer requirements a number of turn-key assembly lines, using state of the art technology and equipment that assures the required degree of flexibility and productivity that the industry demands.

MTORRES provides a complete solution covering every project phase, from the concept development to the Assembly Line Final Acceptance and production support.

MTORRES integrates at its jigs a wide range of technical solutions that goes, from the most simple assembly tooling to the highest and most sophisticated technology of reconfigurable assembly jigs, equipped with integrated 'On Line' measurement systems and a top performance range of automatic machines, controlled by powerful control & production software packages.



Every MTORRES developed concept is designed to fulfill the most demanding customer requirements focusing on easy working procedures to maximize production rates, using the latest technology to boost flexibility via automation implementation, minimizing manufacturing process time, footprint minimization, flexibility on the steps to be implemented according to the production ratios increases, etc.

MTORRES powerful engineering and project management capabilities ensures a satisfactory project implementation from the early project steps, through a concurrent engineering phase, till the end with the customer operators training and full production support.

A350 PROGRAM S19

Turnkey assembly line installation for the A350 XWB fuselage Section 19 project. A total of 28 assembly stations are involved in an automatic pulse moving line concept regulated under Lean directives and prepared for a maximum Rate of 13 Aircraft per Month to be achieved on three different steps, 4, 7 and finally 13.

A wide range of technologies has been applied at this assembly line. They cover from the most traditional geometrical assembly jigs on a perfect match with the most advanced automated assembly technologies and automatic drilling and riveting process, managed from a customized control and production software.

Nearly all type of available assembly technologies are used at this assembly line to manufacture the latest Long Range aircraft generation. The most important ones are automatic pulse moving line, fully automated NC alignment system vision system for section positioning, TORRESDRILL&TORRESRIVETER, 5 axis NC drilling column machines integrated in the assembly line.

Flexible Drilling Heads FDH and Flexible Drilling&Riveting Head FDRH are also included in the scope. One TORRESMILL NC Surface Milling Machine for final tail connection with Special MTP Software and HMI for machines and automatic stations control.

MS 21 WING ASSEMBLY LINE

It is a full Turnkey Wing Assembly System that comprises the necessary equipment for manufacturing, test and later integration of the Outer Wing Box and Central Wing Box.

The complete project has been customized according to Customer needs in terms of performances and rate.

A total of 18 assembly stations are involved in an automatic pulse moving line concept regulated under Lean directives being the project conceived to allow progressive and flexible implementation of some of the systems involved.

Different tooling concept has been applied to assure the highest performances following the manufacturing process and flow designed by MTORRES, that includes also tolerance analysis and aircraft design modifications suggestions to increase the productivity.

All technologies involved, from the traditional geometrical assembly jigs, flexible skin panel supporting tooling, the most advanced automated assembly technologies and the necessary test for final wing qualification (electric, hydraulic, leak and geometrical measurement) has been designed to assure a perfect match between performance and cost, being all processes managed from a customized control box thru a production software.



Turn Key Assembly Lines



C919 FORWARD AND REAR FUSELAGE ASSEMBLY SYSTEM

It is a Full Turnkey Fuselage Assembly System that comprises the necessary equipment for manufacturing, the forward and rear fuselage, including the cargo and passenger doors.

The complete project has been customized according to Customer needs in terms of performances and rate, to assure the final market demand being a scalable assembly lay out regulated under Lean directives capable of an easy implementation without existing manufacturing process disturbance.

Different tooling concept has been applied to assure the highest performances following the manufacturing process and flow designed by MATORRES, that includes also tolerance analysis and aircraft design modifications suggestions to increase the productivity.

All technologies involved, from the traditional geometrical panel assembly jigs, flexible skin panel supporting tooling, massive panel to structure riveting systems, flexible integration TPS of the formed panels to achieve a high accuracy barrel sections, customized Flexible Drilling Head for panel joint, or robotic drilling cell for the panel manufacturing area assures the highest degree of quality and performance required for a new Singel Aisle aircraft.

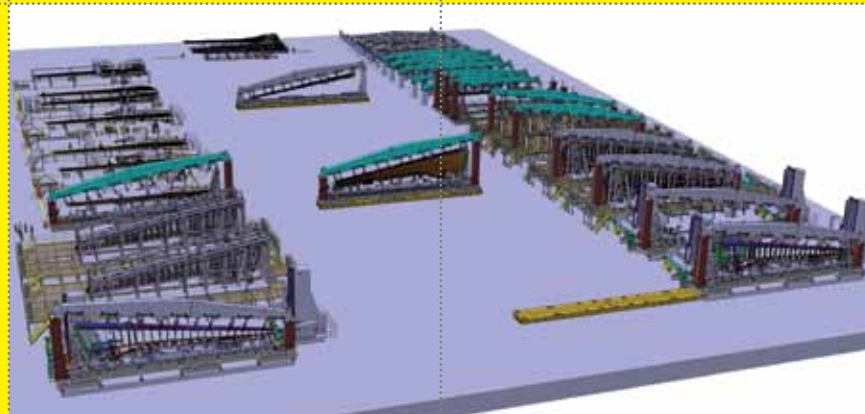
EMBRAER E 2 JETS CENTER FUSELAGE 2 & CENTER WING STUB

One of the newest project configuration provided for the last program launched to the market of Singel Aisle sector. It is a full Turnkey central fuselage section and center wing stub assembly system that comprises the necessary equipment for manufacturing, under Lean directives a maximum Rate of 13 Aircraft per Month.

The complete project has been customized according to Customer needs in terms of performances and rate being the proposed solution flexible to accommodate different manufacturing rates 4-9-13 with the best optimized cost performance.

Different tooling concept has been applied to assure the highest performances following the manufacturing process and flow designed by MATORRES, that includes also tolerance analysis and aircraft design modifications suggestions to increase the productivity.

A wide range of technologies has been applied at this assembly line. They cover from the most traditional geometrical assembly jigs for singular pieces (panels, spars...) on a perfect match with the most advanced automated assembly technologies and automatic drilling, riveting and final wing interface milling process, managed from a customized control and production software.



PROGRAMS



• Airbus A330



• Airbus A340



• Airbus A350



• Airbus A380



• Airbus A400M



• Comac C919



• Dornier 728



• Embraer E190/E170/E145



• Embraer KC390



• Eurofighter Typhoon



• Irkut MS21