USA

4 x 6" multitape ATL head.

B-787 horizontal stabilizer manufactured by multi tape ATL

This project has set MTorres as a key partner for Boeing and has also consolidated the multi tape technology

■ BACK in 2012, **Boeing** trusted **MTorres** as the single supplier for the **ATL's** needed for fabrication of Skins and Spars for the **787 Horizontal stabilizer**.

This was a key Project as **Boeing** decided to build a new plant in **Salt Lake City** (UT) focused on manufacturing the 787 **HSTB** parts, where high productivity and reliability are a "must".

In a first phase, Boeing ordered three machines with exchangeable heads capability and a total of five heads, to be installed in two different sites, Boeing **ADC** (Tukwila, Wa) and the new plant in **SLC** (UT).

MTorres, once again took the challenge to develop further the multi-tape technology providing the customer with a reliable high productivity product and reduced scrap.

This project is an example of team work since it required major developments in all areas; hardware, where multi-tape has been developed further and several head functions have been now automated for increased reliability, software, with the development of the navigation system which optimizes part production (scrap vs time) real time and application engineering, where thousands of testing hours have been invested to automate the layup process and bring it to a higher level.

The initial tests back in 2013 confirmed the potential of this technology and **Boeing** launched the project second phase with an order for two more machines (three heads).

In April 2015; MTorres has successfully completed the delivery of all five machines and 8 heads which are now operating at both Boeing sites.

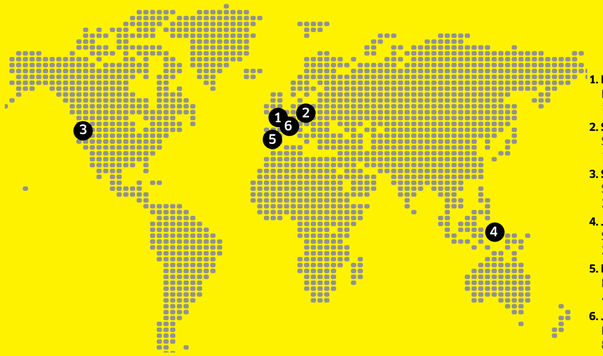
This Project has set MTorres as a key partner for Boeing on lamination programs and has also consolidated the multi tape technology which has contributed to attract other customers interested in the advantages when compared to conventional ATL.

But this is not the end, a sixth machine is foreseen in the next future to complete **SLC** plant needs; this story will continue.

DATA

3 ATL machines have been delivered at new Boeing facility in Salt Lake City (UT) and two more at the ADC Boeing facility in Seattle.

UPCOMING AEROSPACE TRADE SHOWS THAT MTORRES WILL BE PRESENT IN:



1. **LE BOURGET**
   Paris, France
   15-21 June 2015
2. **STADE CONVENTION**
   Stade, Germany
   16-17 June 2015
3. **SAE AEROTECH**
   Seattle, WA, USA
   22-24 September 2015
4. **JEC ASIA**
   Singapore, Singapore
   20-22 October 2015
5. **METALMADRID**
   Madrid, Spain
   4-5 November 2015
6. **JEC EUROPE**
   Paris, France
   8-10 March 2016

World champions at Robot Performance in the FLL USA

Mechatronic Ants, the team of the Torres de Elorz plant, validates the world title in robotics and gets the second position in the overall classification

Team Mechatronics Ants showing their awards.

FIRST LEGO LEAGUE

- **105 teams**
- **1,000 students, grades 4-8**
- **From 36 countries:** Australia, Brazil, Canada, Chile, China, Colombia, Denmark, France, Germany, Greece, Iceland, India, Israel, Italy, Japan, Jordan, Lebanon, Mexico, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Russia, Singapore, Slovakia, Slovenia, S. Africa, S. Korea, Spain, Taiwan, Turkey, Ukraine, UK, US
- Autonomous robots are built using **LEGO MINDSTORMS** technologies

OUR team **Mechatronic Ants** has achieved the title of world champion in the Robot Performance in the World Festival of the **First Lego League** (FLL) held last April in St. Louis, Missouri US. They beat two of the three rounds getting the world record for scoring with 842 points. They have also achieved the second place in the overall classification which also includes the Scientific, Technical and Values Projects.

For the last four years **The Ants** have managed to be on the podium robot of all **FLL** tournaments in which they participated. They have also managed two years in a row to reach the worldwide leader, and another four being the best in Navarre (Spain). The Fuente Alamo plant team the Incredible Squirrels who came as third of Spain has also participated in the World Festival. This young team, formed by kids from 10 to 13 years, has also developed an excellent job in Missouri although they could not reach any trophies. They had no luck with the robot in their first international experience; if they had acted as in regional and national competitions, they would have finisehd among the top 15 teams in the world.

Mechatronic Ants, with a hard preparation weekends of almost eight months each season, have got a place in the global elite tournament where 24,000 teams from five continents are participating. In the recent tournament United States have involved 105 teams in the preliminary rounds. The work of these MTorres future workers continues after winning the cup of robotics in the First Lego League birth place.

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News of the MTorres Company 2015

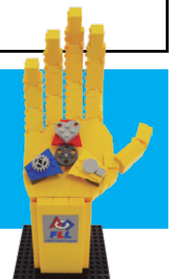
MTorres AFPs for Airbus 350 wings

MTORRES will provide the Fiber Placement machines that Airbus will use at its plants at both, Stade (Germany) and Illescas (Spain), to manufacture its latest A350 wing skins

MTorres involvement on the KC-390 program

MTORRES ATL's FOR BOEING 787 HTP SKINS

World champions at the FLL USA



MTorres provides technology change to Airbus 350 wings lamination

GERMANY & SPAIN

Existing ATL machine at Airbus facility.

MTorres will provide the Fiber Placement machines that Airbus will use at its plants at both, Stade (Germany) and Illescas (Spain), to manufacture its latest A350 model upper and lower wing skins

■ **AIRBUS** has decided this technology change from Automatic Tape Laying, currently being used via MTorres Tape Layers, to the latest generation of Automatic Fibre Placement Machines, also developed by MTorres. This change implies a substantial increase in the overall process productivity and a significant material scrap reduction generated in that process. As a result a significant cost saving has been identified by Airbus leading to take this industrial decision, after going thru all technical analysis needed to validate this new technology for its application to these components. The A350 is an aircraft structurally built in Carbon Fibre. For this purpose, different technologies are used depending on the specific requirements that each component to be manufactured has to comply with. For the laminating process of the pre-impregnated fibre, which is the most common material form used for manufacturing Composite components in aerospace, there are two different technologies. The automated tape laying, **ATL** technology that automatically laminates.

BRAZIL

Agência Força Aérea/Sgt Batista.

MTorres delivers assembly systems to Embraer

MTorres is involved at the Embraer KC-390 on the Wing Integration project as well as on the Pylons Drilling and Assembly solution

■ BOTH projects have been designed, built and delivered to the customer and at this point in time, they both are at the final stages of their start up into production. These two MTorres lead projects are of the highest relevancy for Embraer at the program for the largest airplane that Embraer has ever designed and built.

Once in full production they are expected to be reference within the **Brazilian Aerospace Industry** in general and specifically within **Embraer** as key solutions to build such an aircraft. Given this level of relevancy, together with other ongoing projects at this same customer, they are crucial to strengthen even further our relationship with this customer, opening the door for additional business in the short and mid term for us.

Expansion of Machining Capacity In Fuente Alamo

SPAIN

■ **MTORRES** has expanded the facilities of its plant in Fuente Álamo (Murcia) with the aim of increasing our market targets with an added value in the aeronautical sector and also getting into new areas, such as the automotive one, with special emphasis in the area of machining large pieces for composite materials and quality control, and a remarkable increase in the production capacity of the existing facilities

It is an established fact that the design and manufacture of molds have a key importance, with a tendency to increase their accuracy and geometrical tolerances, their durability and the use of new materials. All that needs to be prepared to give a quick and agile response with the best facilities and the best trained professionals.

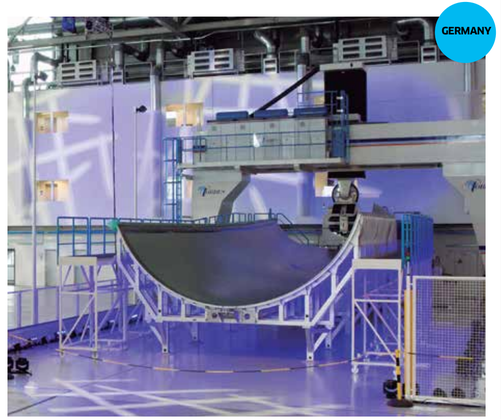
New High capacity milling machine at Fuente Alamo.

THE KEY POINTS

- **Increase the size of the machining plant** in 55 metres length. Increased the floor space in 1,424.7 m².
- **Installation of the new TORRESMILL® 6-axis machining.**
  X axis = 30,000 mm
  Y axis = 5,300 mm
  Z axis = 1,700 mm
  C axis = ± 360
  A axis = ± 110°,
  allowing operations and double curved molds specially adapted for working with composite materials and INVAR.
- **Table** 4,5 x 30 meters (25Tn carrying capacity) and 24 tools changer.
- **New office for the Quality Department** with 100 m² with a new CMM dimensional machine.

MTorres provides two new AFP systems to PAG

GERMANY



A350 XWB-1000 version skin panel manufactured by MTorres AFP.

At the end of 2014, MTorres provided two newly developed Torresfiberlayup systems to Premium Aerotec in Germany

■ AT Nordenham and Augsburg (former Airbus plants) Premium AEROTEC manufactures and assembles a significant work share of the Airbus A350 XWB fuselage sections.

In Nordenham, Premium AEROTEC produces the entire front fuselage section (section 13/14) that will afterwards be delivered to Airbus in Hamburg. In Augsburg, it is produced the side shells of the rear fuselage sections (section 16/18) of the A 350 XWB that are also delivered to Hamburg for completion prior of the delivery to the final assembly line to Toulouse (France).

At the start of the A350 XWB program, and based on the known processes at that time, the manufacturing process for the fuselage shells was harmonized all over the plants following the same procedures everywhere. The lamination of all fuselage panels or shells was done on a male (convex) mold. During the first years of production in 2010/2011, Premium AEROTEC has re-considered its process chain focusing on laminating into the female lay-up tool directly and along with this e.g. to eliminate the transfer procedure from a male lay-up to female curing tool prior of curing the part in the autoclave.

Based on the strong and historic relationship with Premium AEROTEC the customer placed all his confidence and trust in MTorres and today we can proudly say, again it has been a great success based on a great team work of all the people involved from both sides.

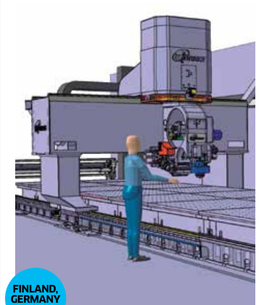
Also, both Premium AEROTEC plants in Nordenham and Augsburg have reached an important milestone in the A350 XWB program with our 2 newly developed TORRESFIBERLAYUP systems. Each of the two plants started their production for the A350 XWB-1000 version, the largest version of the new aircraft family mainly made of CFRP material.

New projects, new customers, new solutions

■ IN the past few months a number of new contracts, some of them significantly new and different from other scopes supplied in the past, have been captured.

Patria and **GKN** Munich purchased a new ATL configuration (**2D ATL** integrated type) for which we have recognized an increasing interest especially for pure 2D and smaller sized parts. Furthermore, there are even some companies attracted by this new product that are just starting to increase their level of automation on lamination process. The configuration, is a very efficient, small sized 2D ATL based on the known and well proven technology but with the gantry being guided on both sides of the vacuum table what very well fits to the ATL product portfolio and completes the overall possible configurations where MTorres has provided all other possible lay-outs such as gantry, column, robot and cantilever based machine configurations already.

Hengshen has purchased a **3D ATL** gantry configuration machine. This ATL will incorporate the innovative MTorres multi-tape laying head, working in this case with 2 tapes, 150mm each. The head provides independent tape control and capability to lay down each tape independently. One of the main advantages of this multi-tape head is that, keeping similar productivity as the standard 300mm single tape, reduces dramatically the scrap. Additionally, an advanced software makes an intelligent management of the laying process and balances and optimizes the use of both tapes.



FINLAND, GERMANY & CHINA