

# MTorres expands its assembly and supply chain capacity

MTorres has achieved two relevant milestones in 2013. One is the establishment of a new assembly facility in Everett, WA and the creation of MTorres do Brasil.



New assembly facility in 2510 West Casino Road, in Everett ( USA).

■ ON ONE SIDE, the new building established by MTorres America is located in Paine Field, within walking distance from the Boeing Everett factory, where wide-body Boeing 747s, 767s, 777s and 787 Dreamliner are assembled and also where Boeing has recently confirmed the 777x composite wings will be built.

This investment provides now the capability to build the MTorres designs at our AS9100 certified Assembly and Manufacturing facility and to deliver to our American customers our locally made world class equipment.

The new facility counts with 31,000 sq. ft. assembly surface. It has been equipped with assembly and inspection means, overhead crane and temperature controlled quality control area. Above all, it counts with a well-trained technical team to provide the assembly and service capabilities to our American Customers.

The major activities being performed in the new building are tooling fabrication, tooling assembly and technical support, but also MTorres America will soon set up a local R&D team to develop new and specific solutions for our American customers' needs, matching MTorres traditional R&D efforts strategy.

“

It is a path for a new globalization process where to be commercially close to the customer alone does not represent an improvement of competitiveness.”

Gustavo Tonioli  
Manager of the MTorres operations in Brazil

## MTORRES DO BRASIL

Other relevant milestone achieved a few months ago is the full establishment of an MTorres subsidiary in Sao José dos Campos, SP, Brazil.

The newly created company will have a strong supply chain and project management focus in order to support the MTorres operations in Brazil, mainly driven by the current projects with Embraer.

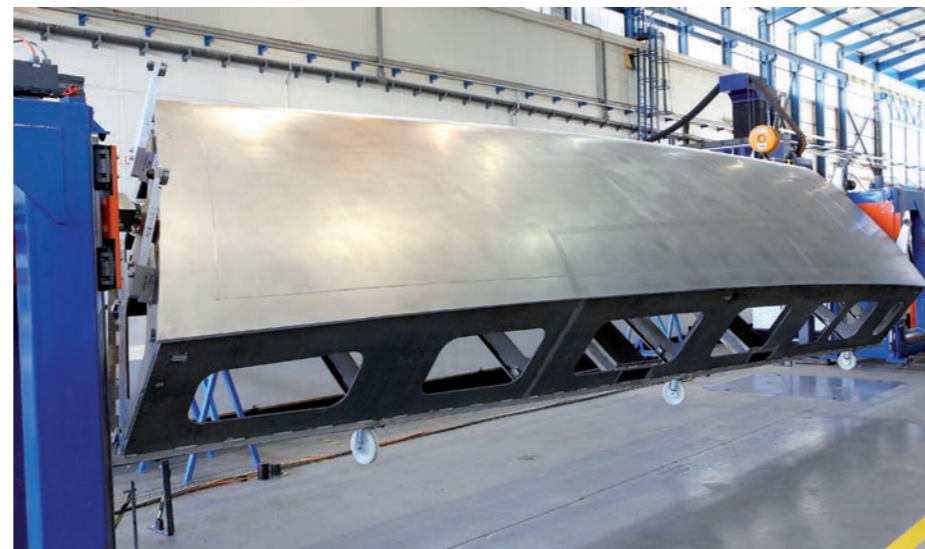
According to Gustavo Tonioli, Manager of the MTorres operations in Brazil, the creation of this new subsidiary represents a strategic decision not only to be commercially close to the customer but also with an industrial perspective, sharing the know-how, the technologies and the restrictions, being part of the customer environment and fully support their needs in all business scenarios.

“It is a path for a new globalization process where to be commercially close to the customer alone does not represent an improvement of competitiveness. On a worldwide market, it is a must to support customer demands on different business aspects such as social, technological, financial and industrial. This challenge is an opportunity to create new procedures and establish better methods that, eventually, can improve all of our company”.

MTorres do Brasil is starting the delivery to Embraer of different tools and jigs for the KC-390 and is managing new packages for the E-2 program.

# SAAB-Cleansky

Since February 2013 MTorres has been cooperating with Swedish company Saab in the European CleanSky, an R&D International Project whose target is to reduce the aircraft energy consumption and footprint.



Extremely accurate tool delivered to SAAB.

SINCE February 2013 MTorres has been cooperating with Swedish company SAAB in the European CleanSky, an R&D International Project whose target is to reduce the aircraft energy consumption and footprint.

According to its own definition, “Clean Sky, a Public Private Partnership between the European Commission and the Aeronautical Industry, was set up to bring significant step changes regarding the environmental impact of aviation. Clean Sky will speed up technological breakthrough developments and shorten the time to market for new and cleaner solutions tested on full scale demonstrators, thus contributing significantly to reducing the environmental footprint of aviation

(i.e. emissions and noise reduction but also green life cycle) for our future generations.” MTorres entered this project as a supplier of SAAB for a complete solution that includes the design, manufacturing, transport and installation of two molds for a wing section and the corresponding turning and transfer equipment.

Although it could seem far from innovation, the high risk and extreme difficulty comes from different aspects:

- **Geometry** is including leading edge; this part of the mold is removable.
- Local and global tolerances are extremely accurate.
- Solution had to include complete new process for laying up and transfer.
- **Dimensions and weights** are limited.

With this project MTorres is going a step further in mold manufacturing, defining the processes needed to achieve the tolerances for laminar aerodynamics and providing full solutions, including not only manufacturing but also all the high value tasks needed.

For such a kind of project, close cooperation with SAAB has been the key to success. Continuous, clear and open minded communication, especially during the conceptual design, has allowed the development of a complete innovative solution.

We hope we will soon see the first prototypes manufactured and flying...

## POINTS OF VIEW

The development of such a project has been a challenge from different points:

- **Design.** Removable parts in molds. Complex process.
- **Structural calculations.** Very light-weight structures.
- **Welding.** Need for extra tooling and new process to achieve tolerances.
- **Milling.** Milling machine tolerances continuously measured, temperature controlled in order to achieve part tolerances. At the very edge of machine capability.
- **Surface.** A new process for automatic polishing had to be developed.
- **Quality.** Difficult geometry measurement due to shape and tolerances. At the very edge of equipment capability.
- **Commissioning.** Installation in a clean room, without affecting current works.

## FOR MORE INFORMATION

[www.mtorres.es](http://www.mtorres.es)  
[www.mtorresamerica.com](http://www.mtorresamerica.com)

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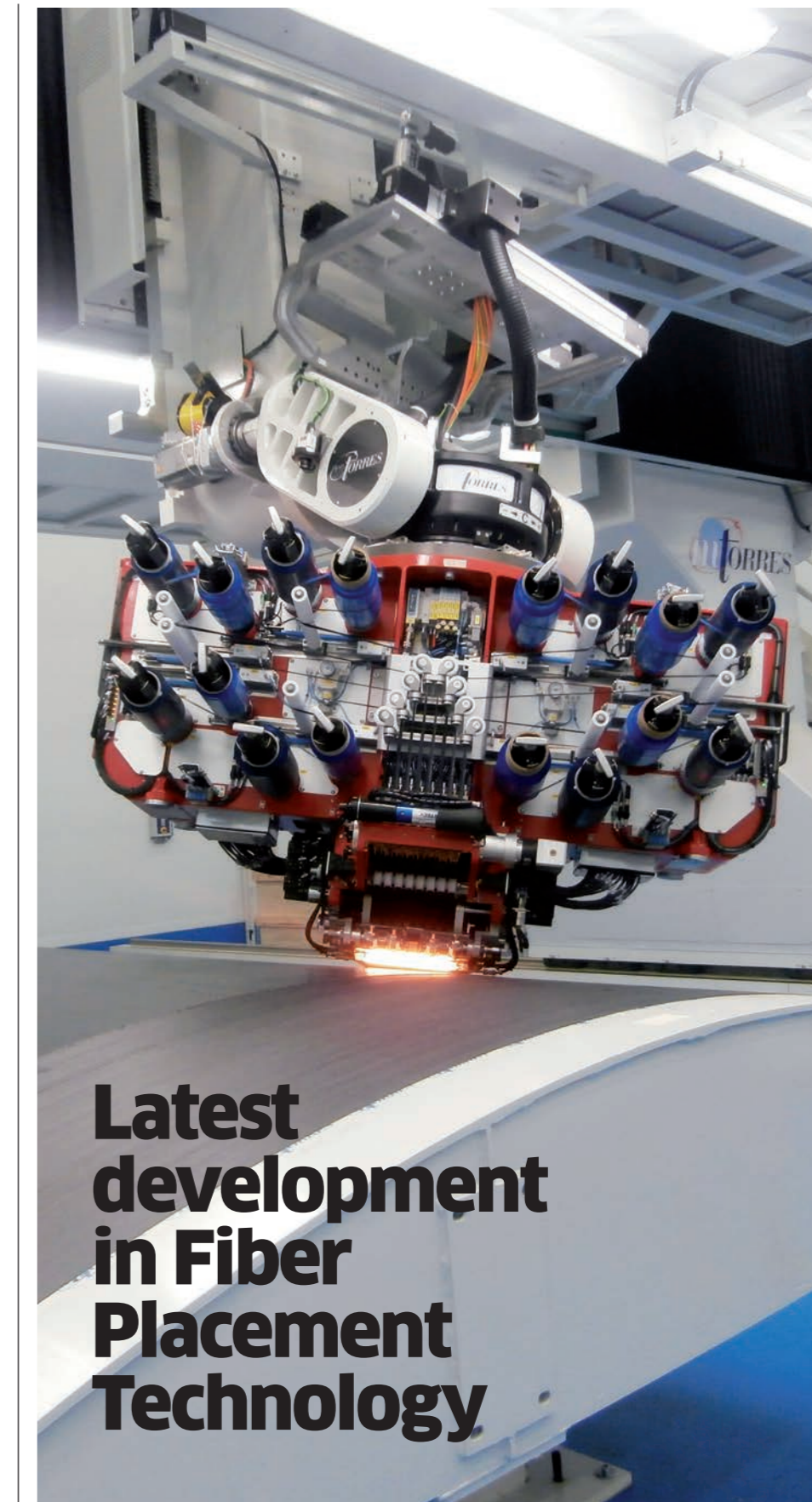
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## Latest development in Fiber Placement Technology

New projects,  
new customers,  
new solutions



**MTORRES AMERICA,  
NEW BRAND  
ON THE OTHER SIDE  
OF THE ATLANTIC**

We have adopted a specific logo and a new website



MTorres expands  
its assembly and  
supply chain  
capacity

## UPCOMING AEROSPACE TRADE SHOWS THAT MTORRES WILL BE PRESENT IN:



### 1. JEC EUROPE 2014

Paris, France, 11-13 March 2014

### 2. SME Composites Manufacturing 2014

Cincinnati, OH, USA 9-11 April 2014

### 3. SAMPE 2014

Seattle, WA, USA 2-5 June 2014

### 4. SAE 2014 Design, Manufacturing and Economics of Composites

Madrid, Spain, 15-18 June 2014

### 5. STADE CONVENTION 2014

Stade, Germany, 24-27 June 2014

### 6. SAE AEROSPACE MANUFACTURING 2014

Salt Lake City, UT, 23-25 September 2014

### 7. AEROSPACE SYSTEMS & TECHNOLOGY CONF. 2014

Cincinnati, OH, USA 23-25 September 2014

### 8. JEC ASIA 2014

Singapore, Singapore 18-21 November 2014



# New projects, new customers, new solutions

In the past few months, a number of contracts, some of them significantly new and different from other things built in the past, have been obtained. Two new customers in the US, ATK in Utah and LMI in Oklahoma, have been added to our reference list.



Surface Milling Machine in operation. A cleaner future, available today.

THESE are excellent news. Widening our customer base is by itself a very good and healthy symptom. We are increasing our presence in the world and, as far as the above specific customers we are strengthening our position in the US market. ATK has been a longtime target for MTorres to start doing business with and we finally have fulfilled these wishes. ATK has purchased a very special ATL from MTorres for their current programs applications. It is quite a special solution.

LMI has purchased from MTorres a very interesting cell, including a **Torresmill** and a **Torreslaser**, combined with a **Torrestool** common for both machines. This cell is very specific and quite unique but it is a perfect fit to MTorres products. Only once in the past a comparable cell was sold and installed at **Bae Systems**.

Also, within the **Assembly** world, in the past few months, we have signed a contract for a new assembly line for the **C919 Rear Fuselage**. This contract has been for months on our radar and finally has been signed. This comes as an addition to the large assembly contracts recently signed with **Embraer** for the E2 programs.

It is also worth mentioning that additional **AFP** machine that **KHI** purchased from MTorres late last year for the 787 fuselage section 43. It is the 3<sup>rd</sup> unit KHI purchases from us. It is our number one customer in Asia.

All this news, as well as the ones not mentioned in this short article, complete our current backlog but they display the worldwide strength that MTorres has in our activity within the **Aerospace Industry**. We need to keep on working on this direction to be able to go within the next few years well beyond our current position to a much stronger one.

This is our permanent task and we shall implement it. No question about it.

## NEW

- ATK has been a longtime target for MTorres to start doing business.
- LMI has purchased from MTorres a very interesting cell, including a Torresmill and a Torreslaser, combined with a Torrestool common for both machines.
- MTorres have signed a contract for a new assembly line for the C919 Rear Fuselage.
- The large assembly contracts recently signed with Embraer for the E2 programs.
- That additional AFP machine that KHI purchased from MTorres late last year for the 787 fuselage section 43.

# Latest development in Fiber Placement Technology

The new development of the Spools built in the head AFP was really remarkable, and we could consider time to market was acceptable due to the short notice development.



Torresfiberlayup at our R&D center in MTorres facilities in Spain.

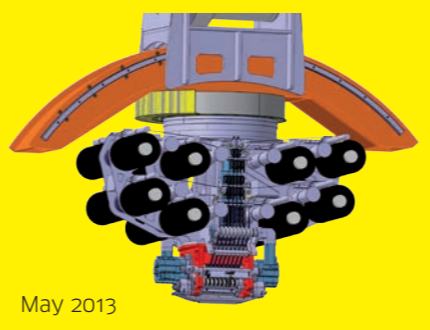
During the last decade, most of the large aircraft structures manufactured in Carbon Fiber Reinforced Polymer (CFRP) has been produced either with an Automatic Tape Layer Machine (ATL) or an Automatic Fiber Placement Machine (AFP). Changing times is a great technology evolver, and what has worked perfectly for the last 5-6 years, doesn't necessarily need to work out in today's competitive world, where continuous upgrades sometimes is not good enough and clean sheet designs are needed to compete in the market (Airbus is well example of this with the revamped A350XWB).

In MTorres we are characterized for our R&D effort (up to 10% of our turnover) and customer commitment for each of our machines. Therefore, it was logical that when a loyal customer asks us for new ideas and development, we take it very seriously and consider it as priority#1 in our long things to do list.

Therefore, we had a new project to develop, where as always, time to market was the key to convince we were the right composite machine-tool partner. Typically, Fiber Placement lead times are between 16-18 months, due the complexity of the machine and the huge amount of manufacturing hours to put together a pretty complicate piece of equipment that a Fiber Placement Machine is. Normally one team is responsible for the unwinding creel, where material is stored and unwound towards the AFP head through the guiding system. AFP end-effector is typically another team responsibility and machine itself (typically a column or gantry, although MTorres has also developed Cantilever or Robot machines) is also separated into another team responsibility. Then, it is possible to design and build parts of the machine in parallel that finally are put together and tested for customer verification. That approach could not be taken for the new AFP development. Customer wanted shortest guide path as possible (due to bad experience with previous supplier) and include spools in the head, due to the unique application of laying in female mold A350 panels, to save the transfer step.

Time to market is king in new develop-

## Conceptual design



ments, and when the objective is crystal clear, resources are available, and all the team works in the same direction, normal people can do extraordinary things in very limited time. CATIA design started around April last year, and due the vast experience of MTorres designing AFP machines, and taking into account that end-effector is the same from the previous 23AFPs installed worldwide, we achieved to do the first 3D lay-ups in MTorres R&D clean room in less than 6-7 months from conceptual design phase.

It was really huge success for MTorres, showing to the customer that what we have been discussing for months, really works, and what is more important, within the timeframe agreed with him, as confidence in your capabilities sometimes is more important that actually technology can do. Is this new type of AFP the way to go in composite manufacturing technology? Probably yes, but not in all the circumstances. The best advantages of

MTorres is that due to the fact that has successful installed more than 20 traditional AFPs (with creel, guiding and end-effector) can select best technology suitable for each application, and for example, back to back wing spars and stringers are best manufacturing with standard Column AFP with autosplacers or light cantilevers with biggest spools possible, in order to minimize scrap to zero.

The new development of the Spools built in the head AFP was really remarkable, and we could consider time to market was acceptable due to the short notice development, but could have we done it better? Definitely yes! According to our founder and President Manuel Torres, we were something like 10 years late! As the very first patent MTorres filed related to AFP technology dates back in 2003... which is of great help to eliminate any doubt about IP protection, as it is MTorres philosophy to fund and patent all of its developments.

In today's world of 3D printing, fast response times, etc. with today's technology it is possible to develop a new concept in a very short period of time, but great ideas take long to mature, and sometimes it takes up to 10years till a great idea is brought into market. Could we have brought that idea into the market before? Most likely yes, but probably the market was not ready yet for such a revolutionary idea, so it is not important to develop the perfect machine for its own shake of R&D, but listen to customer, align strategies and ensure customer satisfaction at the right time, with the right machine, and of course, within budget!



## THE NEW BRAND ON THE OTHER SIDE OF THE ATLANTIC

AIMING to improve our service capacity strategy, and trying to provide better product accessibility to our American costumers, we acquired Pacifica Engineering Inc one year ago.

Since this acquisition, developed from September 2012 to September 2013, our local staff has increased more than 72% and today we have two headquarters: the main one one in **Bothel** (WA) and a new production centre in **Everett** (WA). The integration of both organizations and the new installations allow us to offer to our customers engineering, design, fabrication and assembly services.

In November we moved a step forward within this strategy of reinforce our presence in the American market and therefore we have launched our new brand **MTorres America** which brings together the abilities of Pacifica Engineering and MTorres in product range, project management and after sales services.

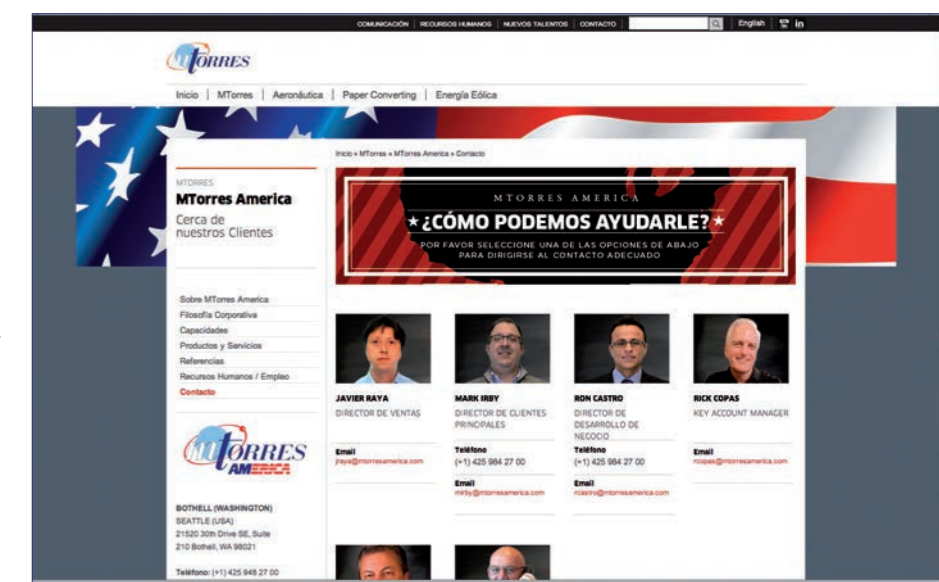
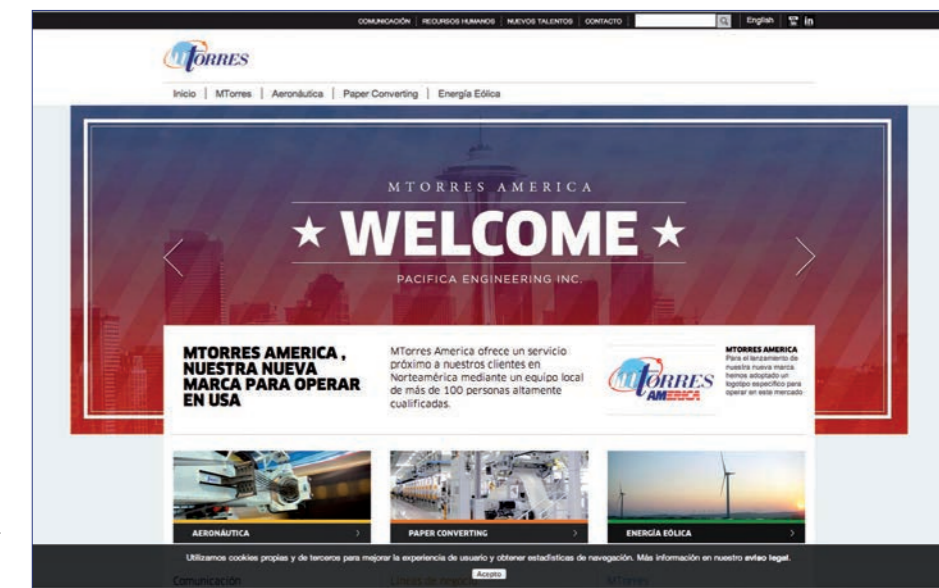
## Grown

# 72%

**LOCAL STAFF** Since the acquisition of Pacifica Engineering Inc. in September 2012 until September 2013, our local staff has grown more than 72%.

MTorres America shows our compromise with the American Aerospace Industry by proposing a closer service to our North American customers thanks to a local team composed of more than 100 highly qualified people.

We have recently launched our project "Product Development Offering" within the MTorres' Strategic Plan. Its main purpose is to strengthen the development of our organization in the US and to provide solutions from a closer way to our customers.



For the launch of our new brand we have adopted a specific logo, in views of working with it in this market, as well as a new micro website [www.mtorresamerica.com](http://www.mtorresamerica.com) that we invite you to visit.