



## New Centre for Research and Development

### **A350 XWB:**

FACC delivers first components

### **Boeing 787:**

Successful in scheduled service with FACC technology on board

### **Embraer:**

From the beginning of aviation in Brazil to a high-tech aircraft manufacturer



## CONTENTS



08 **FACC delivers components and systems for the Airbus A350 XWB**



12 **Boeing 787: On board, technology made by FACC**



14 **The hat that launched a thousand ships**

- 04 **Investment:**  
New Centre for Research and Development
- 08 **A350 XWB:**  
Long-haul jet takes form  
FACC components on the way to the customer
- 11 **Manufacturing:**  
A380 rear secondary structure
- 12 **Boeing Dreamliner:**  
Successful in scheduled service
- 14 **The hat that launched a thousand ships**  
Embraer: a success story from the beginning of aviation in Brazil to a high-tech aircraft manufacturer
- 17 **Legacy 500:**  
First complete cabin delivered
- 18 **Milestone:**  
First winglets for a Falcon jet delivered
- 19 **VisionAir:**  
The dream of flying, cast in bronze

# The hat that launched a thousand ships

Few aircraft manufacturers in the world can pride themselves in a company spirit which dates back to the very beginning of aviation. Embraer, one of the world's main aircraft manufacturers, is such a company.



**Alberto Santos Dumont – the Brazilian ‘father of aviation’**

Founded as a state company in 1969, it was privatised in 1994. Two cultures successfully merged when innovative entrepreneurship joined technological and industrial leadership. With the courage to try out new things, introduce groundbreaking solutions, and its relentless strive for improved quality in each and every product, Embraer became what it is today: a trend-setter in aviation. The company's corporate philosophy derives from the vision, the ideals and the innovative spirit, according to which Alberto Santos Dumont (1873–1932) – the Brazilian ‘father of aviation’ – once lived. For more than 40 years, Embraer has been contributing to world integration through aviation: it has shortened distances between people and has become

synonymous with the most modern technology, versatility, style and comfort in an airplane. In its pursuit of full customer satisfaction, it has taken its forefather's values a step further: it has turned the dream of flying into reality for many.

## The father of aviation

In the late 19<sup>th</sup> century, young Alberto Santos Dumont, fascinated by mechanics and engineering, and inspired by the books of Jules Verne and the sunny Brazilian skies, dreamed of flying. As the heir of a wealthy Brazilian family of coffee producers, Alberto Santos Dumont was later able to study physics, chemistry, mechanics and electricity in Paris. He was determined to turn his dream of flying into reality – hence his interest in balloons. In 1898, he flew his first own balloon, named *Brésil*. The spirit of modern-day aviation was born when he started designing steerable balloons (so-called dirigibles) which could be self-propelled through the air. Until 1905, he built and flew eleven dirigibles and even designed a helicopter.

The first ‘sportsman of the air’ – as Alberto Santos Dumont liked to call himself – quickly became famous in Europe and enjoyed high-level friendships. In 1904, he visited the United States and met President Theodore Roosevelt at the White House. Roosevelt was interested in flying machines as weapons of war, a notion Santos Dumont did not share.

## 1906: first unassisted take-off

Back in Europe, he worked on gasoline-powered engines for his dirigibles. Finally, on 23<sup>rd</sup> October 1906, he succeeded in flying a heavier-than-air machine for about 60 metres at a height of 2 to 3 metres at Bagatelle in France. His *14-bis* flew without any artificial means of take-off. A month later, after having added ailerons on the wings, he made four more flights, the longest being a record-making 220 metres at a height of one metre and lasting 21 seconds. His success was internationally publicized, and he became known as the first man to have flown by means of an unassisted take-off.

Mauricio Martins de Almeida Filho, Embraer's Vice President Executive Jets, points out that the Wright brothers, although credited with having made the first proper flight in North Carolina in December 1903, used a launch catapult for their flight. “For the 100-year commemorations held at the same Bagatelle Field in 2006, we sponsored a restaging of Alberto Santos Dumont's historic flight with a *14-bis* replica. It really flies!” Mr. de Almeida proudly reports, and refers to video footage which impressively documents the *14-bis*' airworthiness.

## The spirit lives on

Brazilians honour Alberto Santos Dumont for his innovative spirit, his

courage to try out new things, his contributions to science and aviation, and for his impeccable manner of dress. With his ever-present, signature Panama hat, he could always be easily picked out of a crowd.

At the time – and in absence of modern air traffic control restrictions - it was also not unusual to watch him float along Paris boulevards at rooftop level in one of his airships. In 1909, he produced his *Demoiselle* monoplane, the predecessor of a modern light plane. On one of his demo-flights he got lost and experienced engine failures, but landed safely at a castle. When the local count invited him to dinner, Santos Dumont was worried for the first time that day: he was not dressed for the occasion!

We owe another invention to Santos Dumont, or rather his friendship with Louis Cartier: the first wristwatch. Instead of awkwardly checking his pocket watch, it allowed Alberto Santos Dumont to keep track of time with his hands on the flight controls. He then wore the wristwatch on every flight, including his world record-making 220-meter flight, lasting 21 seconds, on 12<sup>th</sup> November 1906.

### Embraer: a high-tech success story

Throughout its history, Embraer has been inspired by its famous countryman. The company's prestigious executive jet programs and special quality initiatives, which Mauricio Martins de Almeida Filho is responsible for, reflect this inspiration. However, Embraer's overall success can be attributed to the fact that it is involved in all stages of a complex process: design, development, manufacturing, sales and after-sale support for aircraft in the segments of commercial aviation, executive aviation, defence systems and agricultural aviation. It has to date produced more than 5,000 aircraft that operate in

92 countries on 5 continents. It is the market leader for commercial jets with up to 120 seats, and has made a name for itself with some of the best executive jets in operation. Embraer had its IPO debut at the New York Stock Exchange in July 2000. Currently, 53.15% of its shares are publically listed.

Key success factors have also contributed to the company's leading market position: state-of-the-art technology, a workforce of about 17,200 highly qualified employees, cash intensity, flexibility, and a global presence. Most important though is Embraer's uncompromising quest for full customer satisfaction at the very basis of its entrepreneurial activities.

In 2010, the company achieved USD 5,355 million in net sales and USD 347 million in net income. While executive aviation sales make up for 16% of all sales, the lion share is commercial aviation with 59%. The rest divided between defence and security, and other services. Revenues are fairly equally distributed: 33% in Europe, 22% in the Asia-Pacific region, 15% in Latin America, 13% in Brazil and North America, and 4% in other regions. Last year's delivery of 126 light executive jets, 19 large executive jets

and 101 commercial jets accounted for 2.06% of Brazilian exports.

2010 investments comprised USD 151 million in research and development, and USD 74 million in properties, plants and equipment. However, environmental initiatives are part and parcel of Embraer's investments. This includes reforestation and environmentally friendly research projects, as well as the Ipanema crop duster - the first certified serial production of a 100% biofuel-powered aircraft. Since 2004, Embraer units in Brazil also operate according to the ISO 14001 certification. It was the first aeronautical company in the world to accomplish this goal. In 2008, Embraer, together with major industry players, signed the declaration on climate change during the third Aviation and Environment Summit in Geneva, Switzerland.

An airplane's stylish looks are particularly important. For its Phenom 100 very light executive jet project (combining bold performance features, comfort and design with low-cost operation and maintenance), Embraer received the *FINEP 2007 Award for Technological Innovation* in the product category. A year later, Embraer's Phenom jet family (Phenom 100 and 300) and Lineage 1000 executive jet won the prestigious *IDEA/Brazil Design Award*.

**In 1906, Alberto Dumont succeeded in flying his legendary 14-bis on a record-making flight, it flew without any artificial means of take-off.**



## FACC: Supplier of the Year 2009 & 2010

Embraer selects its executive jet suppliers very carefully. They have to have matching technical capabilities, reliability, production methods and quality standards. When Embraer embarked on newer versions of its Legacy 450 and 500 executive jets, it wanted to add a new touch to the interior. The goal was to offer the best in style and comfort.

FACC was the supplier of choice: it not only met all stringent requirements, but also best matched Embraer's corporate values and day-to-day relationship objectives. Mr. de Almeida commends FACC for its outstanding expertise, its cutting edge technological know-how of composite parts and the flexibility to design different and ultra-modern shapes. Together, the Legacy's innovative design ideas were turned into reality. In 2009 and 2010, Embraer therefore acknowledged FACC's excellent quality standards, flexibility, delivery performance, innovativeness and customer support with its *Supplier of the Year Award*.

**Assembly line of the Brazilian aircraft manufacturer Embraer in São José dos Campos**



## Unwavering excellence: a constant companion

Irrespective of the overall economic situation, Embraer remains steadfast in its unwavering strive for excellence, in seeking to exceed customer expectations, and in its corporate philosophy. To this end, the company launched an internal productivity improvement programme a few years ago. The *Embraer Entrepreneurial Excellence Program – the P3E* – was born to strengthen the internal culture of excellence, improve efficiency and implement best managerial practices. It allows the company to maintain its high productivity levels and stay competitive even during times of severe economic pressure. Embraer has also extended the programme to some suppliers, providing training support and assisting with improvement measures to increase cost-effectiveness and competitiveness.

“When we set out to really penetrate the business market with our new Phenom 100 and 300, and Lineage executive jets in 2005 we had a vision. We wanted to become one of the main players in the market. Only five years later, with these airplanes in production and the launch of the Legacy 450 and 500, we can say that we are one of the main players. It was a huge effort. But, we wanted to change the market perception of each segment with high-class value, comfort, technology and innovation,” Mr. de Almeida explains Embraer's visionary crisis management.

It is what makes Embraer optimistic about the future and the steadily growing executive jet market in today's globalised world. Nowadays, many customers regard their executive jet as an essential productivity tool. They can do more in less time, enjoy more travelling comfort and speedy processes at airports, and they are independent from commercial flight schedules.



Mauricio Martins de Almeida, Embraer's Vice President Executive Jets, explains the analogy to the steerable airships of the Brazilian ‘father of aviation’: “When we refer to Alberto Santos Dumont we are reminded of *‘the hat that launched a thousand ships’*. With the presentation of the 1,000<sup>th</sup> jet of the ERJ145 family in 2007, we reached the historic milestone of 1,000 aircraft of the regional jet family produced in a little over ten years.”

Fast growing markets, such as China and the Asia-Pacific region, are prime examples. In the third quarter 2011, Embraer's value of firm order backlog already amounts to USD 16 billion.

Carrying the past into the future, Embraer aims at becoming one of the world's top players in the business aviation market. “Our customers are our most important asset! Therefore, year after year, we want to offer even better products and services. We want to grow among the leaders with the help of our loyal team and even better quality. At Embraer, we have a common vision, and we share the spirit of aviation!” Mr. de Almeida concludes. “Perhaps, when you next arrive at Rio de Janeiro's Santos Dumont Airport or visit one of our facilities, you will be able to feel some of this spirit too.”