

# **Airship do Brasil bets on computer simulations to produce cutting edge technology.**

The aerospace sector is one of many, mainly distinguished for its high technological capacity and human intellectual capital within the Brazilian industry complex and increasingly gains more visibility within national context. It is also responsible for promoting others sectors by stimulating the continual improvement of products within its productivity chain through the incorporation of innovative procedures and sensitive technologies that give the local aeronautical sector independence from imports and larger participation for export markets.

Due to these reasons, the aeronautical sector is considered a strategic asset to the development of Brazil. One company that has been gaining growing attention for producing state of the art technology is Airship do Brasil, a full, national homegrown company whose headquarters is located in São Carlos in the state of São Paulo. ADB specializes in development, fabrication, commercialization, and operation of aircraft and other solutions utilizing lighter than air (LTA) for cargo transport, infrastructure patrol, and sensory and monitoring services.

Additionally, the company offers logistical support, security, surveillance, publicity, aerial-geophysical, weather and environmental services. Intending to better understand how ADB is adding value and developing innovative products, ESSS has interviewed Daniel Diego Milstein Gonçalves, the company's Chief Technical and Operational Officer (CTO / COO).

**ESSS** – ADB is specialized in fabricating, developing and commercializing aircraft and other solutions utilizing lighter than air technologies. What are the main challenges in working with these types of projects?

**Daniel Diego Milstein Gonçalves** – Lighter than air technologies, even though they may be older than today's mainstream tech, are not very common. Consequently, there is a great shortage of man power with previous experience and/or knowledge. There is also the aggravating factor that today's universities do not put a lot of effort into this area.

This situation makes the developmental projects of ADB unique within Brazilian context, encumbering us with costs and deadlines. Beyond that, there are some particularities to solving unique problems related to LTA, such as cargo transfer. When

cargo is delivered, there must be compensation with ballast, making the operation more complex compared to conventional means.

Even though it is complicated there is a solution, which involves ventilation of thrust gas, which turns out to be helium, this is an economically impractical since helium is a non-renewable resource. The challenge then, is the development of technologies and materials that permit these types of operations in a safe and cost effective manner (such as using hydrogen as thrust instead).

**ESSS** – What are ADB's future projects?

**Daniel Diego Milstein Gonçalves** – The company has the objective the development of large-scale aircraft for cargo transport. For this project, we will navigate “unknown waters,” and to do this in a safely manner we are using computational tools for our projects, guaranteeing safety and economic feasibility.

**ESSS** – Have computer simulation tools been great allies in the development of LTA tech? In what way is ADB using these simulation tools?

**Daniel Diego Milstein Gonçalves** – Yes, especially with structures (for example, the analysis of stabilizers and gondola for the ADB-3X-01 project) and aerodynamics.

**ESSS** – The aerospace sector is responsible for generating state of the art technology. Do you consider the utilization of computer simulation tools to be essential to the development of these technologies?

**Daniel Diego Milstein Gonçalves** – The particularities of said industry, specific market niches which we are inserted in and the urgency for positive cost-benefit relations have greatly compressed our possibilities. Due to these aspects, our error margins in relation to predictions have to be as close as possible when we use it to compare project and final product. Only good quality platforms can guarantee us the accuracy levels we seek, and that's where ESSS's suite comes in as a powerful ally.

**ESSS** – What are the main differences between the LTAs of yesteryear compared to those of today?

**Daniel Diego Milstein Gonçalves** – What has changed? In large part, materials. Today they are lighter and more resistant, the bases for material certification are more demanding and restrictive which makes the use of state of the art technology one of the only subsidies which guarantees us lightness and safety in our products.

**ESSS** – ADB bets on LTA technology. What is the company's intention in relation to the diffusion of this tech in national territory?

**Daniel Diego Milstein Gonçalves** – LTA technology has always been amongst us, since the early days of aviation. There is a strong will in ADB in promoting it and showing that it is viable within certain market niches. In a country with vast dimensions such as ours with enormous logistical difficulties and precarious transport

infrastructure, LTA solutions are more than viable, they are the solution to the unique demands that Brazil has, and surely ADB will be there to provide the very needed solutions.