

COLLABORATIVE EFFORT TOWARDS CLEAN AVIATION

Since flying mostly is a transnational activity, it is no surprise that the Brazilian aviation company Embraer collaborates with partners all over the world. One of their long-standing partners is the Dutch Delft University of Technology. Luciana Ribeiro Monteiro, Technology Development Analyst at Embraer, and Henri Werij, Dean of TU Delft's Faculty of Aerospace Engineering, explain the added value of working together for both parties.

Embraer and TU Delft go way back: as far as Luciana Ribeiro Monteiro and Henri Werij know the bonds between both institutions date from over twenty years ago. To strengthen these bonds even further and make a collaborative effort toward clean aviation, Embraer X – Embraer's innovation arm – recently opened an office at the Aerospace Innovation Hub@TUD.

'We already had an office in Amsterdam for sales and maintenance,' Monteiro tells. 'But we decided to open an additional office at the Aerospace Innovation Hub@TUD as well, to facilitate the interaction between science and industry and start new partnerships in Europe. Europe's sustainability agenda is a very interesting opportunity for us. Since we have tight collaborations with multiple Dutch players and the Netherlands is strategically positioned within Europe, we decided that Delft would be the right place for us to accelerate innovation in sustainable aerospace.'

SHARED ATTITUDE

One of the reasons this partnership works so well is that employees from Embraer and academics and students from TU Delft share their open attitude, agree Monteiro and Werij. Monteiro: 'It is easy to work with the Dutch: they are not complicated, and their ambitions fit with what we want to do. We always feel very welcome, people are open to anything we suggest. That is really a lot like the atmosphere at Embraer, where every idea is embraced and people are really helpful.' 'Embraer is very open to explore new ideas and views from our students,' adds Werij. 'At our university of technology, we conduct science that leads to applications in society. Therefore it is crucial for our scientists and students to understand the actual needs of the field and get informed by the engineers of Embraer about the practical issues they encounter in their daily work.'

The collaboration between Embraer and TU Delft goes beyond the Faculty of Aerospace Engineering alone, Werij stresses. 'Even though my faculty is the first contact for Embraer, the company is working with other faculties as well.' Monteiro: 'We have a Memorandum of Understanding with TU Delft, which

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Delft University of Technology

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comprises some long term lines of research. Each year, we jointly decide which topics we will prioritize for that year. The common thread in all of these topics is sustainability. In our case, that theme comprises a broad variety of subjects, ranging from developing lightweight materials and alternative fuels to understanding collective passenger behavior and designing interiors that make passengers feel safe and secure.'

TOWARD CLEAN AVIATION TOGETHER

One of the large scale programs both partners are currently engaged in, is the Dutch Growth Fund program 'Aviation in Transition'. 'For us, this program is an amazing opportunity in terms of the available funds and the commitment of all the partners involved,' says Monteiro. 'This is an excellent example of how over the years TU Delft has helped us to understand the Dutch and European ecosystem and brought us into contact with opportunities to collaborate with other partners as well. As a matter of fact, knowing about this unique opportunity, in 2021 we decided that we would focus on the Netherlands for developing hydrogen as a sustainable fuel option.'

The collaboration is a very organic one, both Werij and Monteiro say. 'For example, Embraer is one of our most active partners in our Joint Interdisciplinary Projects,' says Werij. 'These are projects where our master students work in interdisciplinary teams on real business cases.' 'Since 2019, we have participated in these projects every semester,' adds Monteiro. 'It is fascinating to combine experienced engineers of ours with the

fresh ideas of students. For us it is very valuable to see how they sometimes take a completely new turn in certain projects.'

Besides hearing about their ideas, getting to know new generations of students is also an interesting aspect of the collaboration for the Brazilian company, Monteiro says. 'We use these contacts to scout for new talent.' That is also an important added value of this partnership as far as Werij is concerned. 'For students it is very motivating to experience the possibilities of aviation as a work field during their studies. That helps them understand what they can do when they stay in aviation, instead of drifting off into entirely different fields.'

And it is exactly that human capital that is indispensable for the aviation sector to become carbon neutral by 2050, as is the goal the International Air Transport Association committed to. 'This challenge is about changing an entire ecosystem, and we want to be at the forefront of this development,' says Monteiro. Werij adds: 'This transition goes beyond the aircraft alone. It is also about transforming airports, operations, transport and production of alternative fuels. Industry and academia have to come together and explore different routes, since there is no one-size-fits-all solution for all aircrafts and airports. Overall, I hope that together we can contribute to system changes that are required in aviation. And since as an aircraft producer, Embraer focuses on the smaller planes, this specific collaboration enables us to bring new ideas further fast.'



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Luciana Ribeiro Monteiro
Embraer



AVIATION IN TRANSITION

Through a 383 million euro investment (of which 119 was conditionally awarded) by the Dutch government in its National Growth Fund scheme, the Dutch aviation sector is focusing on research and development for climate neutral aviation with hydrogen at the center of attention. Part of the 'Aviation in Transition' program is the setting up of an open innovation think tank that brings together academia and industry to develop a broad vision for an ecosystem and draw a roadmap for research and development of innovations for climate neutral aviation. Within the think tank, the partners will develop and demonstrate pioneering innovations and technologies and entice market parties to invest in further developments of these new sustainable solutions.

