Delft Global in a nutshell.

Offices in Brazil, China and Vietnam; international co-operation between innumerable researchers and organizations throughout the world; more than 18,000 Delft alumni working abroad; over 600,000 people from all over the world registering for a Delft massive open online course (MOOC); and around 3,150 foreign students coming to Delft each year. TU Delft is truly international.

Delft Global in a nutshell.
TU Delft in Brazil

‘People want to see a professor’

For the past three years, TU Delft has had an office on the campus of Unicamp university in Brazil. But how do you organise joint teaching and research programmes 10,000 kilometres away?

“That takes passion.”

One room in the white building housing the Institute for Energy Research: that is the full extent of TU Delft’s physical presence at Unicamp. The University of Campinas, to give it its full name, is situated on a former coffee and sugar plantation at an almost two-hour drive from São Paulo airport in Brazil. Anyone calling that office is redirected to the administrative department on the ground floor, where either Fabiana Gama Viana or Lilian de Andrade Paulino picks up the phone. They are responsible for the day-to-day running of the outpost shared by TU Delft and BE-Basic. Unless someone from Delft happens to be in Campinas, all contact is by telephone or e-mail.

The office is empty much of the time, but it is not in fact the most important part of the Delft-Unicamp partnership. That centres on the shared interest that Brazil and the Netherlands have in research and education pertaining to a sustainable biobased economy, as well as on tutors and students who complement and learn from one another. And above all, it centres on personal contacts that pave the way for new research relationships.

Founders

The founders of the partnership, Delft professors Luuk van der Wielen and Patricia Osseweijer, personify those relationships. Osseweijer is a professor of Biotechnology and Society as well as Scientific Director of TU Delft Brazil. Van der Wielen is a professor of Bioprocess Engineering and chairs the board of BE-Basic. They liaise on new and ongoing research and educational initiatives with professors, industry and governments, in both the Netherlands and Brazil. They travel to Campinas about once a month to give lectures and to discuss the progress and registration of current and new dual-degree PhD students – those enrolled at both Unicamp and Delft.

Osseweijer and Van der Wielen also meet research partners and financiers. In São Paulo on 23 November, for example, they signed agreements on behalf of BE-Basic to renew and extend Dutch-Brazilian cooperation in the field of sustainably produced biofuels for the aviation sector and the use of the manufacturing residues as chemical building blocks for new products.

Hosted by the Brazilian research and innovation organisation Fapesp, the signing ceremony was also attended by representatives from the Dutch Ministry of Education, Culture and Science (OCW) and from the local consulate, as well as commercial partners DSM, Corbion, Boeing and Embraer, Brazilian biotechnology laboratory CTBE, Unicamp, the University of São Paulo and the Dutch research institute KNAW-NIOO. Those present greeted each other like
old friends. After the meeting Hans Schutte, Director-General at OCW, said that he was very pleased with this ‘biggest scientific partnership between the Netherlands and Brazil’: “This is a fantastic project, an example to others. Brazil is one of OCW’s priority countries. BE-Basic delivers scientific results and human capital. What’s so impressive is that this partnership unites so many parties. That takes passion. TU Delft has two people with that kind of inspiration [Osseweijer and Van der Wielen – ed.]. What’s more, they’re capable of forging links with businesses, so that they benefit as well.”

**Eucalyptus**

Like all other forms of contact – with professors, students and governments – interaction with the business community requires a considerable investment of time. Links between universities and private companies are few and far between in Brazil. So Delft’s experience in this area adds value, Unicamp researchers say. BE-Basic has good relationships with big firms like Akzo-Nobel, KLM, Embrearr and BP. One prominent topic in the contacts is bioethanol, a major industry in Brazil. It is usually derived from sugar cane, but – as he explains a couple of days after the São Paulo ceremony – Van der Wielen is keen to use other crops as well. So he has an appointment at the paper and pulp mill Suzano, just outside the town of Americana, half an hour from Unicamp. The plant runs huge eucalyptus plantations and is looking for ways to make new products out of cellulose and lignin, both of which are derived from the wood. The two Dutch academics drive over to the mill in their rented car. Because, Van der Wielen says, “In >>

**Education**

TU Delft, BE-Basic and Unicamp have delivered six joint Master-level courses in recent years, some in collaboration with companies like DSM, and several more are in the pipeline. The most recent of these was entitled “Business Development: Beyond Bioethanol”. The Brazilian students were challenged to compile a business plan for a profitable company producing sustainable biokerosene for aircraft. Aviation fuels are a new and important area of research for BE-Basic. As well as these conventional courses, the partners also run a joint MOOC (massive open online course) on Industrial Biotechnology.
Brazil you can’t just rely on what people tell you, or on nice pictures. You have to take a look for yourself. People want to see a professor. Only then do doors open.”

After some small talk – another essential in Brazil, according to Osseweijer: “The Dutch get to the point too quickly” – the conversation turns technical. During their guided tour of the plant, the professors examine three experimental setups. The first extracts oil from wood chippings. The second has a soggy white mass floating in it. “That’s cellulose”, Osseweijer explains. “It’s used to stiffen paper or to strengthen cosmetic products.” The third experiment entails reducing the size of lignin particles. But they are still too big for use as, say, a substitute for rubber in car tyres. “They’re micro, but they need to be nano”, is how Osseweijer sums up the problem. Standing next to the throbbing machinery, Van der Wielen suggests having a student make a model of the production process. The first hook for a concrete line of research has been cast.

The joint TU Delft Brazil/BE-Basic Brazil office at Unicamp officially opened on 21 November 2012. The initiative originally came from TU Delft. In the past five years the TU Delft Executive Board has invested almost €1.5 million in the project, and the faculty of Applied Sciences close to €800,000. With further contributions from BE-Basic projects and from the research and innovation organisation of the state of São Paulo, FAPESP, as its principal financiers, the total five-year investment amounts to some €13 million. Most of that money has gone into joint research projects on the biobased economy.

Six Delft PhD students and ten PDEngs (on shorter professional doctorate programmes) have already conducted research in Brazil. Five Brazilian PhD students have come to the Netherlands, and another twenty are ready to follow them. The funding for these exchanges is now available, as earlier this year the Dutch Minister of Education, Jet Bussemaker, reached an agreement with BE-Basic to facilitate a hundred dual-degree students between now and 2025.

During a meeting in São Paulo the Dutch professors signed agreements to renew and extend Dutch-Brazilian co-operation with research partners and commercial partners.