



Success story of an engineering student from Arts et Métiers in Texas A&M

Published on Friday March 9, 2018

View online : <https://www.france-science.org/Success-story-of-an-engineering.html>

Texas A&M University, in College Station, is among the 100 best universities in the world, according to the Shanghai Ranking. Having seen numerous scientists, political and business leaders as well as future astronauts graduating from its classes, its reputation is established at home and abroad. And it is looking abroad, with a strong international policy with numerous cooperation and exchanges agreements established with more than a hundred universities and institutes all over the world. Earlier this year, the Office for Science and Technology in Houston organized with Texas A&M a [workshop on sargassum](#), an Atlantic algae, but it is deeper inland that we met Homero Lopez and his student, Tristan Petit de Servins.

Tristan just graduated from Texas A&M, but through a different path than most. Before being a student in Texas, he was registered at the ENSAM, Ecole Nationale Supérieure des Arts et Métiers, a prestigious engineering school in France where he and a dozen other students went through a transatlantic partnership program to finish his studies in one of the United States' many universities. Prepared to face the challenges and cultural specificities he would find in the host country, he chose this Texan university to work for two years and graduate from both it and his home institute.

Texas A&M came as a logical choice, considering not only its reputation but the common history it shares with ENSAM through numerous partnerships, up to and including the signing in November 2017 of [an agreement to establish a common campus in Aix-en-Provence \(France\)](#). First things first, however, and once arrived in one of the biggest actors of research and higher education (third only to California and the State of New York), Tristan's first job was to find funding for his studies, as university can be much more expensive in the United States even though [numerous opportunities are available to help pay for it](#).

Meeting various professors, the young student eventually met Homero Lopez, researcher in Texas A&M. Through his excellent relations with both the industry and public funding agencies, his different projects allowed him consequent grants, which he partially used to not only pay for Tristan's studies but also grant him a stipend in exchange for research activities in addition to these. A win-win agreement.

Months and years went by, and with them both courses and successful exams, as his graduation ceremony showed, but his stay in the US brought even more. His research project became a detection system aimed at preventing corrosion damage on the many underground pipelines buried under urban centres. Carrying liquids and gases around the cities like blood to a body, these pipes are usually placed under roads, but corrosion can damage them enough for leaks to appear, with massive costs for both utility companies and city administration. Being underground, these pipes are also hard to check with conventional methods while digging them up is a lengthy and expensive process, so both false positives and false negatives are expensive enough to justify the development of a reliable remote detection method.



Challenge accepted for the team. Through months of research and development, the solution offered was an electromagnetic version of a sonar, capable of detecting differences of behaviour between pairs of pipes (as city pipes are usually paired for each required direction of the current). As the first prototypes were designed and developed, the French engineering student went to Canada and in (or under) the streets of New York for a testing campaign.

With successful results. Not only were the results scientifically interesting, but adopting the local tradition, they led to a common patent between professor Lopez and Tristan Petit de Servins, covering this new technology

that was still being improved as we met them. Newly graduated, his goal is to come back to France to work on this system and commercialize it through a start-up, an initiative appreciated by ENSAM's administration which booked him a position in their incubator.

For professor Lopez too, it was a particularly successful experiment, as he was able to discover the specificity of French engineering, which is taught and practised in a very different way compared to the United States'. To quote him, he is used to work with engineers who solve issues by asking themselves "What shall I do?" while the French tradition is to ask oneself "What shall I understand?". Through this difference, which completed the US expertise, they were able to achieve the aforementioned results.

With a more than satisfying result, his opinion is clearly in favour of recruiting new French students for such academic exchanges, where courses and research activities coexist for such results that only come thanks to a meeting of worlds. The work done by the Office for Science and Technology as well as French and US universities aim to further this kind of synergy through exchange grants, institutional partnerships and streamlining of student visa processes.

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