

Innova

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La Salle · Engineering, Architecture and Management



**THE FUTURE CHALLENGES
OF ENGINEERING**

LA SALLE UNIVERSITY CAMPUS

LA SALLE

“WE STARTED WITH THE MISSION TO GIVE TECHNOLOGY THE VALUE IT DESERVES”

Jaume Anguera holds a bachelor’s in electronic systems and an engineering degree in electronics both from the Universitat Ramon Llull. He also holds an engineering degree in telecommunications engineering and a PhD in engineering both from the Universitat Politècnica de Catalunya. In 1999, he joined Fractus, a company devoted to researching and developing antenna patents for mobile devices.

By Miguel Jordán

What is Fractus’ main activity?

Fractus is a Catalan company that was created in 1999. Its area of work is fractal antennae. It designs miniature and multi-band antennae – ones that can operate with a variety of technologies. It is a product aimed at a very specific sector: mobile telephony or wireless applications like Bluetooth.

How is the company organised?

We’re divided into two departments. One is intellectual property, which is devoted to developing new technologies and

protecting them with patents. The other is products and services, which works with customers and actually develops the technology we have created.

We are more focused on the design and patent aspects, which we sell, and then our customers are in charge of manufacturing them.

One of Fractus’ main features is that research is one of the company’s tangible values. How can you explain this peculiarity?

Fractus is a company whose hard-core is technology. It earns its profits by selling technology. Imagine that we research a new product and patent it, that then gives us the right to sell the user licence to a third party interested in using the technology. For example, Siemens uses antennae that they manufacture themselves, but we sold them the design.

What other services do you offer your customers?

They also ask us to perform feasibility studies on projects when the company wants to launch a product. Fractus then conducts the study to see how it will work and whether it is feasible to launch it on the market. We don’t enter so much into the production and manufacturing aspects; that’s not our business focus.

Is a special interest in research like Fractus’ common in our country?

Fractus has an unusual model for a Spanish company. However, abroad, especially in the United States, it is more common. There is a company there called Walkcom that patented a communication protocol that just a few years later came to be used quite widely in mobile telephony. All the operators that use it have to get Walkcom’s permission, and that’s where the majority of its turnover comes from. This income comes from the fact that back then they spent tonnes of money on research and they have a solid patent.

Fractus was created with the mission of giving technology the value it deserves. This is most certainly because we come from academia. Ignoring manufacturing and setting such stock in R&D gives us this specific approach.

Does the fact that you work with patents make it a highly competitive sector?

Yes. In ten years’ time the sector has evolved a great deal because of the huge strides in mobile telephony. There are many research centres that are working constantly on the improvements that are being requested; for this reason you have to constantly research. With the market expanding, someone else is surely doing it, so you can’t lag behind.



Jaume Anguera

INNOVATION AND RESEARCH

If the market weren't so active, we could work in a more relaxed fashion.

Large companies are constantly launching a plethora of mobile models, and this makes them spur the companies and centres devoted to research. Every year they want more features for their devices, and this stiff competition is also good because it makes the sector improve a lot.

Fractus' interest in R&D has led it to work closely with academia, right?

Given this environment, we decided to align Fractus' interests with those of La Salle's Electromagnetism and Communications Research Group. We began by involving students in the last few years of their degree programmes who could do their end-of-degree project in the company, for students pursuing both diplomas and bachelor's degrees. The students benefit because they are in touch with the business world before finishing their degrees, so they leave the university with experience under their belt, better prepared to face the working world. The second goal of the agreement between Fractus and La Salle is that our company has many means to work on antenna research. These tools are apparatuses with complex measures; obviously they help in the company's day-to-day work, but they also help university research.

Another point in the agreement is that if conditions are favourable, students can join our staff. In fact, 35% of the La Salle students who have done internships with us have later been hired. And since we just began (in academic year 2005-2006), this figure will most likely only rise in the coming years.

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So how can university curricula benefit from this cooperation?

If a company approaches the university, it is helping the academic institution



improve its curricula and syllabi to better adapt them to the true needs of the market. Thus, students leave with suitable training. Often when students graduate, they encounter an unfamiliar reality, and this prior contact with the business world can be very useful for them.

Are they also involved in disseminating the research?

Yes. Another major goal is that these studies can be highly innovative and have an impact on the world of science. Because of that, we disseminate them in joint publications between Fractus and the department of specialised journals, which helps earn academic prestige and international recognition.

In what areas do the students at Fractus work?

The students' projects are devoted to research into new miniature antennae for the mobile telephony sector. This is a segment on the upswing because billions

of cell phones have been sold around the world. These devices come with a wider and wider range of features, such as Bluetooth, television, etc., but the space that they take up has to be the same and they have to be able to operate with many different systems. This is a field that is growing really quickly and there is lots of research yet to be done.

The students already come here with basic knowledge, and here in the company they gradually develop the more practical facets. The ultimate goal is to make a prototype. At Fractus we have laboratories for developing these projects, which are usually very small-sized antennae. Nowadays, another important factor is how these devices work in different environments. At the start of mobile telephony, the only thing studied was how they would operate outdoors. Now that's not enough; we have to take many different variables into account, such as how they operate in enclosed spaces or close to the human body. ☒