

## **ISTOÉ Dinheiro magazine talks about innovation at Fibria**

*Article published in the website covers topics such as carbon fiber, nanotechnology and bio-oil*

ISTOÉ Dinheiro, a Brazilian business magazine, published in its website on May 6<sup>th</sup> a report on the progress of investments made by Fibria in research and innovation. Entitled “A fórmula de crescimento da Fibria” (Fibria’s growth formula), the report outlines the future prospects for the company, which plans to invest in new markets such as carbon and bio-oil production, as well as nanotechnology by 2025.

Carlos Sambrana, the reporter, has also included excerpts from his interview with Marcelo Castelli, CEO of Fibria, at the end of the report. The report is also available in the print version of the magazine, which has already hit newsstands across the country.

***Read the full report***

### **Fibria’s growth formula**

Producing carbon fiber and bio-oil, and betting on nanotechnology. These are the plans of the pulp giant to enter new markets and to reinvent itself. The goal is to add more than R\$ 2 billion to its revenues by 2025

Marcelo Castelli, CEO of pulp giant Fibria, usually carries out a stressful though necessary exercise to lead the company. Even when things are going well, he and his team project a variety of scenarios, ranging from catastrophes to very minor problems, to see how the company would fare in each case. The problems brought to the table include climate change, social changes, political and economic upheavals, decline in the international market prices ... “We are constantly on the edge.

I emphasize this because whoever journeyed across the desert, as we did, can never relax. Rest, yes, relax, never,” says Castelli, recalling the time when Fibria “used to sell lunch to pay for dinner” in 2009 when it was born from the merger of Aracruz and VCP. Now, with revenues of R\$ 10.1 billion in 2015 and buoyed by solid economic fundamentals, the company can pursue new paths that go beyond pulp, which has been the company’s only product until now.

With the aid of an innovation committee, the company is preparing itself to sell products such as carbon fiber, used in cars and aircraft, components for surgical prostheses and bio-oil for the U.S. market. “It is what we call Fibria 2020/2025. We will continue to grow in pulp, we are open for consolidation, but over time, we will add new businesses that will generate 25% of the company’s revenues by 2025”, said Castelli. “It is not a small dream and we are not entering anything that does not have tremendous potential.”

The strategy seems obvious but few companies in the pulp industry are putting it into practice: utilize 100% of planted forests to manufacture new products. “Our idea is to obtain maximum value per hectare,” said Vinícius Nonino, new business officer of the company. More than that, the goal is to reduce the company’s dependence on pulp, a commodity that is highly sensitive to market prices and which is directly linked to fluctuations in the U.S. dollar. And judging by the projects that are being coordinated by more than 40 scientists working at Fibria research centers in Jacareí, São Paulo, and in Aracruz, Espírito Santo, it

is as if a new company is born with real chances of overtaking its own creator, at least in terms of revenue.

These are technological innovations such as those generated from lignin, a biomass extracted from wood during the pulp production process. Today it is burned to generate 100% of the energy used in the company's three production plants. But the idea is to create byproducts such as resin for gluing wood boards, activated carbon, which is used in water filters and as a catalyst in cars, and carbon fiber. It is estimated that within a decade this type of sustainable fiber, which is 50% cheaper than conventional fiber derived from petroleum, will be available in the market and can be used in the aviation industry and to make car chassis, thus foraying into the billion-dollar automotive industry.

"Today, Nascar already has race cars that use carbon fiber extracted from wood," said Castelli. Cellulose nanofibrils and crystalline nanocellulose are still under development. While the former can be used as a fluidificant for drilling oil fields and as a protective film in food packaging, the latter can be used to manufacture medical prosthesis. To understand the potential of this technology, just look at the price of the product.

While one ton of pulp is quoted at around US\$500, one ton of crystalline nanocellulose costs almost US\$12,000. "We have an innovation committee that works as a funnel," said Fernando Bertolucci, innovation officer at Fibria. "We have come up with 377 ideas, prioritized 144 of them and put 38 projects to work." However, the most important of these is bio-oil, which is used to heat industrial boilers and, most importantly, process oil to produce gas and diesel. In 2012, Fibria paid US\$20 million to become a partner of Ensyn, a U.S. company that owns the technology to produce bio-oil.

In 2014, Fibria injected US\$10 million and last year invested another US\$5 million in the operation. As a result, Fibria owns 12.6% interest in Ensyn, whose partners include Chevron and Credit Suisse. More than giving it a strategic position in the U.S. market, the acquisition guaranteed access to technology, making Fibria the exclusive owner of this bio-oil manufacturing process in Brazil.

The plan is to build a unit in Brazil, budgeted at R\$400 million, with annual production capacity of 22 million gallons. And almost 100% of the production would be exported to the United States, which is interested in this type of renewable fuel. "The U.S. market has the potential to receive 250 units like the one we plan to build here," said Nonino. The business potential for Fibria is huge. "We are talking of billions of dollars," he said. He bases his projections on a policy of incentives for renewable fuels implemented by the U.S. government.

The program is called Renewable Fuels Standard Program (RFS), which took effect in the market in 2005, establishing the replacement of 2.78% of gasoline with biofuel. The initiative was aimed at reducing oil imports by the country. In 2007, the program was expanded and named RFS2. At the time, it was established that the volume of biofuel used in transport vehicles in the United States would increase from 9 billion gallons in 2008 to 36 billion gallons in 2022, which will correspond to 7% of the nation's fuel consumption. Note: for each gallon of biofuel used, the refinery receives US\$3 in tax incentives.

## SYNERGIES

Fibria executives see a unique opportunity in this business because not only does it create a new revenue source, it also leverages all synergies. Around 70% of the wood used in the pulp manufacturing process can be used to produce bio-oil. What does this mean? With the

same wood used to produce 100,000 tons of pulp, the company can produce around 30 million gallons of 3.78 liters of bio-oil each. Exports are also addressed naturally in the company.

After all, Fibria operates in more than 60 ports around the world and 90% of its production of 5.3 million tons of pulp is sold to other countries. Another fundamental aspect of the bio-oil production process is the productivity of its 568,000 hectares of eucalyptus. While the eucalyptus cycle in Europe is 40 years, here it is six years. Furthermore, in the 1970s, six tons used to be extracted per hectare while today, due to heavy investments in genetic enhancement, it is possible to extract 10.9 tons per hectare.

"By 2025 we plan to reach 15 tons per hectare," said Bertolucci. The market usually buys the company's promises. "They are state-of-the-art on the industrial side. It's a company that makes money without forgetting modernization," said Flávio Conde, analyst at consulting firm WhatsCall. The company's constant transformation is based on a three-pronged approach conceived by its technology center. The three fronts are: radial, which seeks leaps in the current business within five years; incremental, which consists of continuous improvements to existing processes; and disruptive, which bets on the creation of new products and technological services.

When technology is not developed internally, the company turns to acquisitions. That's what happened with U.S. based Ensyn, and with Lignol, now called Fibria Innovations, a Canadian company acquired in 2015 that was undergoing judicial recovery but which owned patents for lignin-based products. "We advanced 15 years on this front," said Castelli. The strategy is well regarded by experts. "Large companies are starting to see that innovation is key to survival," said Vivek Wadhwa, director of a study center at Duke University and advisor at Singularity University and one of the 40 most influential people in the world of technology according to the Tech 40 ranking of Time magazine.

But the challenge is huge. "Many companies don't know how to do it because they have an inflexible hierarchy. Today all departments must strive to innovate." Wadhwa also says that the ideal model is a mix of seeking new technologies elsewhere, making acquisitions, and encouraging development within the company. Talking of innovation and new business seems easy these days. But who knows the company's past understands that it took a herculean effort for it to reach where it is today.

Fibria was born when Aracruz and VCP Celulose of the Votorantim group came together to create a global pulp and paper giant. Along the way, however, came the 2008 financial crisis, which imposed a US\$2.1 billion loss from derivatives on Aracruz. Thus, Fibria was born with a massive liability amidst a global crisis, with the mission of dealing with creditors and integrating two different business cultures. During those tough times, net debt was equivalent to 7.2 times cash generation as measured by EBITDA.

"I was using a snorkel to breathe because the water had risen," said Castelli. "Our concern was that we were working hard, but due to external factors we were always back to square one. The feeling was one of flogging a dead horse." What made Castelli believe in the project was the savings that would be generated from the synergies involved, of around R\$4.5 billion. A corporate success story such as this is usually portrayed as a heroic act by an executive who, against all odds, managed to reverse a scorched earth scenario.

Castelli, however, does not make any secret of the difficulties and sleepless nights he endured during the company's revival process. "Before going to bed I used to think, 'wow, the quarter is about to end, what is going to happen?'" He also recalls the effort he made,

when he was with his executives, to not betray his fatigue, stress and dismay. "We almost didn't have the right to be human beings, otherwise the boat would sink. So there was this work of self-motivation and the work of motivating the team." Castelli says he only ever fell apart when he was alone in his home.

In this process of reviving Fibria, he had to fire numerous people, many of whom were his friends, because he had worked at both Aracruz and VCP. "But I had to be rational, pragmatic and do what had to be done. That's life, it's not easy for anyone." In the beginning, he candidly admits, he wasn't able to take care of people or integrate the cultures because he had to save the company. And together with the team that believed in the projects, after many sleepless nights, he did. The synergies captured exceeded R\$5.2 billion, net debt reached 1.78 times EBITDA and now there is cash on hand to plan the company's future.

Compared to the annual investments made by the company, the budget for innovation is still small. This year alone, R\$2 billion will be invested in maintenance and modernization of industrial units, logistics and infrastructure. Another R\$5.3 billion of a total of R\$8.9 billion will be invested by 2017 for the expansion of a plant in the city of Três Lagoas in Mato Grosso do Sul. The research and development area receives a "mere" R\$80 million.

It may seem like a drop in the ocean, but the revolution created by these businesses is equivalent to a tsunami that is capable of reinventing Fibria. "Earlier we used to have an 'or' agenda but now we have an 'and' agenda. Earlier, we either grew or settled debt or gave money to shareholders as dividends or reinvested in the business," he explained. "Now, our modus operandi is "and". We will grow and pay dividends, invest in the business and seek new innovation frontiers. And that's what we are doing," said Castelli.

-----

INTERVIEW WITH MARCELO CASTELLI, FIBRIA'S CEO:

### **"The process of global consolidation is unmistakable"**

Fibria CEO Marcelo Castelli talked to DINHEIRO about the company's new projects. Read a few excerpts from the chat:

#### **How did the idea of investing in other businesses arise?**

In 2009 we conducted a survey of trends, which pointed to the intensification of globalization, technology and global warming. When we connected the dots, we asked ourselves how we could position the company for this scenario. Sustainability then was part of our strategy. We weren't just being nice. We have many opportunities to capitalize on from this new economy.

#### **What are the opportunities?**

We are a company in the renewable forestry business and we can use wood to make products that will replace oil byproducts, such as carbon fiber, lignin, which is a liquid biomass, nanocellulose and biofuel. Then, in 2012 we started to carry out other studies and outlined the company's biostrategy.

#### **And inside the company, did people start thinking differently?**

Our Technology Center spent half the time developing solutions for the forest and the other half helping our daily operations. We went from 2% to 35% in the portfolio of disruptive innovation projects. We realized it was time to change.

#### **How much has Fibria invested in this area?**

We have been allocating an average R\$80 million per year to innovation.

**In the pulp industry, there is much talk of Fibria merging with other giants such as Eldorado Celulose and Suzano. Are there any talks in this direction?**

The process of global consolidation is unmistakable. If you look at our history, you will see that Fibria is the result of consolidation. Consolidation is the best way to create value for shareholders.

**But are there any talks?**

In Brazil, this is not the agenda of CEOs. It's for shareholders. What I'm expected to do is run the company and plan for the future. But as an executive, I'm happy because you don't hear people talk about Eldorado and Suzano. They talk about Eldorado and Fibria, Suzano and Fibria. Everyone wants Fibria.