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DISCLOSURE

Bueno: "There are three different lines of research related to pulp that can become something much bigger than what exists today"



Stora Enso bets on biorefinery

As research advances, the concept of biorefineries becomes closer and closer to the pulp and paper industry. Juan Carlos Bueno, Executive Vice President of Stora Enso's biomaterials area, claims that this is no longer an innovation dream, having already become a reality. "At present, the company is the largest producer worldwide of tall oil, a component used in second-generation biodiesel and fine chemical applications," he exemplifies.

The experience in segments outside pulp production tends to expand, according to Bueno. In this month's Interview, the executive reveals that Stora Enso envisions different fronts for exploring biomaterials and intends to invest in all of them. According to him, market is one thing that is not lacking.

Read more about what is being put into practice at different production units of the company and what the research being currently developed promises for the near future.

O Papel – From Stora Enso's perspective, do biorefineries represent the future for industrial segments that utilize wood as raw material?

Juan Carlos Bueno – Today, when we talk about biorefineries, we envision numerous possibilities. We are talking about the production of new biomaterials, stemming from a specific production process, as is the case of bioethanol and tall oil, a component used in second-generation biodiesel and applied in fine chemical applications. Based on this concept, we know that there exists a wide variety of products to be made, in general, substitutes of fossil fuels. I would define biorefinery as a development area in innovation, in any industrial segment. With regards to advancements seen in the pulp and paper industry, Stora Enso already has significant experiences with the above mentioned products. At present, the company is the largest producer worldwide of tall oil, totaling 130 thousand tons/year – and this is a figure we expect to increase, since we want to expand production to other production units. Production is currently commercialized in the industrial chemicals market. Bioethanol production at our units is also significant, totaling an average of 28 thousand tons/year and consumed internally.

O Papel – Where are these biorefineries installed? Do you intend to inaugurate a pilot plant in Brazil?

Bueno – All biorefineries installed at our pulp mills are located in Europe. We do not yet have a pilot plant in Brazil, but we are already thinking of bringing to Brazil some of the concepts developed at units in other countries. In order for this intention to become reality - not only at mill we have in Brazil, in partnership with Fibria, but also at the one we are building with Arauco, in Uruguay -, we need to establish agreements with the respective partners. But all this alignment still needs to be done and none of the current agreements address the issue of producing products from biorefinery yet.

O Papel – What is the company's policy in relation to research development? Are there studies being tucked in at different units or is there just a single research center that disseminates results achieved to the other production complexes?

Bueno – We have several scientists working, the majority at European units. These researchers dedicate efforts to exploring the potential of resources we have. Once an opportunity is identified, continuity is given to the work so that we can discover at which mills and

at which locations it can be applied. Therefore, most of Stora Enso's research efforts are located in Europe, but the final stages of development and applicability vary. Additionally, here in Brazil we are currently conducting studies to understand the type of local research that should be carried out, so that we do not become exclusively dependent on results obtained in Europe and so that we can incorporate certain aspects of our local reality. The differences already begin with the trees: while in Europe we work with pine and acacia, in Brazil, we work with eucalyptus. So, even though we do not have any research being developed locally, we intend to soon begin investing in studies in the region.

O Papel – What are your short, medium and long-term expectations with regards to research in the biomaterials area?

Bueno – In terms of research in the short-term, we have those aimed at products we already produce and that we intend to boost production, such as bioethanol and tall oil, mentioned earlier. For the medium term, I would mention the microfiber from pulp, which is also known as microfibrillated cellulose (MFC). The concept is that of a cellulose that confers the same characteristics to the end product, with the advantage of being used in less quantity (20% to 30% reduction). We already have a pilot plant operating in Finland to produce this cellulose. In terms of long-term research, I would list carbon fiber. When treated in a specific manner, cellulose can produce the equivalent of a carbon fiber. And the uses for this fiber are the same as for the carbon fiber that's currently marketed, and used in the automotive and aerospace industries, among others. Therefore, having the possibility of producing carbon fiber from cellulose is a very interesting matter. In summary, we have three different lines of research based on pulp, and that can become something much bigger than what it is today.

O Papel – Is there a consolidated market for these new products in Brazil too?

Bueno – There's no longer that doubt of "is there a need for these products here?" Without a doubt, it is a mature market and a global market. This means that products stemming from biorefinery can be consumed locally or be exported. In fact, Brazil stands out as a country highly inclined towards the development of technologies and use of renewable materials. Ethanol is an excellent example of this. But even so, we should

not lose interest in exporting these biomaterials to other markets. We need to focus on the industries that consume these products the most, independent of where they are located. What I mean is that market location is not a limiting factor. And it's not because the Brazilian market is eventually not ready that we're going to stop pursuing these biorefinery alternatives.

O Papel – What factors impede Brazil's pulp and paper industry from investing in this type of research and betting on new markets?

Bueno – The first factor, which reflects not only in biorefinery development, but in everything, is Brazil's tax load. The country urgently needs to undergo tax reform, which fact is nothing new to anyone. The complexity of Brazil's tax system is another constraint that directly affects investments and the strengthening of competitiveness in general. The inflation of costs is another factor that makes the country lose points in terms of competitiveness. The behavior of the US dollar is another key factor when it comes to thinking about investing in research and new markets. This entire set

of factors leads companies to assess very precisely the margin of risks involved in investing in the country, independent of business sector. Market situation is not the only thing that needs to be analyzed, but also the competitiveness of the local operation in comparison to what other countries can offer.

O Papel – Within the context of biorefinery, does the pulp and paper industry have competitive advantages in relation to other industries that work with biomaterials?

Bueno – Without a doubt, the technologies of our industry are very well established. It is an extremely competent and competitive industry that counts on cutting-edge technologies and presents considerable technological development for biorefinery, that is, to take advantage of the natural resource it has in the best manner possible. And, contrary to what many people think about pulp and paper, there is still a lot to be done in terms of development. I envision our industry with huge potential to be exploited. But this certainly requires considerable effort on the part of players and partnerships with universities and research centers. ■

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