

## THE SPECTRUM ROUND TABLE

Getting to the heart of industry matters



# THE FIBER REVOLUTION

## Is the industry ready to replace fossil-fuel-based products?

SPECTRUM recently brought together industry professionals from leading research organizations, associations, and companies to discuss the opportunities and challenges being presented to pulp and paper producers in the replacement of plastic products with paper and board. Over the following pages are excerpts from the enthusiastic panel discussion that was held at the Confederation of European Paper Industries' (CEPI) headquarters in Brussels, Belgium.

**What are you and your organizations working on right now when it comes to replacing plastics with fiber-based products?**

**ELINA PÄÄKKÖNEN:** We are working on lots of different projects at VTT when it comes to fiber replacing plastic, but one of the most exciting ones my particular team is currently working on, is in the development of foam forming to replace EPS (expanded polystyrene foam). Foam-formed, fiber-based products are perfectly able to replace numerous products that are currently made out of polystyrene – for instance, cushioning materials used in various packaging. The beauty of a foam-formed fiber product is that it contains only fibers, water, a surfactant, and air, meaning it is at once both renewable and recyclable – unlike polystyrene.

**FREDERIK ROSÉN:** At RISE, we carry out a lot of surveys globally in the area of packaging, and it is clear that consumers the world over are demanding products that are good for the environment. However, we can't escape the fact that plastic has properties that paper does not have – at least not yet. At RISE, we are doing a lot of research into changing the fundamental properties of paper, for instance, introducing stretchability, much like is seen in the plastic product cling film. One of the partners we are researching with has developed a technology that can be retrofitted to a paper machine that will allow paper to stretch. The fact is, if the industry wants to take market share from plastic, it must work on much more than just flat surfaces and cardboard boxes.

**ESA TORNIAINEN:** At Paptic, we are noticing that our customers, particularly in the packaging sector, are keen and ready to replace plastic products with renewable ones. We are busy bringing our novel wood fiber alternative in packaging to the market and we are getting a very favourable response to how our product looks and feels when compared to plastic, especially when it comes to shopping bags. Brand owners are now taking action, actually faster than what was expected a couple of years ago, and there is an urgent need for sustainable materials that fit to the existing value chains of packaging.

**BERNARD DE GALEMBERT:** Working for CEPI, I take much more of a "helicopter view", as we are not dedicated to products or output. It is our aim here at the confederation to create an environment where the pulp and paper industry is at the core of the bioeconomy and link it directly to the circular economy, encouraging policy makers to enable opportunities for fiber-based products to blossom. We are no longer talking



Paptic shopping bags are a renewable, recyclable, and reusable alternative to plastic.

### FROM THE INDUSTRY

**Elina Pääkkönen, M.Sc (Tech)** – Research Scientist, VTT Technical Research Centre of Finland Ltd.

**Frederik Rosén, MBA, M.Sc** – Vice President, Market Strategy & Business Development, RISE Research Institutes of Sweden (formerly Innventia)

**Esa Torniainen** – Founder, Chief Business Development Officer, Paptic Ltd.

**Bernard De Galembert** – Innovation and Bioeconomy Director, Confederation of European Paper Industries (CEPI)

### FROM ANDRITZ:

**Johan Engström** – Chief Technology Officer, ANDRITZ

### MODERATOR:

**Mark Rushton** – Pulp & Paper Industry Consultant



For more information about the fiber revolution, view the video on your smartphone.

Scan this QR-Code!





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**Johan Engström**  
Chief Technology Officer  
ANDRITZ



**Mark Rushton**  
Pulp & Paper Industry Consultant

about decarbonizing the industry here in Europe, we are now talking about defossilizing – creating all sorts of renewable products from the side streams at mills. We are great believers at CEPI that the pulp and paper industry is the most sustainable industry there is and, therefore, has a major role to play in climate change mitigation.

**JOHAN ENGSTRÖM:** At ANDRITZ, the bioeconomy and circular economy have been characteristic themes in our R&D work – particularly in designing technology that will help our customers to be able to make new products out of wood-based fiber and especially on utilizing the side streams by converting them to valuable products, chemicals, and bioenergy. Lignin, methanol, and sulfuric acid are examples of new bioproducts in addition to tall oil and turpentine. Today, it is possible to create almost anything from wood, including textiles and nonwoven products. ANDRITZ has developed a continuous cooking process for dissolving pulp. Dissolving pulp made of wood fibers is then used, for example, in the textile industry. This is a more sustainable alternative compared to cotton and oil-based materials. Renewable bio-based raw material, recyclability, and biodegradable products are, of course, very important features in the battle against plastic pollution and climate change.

**Is the pulp and paper industry ready to replace plastic in all its shapes and forms?**

**ESA TORNIAINEN:** Think about it – more than 10 million tonnes of plastic waste ends up in the ocean every year; this is something the whole human race should be ashamed of. Yes, we as the industry are ready and see this as a good business opportunity. But it is much more than that; if we have the means and know-how to replace plastic, it is our responsibility to do so as a matter of urgency. Brands are, of course, an important vehicle in all this; actually, this plastic crisis is a great opportunity for them to shift to fiber-based packaging and communicate to the consumer how responsible they are – and how seriously they are taking environmental concerns.

**FREDERIK ROSÉN:** The pulp and paper industry has a huge potential to gain from this shift; however, it historically has focused on big volumes and mass production. It is true to say that if there is not hundreds of thousands of tonnes involved, the industry is not really interested. This is where the dynamic will have to change; we will see new, smaller start-up companies being formed around mills, as well as closer to markets, as entrepreneurs create new products. These new entrepreneurs

should come from the pulp and paper industry, but it could also be that outside companies come in that have the ideas, skills, and enthusiasm to create new products. After all, this is a fabulous raw material they have to work with.

**JOHAN ENGSTRÖM:** The fact is, the raw material and the technology are already there to convert from fossil oil to wood-based products, it really is a case of the pulp and paper industries implementing the technologies. New technology to enable this conversion to take place even faster is being worked on by suppliers to the industry constantly, for instance, in barriers and coatings for food packaging, which is where R&D in the area of nanocellulose is becoming instrumental. In fact, nanocellulose is already now being used in commercial applications enabling much stronger, lighter materials to be used in packaging. Micro crystalline cellulose (MCC) is an interesting raw material for many applications, including pharmaceutical, rheology modifying, and animal feed uses.

**BERNARD DE GALEMBERT:** We at CEPI have made a list of all the products that can be replaced with fiber, which we call the "Science Fiction" list. The fact is, the sky is the limit with what can be done; for instance, I like to dream that a complete iPad 10 could be made of fiber-based products; carbon fiber for the body, printed electronics for the motherboard, and a nanocellulose-based touch screen. But packaging is definitely the major growth pathway the industry will take first, and is taking; just look at all the conversions that are taking place from graphic papers to packaging machines. Another encouraging sign for the industry in Europe, in particular, is that we see national policy makers taking the messages about plastic forward and turning it into legislation, regulation, and incentives.

**ELINA PÄÄKKÖNEN:** Just in the last year, there has been a lot going on as the consumer has become aware of the problems that plastic waste has been causing around the world. This has, of course, resulted in the consumer having a preference for fiber-based products. The industry has to begin now to develop and change to meet the need and certainly should be planning ahead to handle this increased demand. Already, brand owners are asking for these new, more sustainable products as a major shift occurs in consumer preferences.

**Final thoughts from the panelists?**

**BERNARD DE GALEMBERT:** We have the perfect alignment of stars for the future of the pulp and paper industry. We know that there is a solution to the littering of the earth and seas by replacing plastic products with fiber-based biodegradable ones, and I am extremely optimistic that the industry can cope with all the new demand. Our next challenge is to attract more young talent to join what really is the most sustainable industry on the planet.

**FREDERIK ROSÉN:** Who will be the pulp and paper industries' Elon Musk in the future, the bold person that takes this industry into the next dimension? We have the most fantastic material to work with; we can even build rockets out of it. As an industry, we must be bold and not afraid to scale our ambitions right up to the limit.

**ELINA PÄÄKKÖNEN:** This is without doubt the most exciting time to be a researcher in the forest products industry. The best part of my job is talking to consumers and brand owners about the fantastic products we are working on that are not only highly effective, but are from completely renewable resources, as well as being 100 percent recyclable. How could they not be impressed?

**ESA TORNIAINEN:** The forest industry is, for sure, the most innovative and sustainable place to work at the moment. The great public does not necessarily see it that way, but we have to be bold and take our new products and applications based on wood to the market and show them what an amazing industry we are.

**JOHAN ENGSTRÖM:** We can make anything out of this fantastic material, and we are at the beginning of an important new era for our great industry. We have seen what is done in the labs and now we need to bring it to the market. As has already been said, "the sky is the limit".

The SPECTRUM ROUND TABLE on the Fiber Revolution is the second in a series of regular round tables.



**"Who will be the pulp and paper industries' Elon Musk in the future?"**

**FREDERIK ROSÉN, MBA, M.SC**  
Vice President  
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