

VOLUME 14.7 – 2019

PACKAGING EUROPE



THE OMNICHALLENGE

SMURFIT KAPPA ON HOW E-COMMERCE IS
FORCING FMCG TO RETHINK PACKAGING

HOLYGRAIL • SMART PACKAGING • K2019 • BIOPLASTICS • FLEXIBLES



BIOPLASTICS: WHERE ARE WE NOW?

Innovation in bioplastics development continues apace, but there is still much to be done and many challenges to be overcome if we are to see their more widespread adoption. We heard from three different voices from the industry – Stefano Facco from Novamont, Caine Folkes-Miller from Floreon and Anantshree Chaturvedi from FlexFilms Inc. – to gain their insights into the state of the industry and where it is headed.

The conversation around bioplastics is a complex one, and there are varying opinions as to their merits and drawbacks. They have been around on the market for over 20 years but their high cost and relatively low commercial value has in the past meant they have been considered low-volume, niche materials.

But the market statistics suggest that the tide may be slowly but surely turning. According to the most recent data released by European Bioplastics in collaboration with the nova-Institute, global production capacities of bioplastics have been predicted to grow from around 2.11 million tonnes in 2018 to approximately 2.62 million tonnes by 2023.

“The market is indeed growing in a healthy way,” says Stefano Facco, new business development director at Novamont. “Bioplastics have well demonstrated worldwide their benefit when organic recycling is adopted. ▶



New recycling schemes, including such polymers, are evolving in parallel to the increase in our production capacity. There are already many products on the market, and new developments in the area of high barrier bio-polymers will further help to grow the market.”

‘Significant opportunities’

Some of these new developments hold great potential. There are several recycling options currently under evaluation, including chemical recycling and the development of monomaterial solutions. Organic recycling is also an option in certain product categories – particularly that contaminated by food residues. A challenge here is to develop compostable solutions that can meet the stringent demands of the food sector, such as compostable high barrier films that can perform in the same way as traditional plastics.

“Given the direction taken by European legislation, and given the benefits already demonstrated, food packaging could be one of the sectors in which bioplastics will increase significantly,” says Mr Facco. “Indeed, according to several studies, the replacement of some types of food packaging with compostable solutions would bring benefits in terms of better management of food waste within both large-scale distribution and domestic environment. Moreover, it will help to reduce landfilling, improving the quality of organic waste collected, thus allowing the production of high-quality compost.”

Home composting solutions for flexible films are a particular area of focus, as they are difficult to recycle, have a limited resale value and often contain food residues. “Composting your films either at home or via food

waste collection and recycling your rigid higher value packaging would be a compelling and relatively quick to implement solution,” says Caine Folkes-Miller, commercial director at UK-based Florean. “The same could be said for fast food packaging which by nature is going to be contaminated with food waste. If these could be disposed of to composting via the same stream it would provide significant opportunities.”

“Certainly, the increase of composting plants, the improvement of existing technologies, and the introduction of new innovative recyclable technologies will play a fundamental role in simplifying the growth of the sector and allow it to reach maturity,” adds Mr Facco. That being said, it should not be seen as a case of either / or when it comes to recycling and composting – rather using the most appropriate end-of-life pathway for each product.

Barriers to adoption

But despite the above, there are still several factors slowing down widespread adoption of bioplastics. One of the biggest of these relates to the regulatory climate across Europe. Stefano Facco argues that at European level it is vital to provide for a harmonisation of the legislative framework, reduce duplication and fragmentation, and encourage investments in line with an industrial policy in the sector.

“For example, the Single-Use Plastics Directive tried to give an answer to an important problem: marine litter. It should be noted that marine litter (plastics or other materials) comes from land. Thus, if we do not address the waste on land, strengthening a proper waste management system, we ▷

will not solve the issue of marine litter. In this context, compostable materials represent one of the possible solutions for specific plastic applications, which today are not collected with plastic waste or are not recycled for technical or economic reasons. Unfortunately, this directive is missing a holistic approach with the risk of stopping innovation and solutions.”

And some, in fact, still argue that bioplastics are less sustainable than building a better recycling model for existing materials. “That is why the EU is thinking to go the mono-material/polyolefin route as these materials can be recycled into garden furniture, decking, and flower pots readily after their use in flexible packaging,” says Anantshree Chaturvedi, vice-chairman & CEO, FlexFilms Inc. – the global manufacturing arm of India’s Uflex. In his opinion, bioplastics will likely become more cost-effective after substantial investments from major chemical companies, but this is at least a decade from today.

“Uflex has been working on an alternative aerobic bio-degradation material for sustainability purposes. This would then meet the best of both worlds in acceptance and sustainability.”

There is also the question of supply and demand – until the latter increases, investment in the former cannot reach the levels the industry would need to see to ensure sustainable economic growth. “There is a need for more suppliers with greater capacity,” says Caine Folkes-Miller. “For this to happen there needs to be a concerted effort to commit to the use of bioplastics in key areas where it makes the most sense (flexible packaging, fast food containers

and accessories). This would drive down costs and accelerate research and development which would see the packaging market in a very different place 5-10 years from now.”

According to Mr Chaturvedi, for this to happen the industry also needs to find the correct balance between functionality and cost-effectiveness. “The heavy investment into R&D by biopolymer companies into low-cost routes of bio-monomer production will give the greatest return in the next decade. Some further bioplastics will emerge with unique properties. Bioplastics need to match the functional and barrier properties of the fossil plastics without exceeding a 15-20 per cent mark-up. This will then start finding a place in the multi-layer plastic segment.”

Bioplastics vs fossil-based?

With all the highly charged conversations around fossil-based plastics and their alternatives, it can be hard to get a clear picture. And in fact, seeing it as a case of ‘either/or’ when it comes to fossil-based or bioplastics may not be helpful. While it is clear that end-of-life infrastructure and industrial scale need to develop further, we should not ignore the fact that other materials, such as glass and wood, are very energy-intensive to produce.

However, to fully utilise the benefits of bioplastics, recycling waste streams need to be developed. Caine Folkes-Miller points out that the technology already exists to recycle materials such as PLA back to food grade material, but food waste collection also needs to be developed. ▷

Stefano Facco



Anantshree Chaturvedi



“A big concern is bioplastics being unnecessarily caught up in the backlash on plastics and some of the knee jerk reactions in terms of regulatory approaches, specifically around single-use plastics,” says Caine Folkes-Miller. “Increasing the use of carton board, glass and wood has a very negative impact on energy consumption and carbon footprint. Plastic has been so successful due to its resource efficiency. Now it’s time to consider that bioplastics provide a really great opportunity to have the best of both worlds – resource efficiency and performance of fossil-based plastics but from renewable low carbon sources.

“The key message is that we should not view the answer as bioplastics vs fossil plastics. We need to think of how best to optimise the use of both which is the only realistic answer to the challenges faced by the packaging industry today.”

Building a circular economy

When we consider the circular economy strategies in fossil-based plastics, there seems to be a growing consensus that we need to move towards monopolymer solutions that can be more easily recycled. We might envisage for example that simplification of the market and the collection / recycling infrastructure could have winners (polyolefins) and losers (polystyrene) when it comes to fossil-based plastics. But do these kinds of dynamics have any impact on the bioplastics landscape?

“These dynamics could certainly have impacts and could even create new case studies of cooperation between recyclable plastics and the

compostable bioplastics sector, as has been demonstrated by ongoing studies carried out for the production of compostable bioplastics starting from monomers derived from plastics recycling and combined with bio-based building blocks,” says Stefano Facco. “Furthermore, the bioplastic sector could even have interest in depolymerisation technologies to further increase environmental sustainability and reduce the use of raw materials in the logic of a circular bio-based economy.”

Novamont believes the circular bioeconomy could be one solution to our present climate crisis. “This model is based on the construction of bioeconomy infrastructures with integrated agricultural value chains and on the development of innovative products designed as opportunities to find solutions to problems affecting environment and society. A long-term strategy is essential to redesign the entire system, but in the short term, we need to rethink the products, their use and their disposal from a circular and eco-design perspective.”

Lastly, some have pointed out that as a growing industrial sector, bioplastics could provide future European employment growth. They could, for example, make a contribution to rural development by providing income in areas that might otherwise decline economically. But while Europe is making strides when it come so R&D and the scaling-up of biomass production, it does need to step up the transformation of research knowledge to industrial applications if we are to reach the necessary economies of scale for production and conversion. □

www.gmgcolor.com

Wherever a color goes
it stays that color

Our promise is to enable all printing clients to always achieve predictable print results. Printing the expected with high color fidelity and quality – be it packaging or commercial print. GMG helps to improve productivity in the graphic arts sector with its innovative range of color management products for digital and conventional printing. With surprises eliminated and productivity increased, everybody involved in the process will benefit.

gmg
we know color

Caine Folkes-Miller

