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Teamwork for the packaging of tomorrow

Swantje Eissing, Business Development Manager, Packaging and her colleagues at the Fraunhofer Institute for Process Engineering and Packaging IVV in Freising, Germany, are working on the packaging of the future.

The Fraunhofer IVV in Freising, near Munich, is well known for its expertise not only in packaging but in the food industry. So the way packaging protects food plays a major role in its researchers' efforts, and is one of their main focuses. Food safety, packaging and sustainability are all part of the picture. "For us, sustainability aspects also include food shelf life, which packaging can extend. That can reduce food waste", Swantje Eissing explains. As a Business Development Manager in the Packaging unit at the Fraunhofer IVV, she's responsible for maintaining a central interface between science and industry. "I've been with the Fraunhofer IVV for more than a year. Before that I worked in research and development for major-name producers in the food industry. So that makes me very good at linking industry's needs with research."

Like the entire packaging industry, this research field at the Fraunhofer IVV is currently very much centred on sustainability. "Consumers, retailers and government have all been paying a lot of attention to that factor over the past few years, and they've kicked off a megatrend. In materials development we're especially looking at recyclability and how to use recycled materials. We're concentrating most of all on replacing multilayer plastics with monomaterials", Eissing continues. But organic packaging and replacing plastics with fibre-based raw materials are also important fields of research at the institute.

From disposable packaging to a circular economy

According to Eissing, packaging should "pave the way for reusability in the broadest sense". And here she's not talking about packages that get returned for a deposit, but rather the reuse of materials – a circular economy.

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“The whole value chain is undergoing a transformation right now. That will call for close coordination among all the various parties involved. Manufacturers, packagers and recyclers need to get into dialogue about the materials they use. The user has to use materials that the recycler can do something with. Recyclers, for their part, need to sort and process the material to yield a good starting material for manufacturers”, Eissing points out. Big differences especially persist in the technologies and options for collecting and sorting materials that can then be reused to make packaging. Which makes it hard to create a harmonised approach that will work all across Europe.

Transformation with challenges

Eissing believes the food industry is one of the sectors that faces the greatest challenges in terms of sustainable packaging. “That’s not because the industry doesn’t want to – it’s really more about the specific requirements for food packaging. Aspects like food safety and the laws lay down clear requirements, and also limits. How to get all of that harmonised is what we’re researching at the Fraunhofer IVV.”

Good sorting yields good raw materials

The Fraunhofer IVV team is working with partners on questions like how to ensure that sorting systems can recognize food packaging for what it is, and also to make sure the packaging can be reused. That might be done by way of things like codes or markers on the packages.

The EU-backed Circular Food Pack Project, which is still running, is focussing on exactly this next step – studying such a cycle for reusing recycled materials in the food industry. Apart from sorting technologies, it’s also developing functional barriers that will ultimately yield a material that is suitable for use as food packaging and that can also be applied for cosmetic packaging, and keeps the packaging in circulation.

Packaging design for better recyclability

One research approach that is already making significant progress in terms of package recyclability is the development of monofilms. “Development is still going on here, and is constantly coming up with exciting new findings”, Eissing enthuses.

She’s especially proud of the Multicycle Project that has just been completed by the institute’s expert teams from materials development and recycling technology. They were aiming to obtain recycled materials from

multilayer packaging in post-consumer waste. A demonstration system applied the CreaSolv® solvent-based recycling process to separate the individual components of the composite and ultimately recover the pure polymers. These were processed into films in pilot systems from materials development, and industrial partners then helped turn them into demonstrator packaging for personal care and home care uses. “Another special aspect of the project for me was that unlike many other research activities, in the end it produced physical samples, and you could actually hold the results in your hand.”

Even when there are no physical results, Eissing is enthusiastic about her profession. “You couldn’t ask for a more current topic – it’s something all of society is concerned about. No matter whether you have an expert knowledge of packaging or not, everybody’s a consumer and has an opinion about packaging.” She finds it especially exciting to delve into this subject, get the many different requirements linked up together, and advance the sustainability aspect within research for industry.

The Fraunhofer IVV is a regular exhibitor at FACHPACK, and will be offering intriguing presentations once again this year, including in the TECHBOX. Swantje Eissing will certainly have another chance to report on new research results by that time at the latest.

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