

Gesamter Artikel (PDF, DE): www.tum.de/faszination-forschung

Bauen mit Hopfen

D

HopfON möchte die Bauindustrie klimafreundlicher und ressourcenschonender machen und setzt dafür auf Baustoffe aus landwirtschaftlichen Abfällen und Rohstoffen. □

Building with Hops

The construction industry consumes enormous resources and is responsible for a large proportion of global CO₂ emissions. The HopfON team is seeking to address this situation. Their vision is to produce recyclable, climate-friendly building materials using agricultural waste and resources.

The idea came to them over a beer in their student accommodation. Thomas Rojas Sonderegger, a student in construction engineering back then, was telling architecture student Marlene Stechl about a talk he had attended: it was about a Colombian who was producing construction materials with banana fiber. “So we thought it would be great if we could make our own locally sourced building material. It could save greenhouse gas emissions,” says Marlene Stechl. “We thought about which solution might work in Bavaria. We were actually joking when we said it would be cool to use hops. The next day we actually started to do some research.”

A promising fiber-based material

They found a supporter in architecture and design professor Niklas Fanelisa. He not only contributes his scientific expertise but also gives the team access to the Bioregional Design Lab at TUM and thus enables further material tests. Because only a small percentage of the hop harvest is used for beer production, Stechl and Sonderegger came up with the idea of using waste from hop farmers. “Along with the ecological benefits, this also saves costs,” says Stechl. The fibrous structure of the hop plant lends tensile strength to the material, making it especially suitable for acoustic panels, insulation and structural boards. The woody cores of hops, known as shives, provide the

Link

www.hopfON.com

material with additional compressive strength. Like hemp, which has become increasingly important as a building material in recent years, hops also have good heat insulation characteristics. To validate the team’s chosen material, Marlene Stechl tested the flammability of the hop plant as part of her master’s thesis and found no cause for concern.

Excellent idea

With their idea, Stechl and Sonderegger took part in the Urban Prototyping Lab run by the TUM Chair of Architectural Informatics. Participants were invited to propose solutions to problems from the construction industry. After submitting their detailed concept, they were invited to apply for the 2022 TUM IDEAward. They won first prize, which came with 15,000 euros in start-up capital.

The TUM IDEAward attracted the attention of former business student Mauricio Fleischer Acuña, who then joined the HopfON founding team. He was followed in 2023 by Matthias Steiger, a biochemist working on a doctorate at the Chair of Chemistry of Biogenic Resources, who is now developing further prototypes for HopfON. HopfON also received the TUM Booster Grant, which includes one year of funding worth 45,000 euros, and two prototyping grants from UnternehmerTUM, the Center for Innovation and Business Creation. The support from the business eco-





system of TUM is of such great help, especially when it comes to ramping up operations and founding the company in 2024, as Mauricio Fleischer Acuña explains. Another key pillar is the location: the world's largest hop growing region, Hallertau, is on Munich's doorstep.

A recyclable product

In their first harvest the founders got a lot of support from the farmers they worked with. As a result, the team was able to get a process up and running to secure enough raw material for production in the upcoming year. This was crucial, explains Mauricio Fleischer Acuña, as the hop harvest takes place only once a year. It is important to the founders to offer a recyclable product. For that reason, they completely avoid using artificial or non-soluble additives. That means that the hop-based construction materials can be broken down into their original components after use and reconstituted as new products. This is a key unique selling proposition as compared to other sustainable materials, says Mauricio Fleischer Acuña. It is also an essential prerequisite for the market launch, which is planned for 2024 with the rollout of acoustic panels for soundproofing applications. ■

Lisa Pietrzyk

