SUSTAINABLE SYSTEMS

Fields of Expertise TU Graz

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Urs Leonhard Hirschberg, Sustainable Systems

Source: Lunghammer – TU Graz

In the 17th round of the initial funding program, a total eight proposals were submitted in the Sustainable Systems category, and the following five projects received funding.

Tajda Potrc Obrecht from the Institute of Structural Design proposes A Roadmap for the Decarbonization of Austria's Building Stock, an ambitious undertaking that aims to create a comprehensive dynamic building model, including all inflows and outflows of material, using data mining, statistical and probabilistic models as well as Life Cycle Assessment (LCA) methods in an interdisciplinary endeavor. Such a model, her proposal argues, will be necessary to test potential decarbonization strategies.

Milena Stavric, associate professor at the Institute of Architecture and Media, wants to further explore Alginate as a Matrix in Biocomposite Architectural Acoustic Materials. Alginate, which is found in brown algae cell walls, is a material that can be produced sustainably in large quantities and which, while used in a growing number of applications, is still largely unexplored for use in construction. The interdisciplinary team will build on a range of promising experiments with Alginate that were done as part of the FWF SFB project Advanced Computational Design, where Stavric is a sub-project PI.

Sonja Wogrin, newly appointed head of the Institute of Electricity Economics and Energy Innovation, was successful with her proposal BASIS, which stands for Basis-oriented time series Aggregation for decarbonized power System optImization modelS. Her project aims to address one of the fundamental problems of power system optimization models: the tradeoff between model accuracy and computational tractability. Her interdisciplinary approach will include aggregated optimization models and Machine Learning (ML) methods to approximate full model results as closely as possible with a reduced amount of data.

Gerald Krebs from the Institute of Hydraulic Engineering and Water Resources Management wants to address the problems posed by flooding, which have increased as heavy rain events have become more frequent due to climate change. In his proposed project KARLA, which stands for "KlimawandelAnpassung durch hochwasserReduzierende LAndwirtschaft" (climate change adjustments through flood reducing agriculture), Krebs and his interdisciplinary team want to study the relationship between agricultural practices and water runoff and thereby lay the groundwork for improved numerical modeling methods for flood prevention schemes.

Fridges and freezers are typically the biggest consumers of electrical energy in a household and account for about 12% of annual electrical energy use worldwide. Even small increases in efficiency in these consumer products can thus have a large impact. Michael Lang and his group from the Institute of Thermodynamics and Sustainable Propulsion Systems think they have a new approach to optimizing these appliances, which they want to develop with the household appliance company Liebherr in an FFG project.

We wish all successful applicants the best of luck with their proposals and hope that the resulting projects can one day be presented on these pages, just like the work of Carole Planchette on the next few pages.