

## Luftiflex – Aircraft interiors and semi-structural components made from flexible fibre composites based on renewable raw materials

### Problem / Motivation

- The development of fibre-reinforced plastics (FRP) has so far focused on optimising the mechanical properties of strength and stiffness, which are particularly useful for lightweight construction and weight reduction
- Fibre-reinforced plastics offer great potential for applications with elongations of up to 100 %, although sustainability needs to be considered
- Potential applications include flexible aircraft wing components, vibration decoupling elements and crash, ballistic and impact protection components



### Solution

- Development of flexible bio-based epoxy and unsaturated polyester resin systems and textile structures with adjustable structural elongation
- Application of a simplified FE model for the calculation of elastic laminates in the planned product manufacture
- Development of a tool for prestressing stretchable textile structures before and during the impregnation and curing process
- Modification of established laminate technologies for elastic laminates
- Development of demonstrators from various application areas



### Project Launch

10/2024

### Project Partner

INVENT GmbH

Technische Universität Braunschweig,  
Institute of Joining and Welding

HOBUM Oleochemicals GmbH

Johann Heinrich von Thünen Institute,  
Institute of Agricultural Technology

and four associated partners



Substitution of the hinges of a luggage compartment with flexible fibre-reinforced plastics (© Wingdesign)

### Acknowledgement

We would like to thank the Federal Ministry of Food and Agriculture for funding the research project Luftiflex (Reg. No. 2222 NR 045E) within the funding programme "Nachwachsende Rohstoffe".



With support from



by decision of the  
German Bundestag