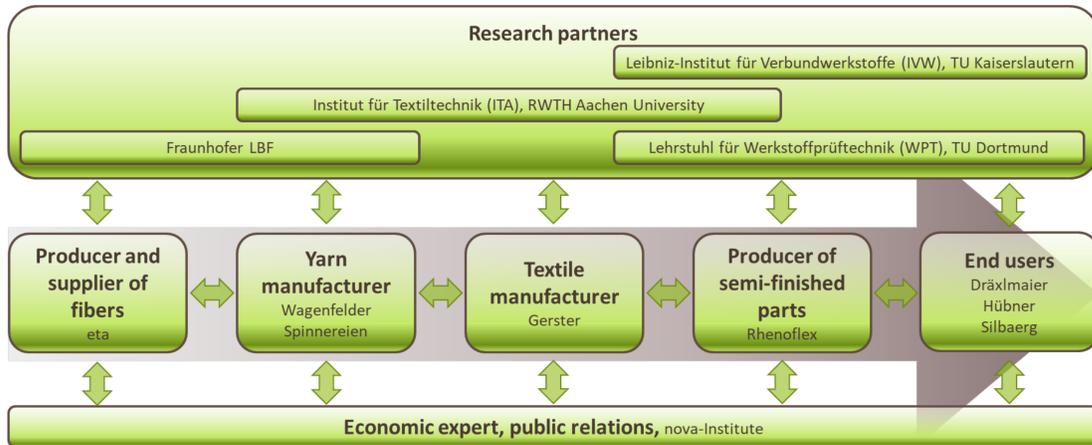


Durable and resource-saving composite structural components based on newly pre-treated and processed bast fibers

L. Wesener¹, S. Halaç¹, A. Kulesa¹, C. Boltersdorf¹, L. Weber², M. Salmis³, C. Heinz⁴, A. Ungefug⁵, Dr. J. Kaufmann⁶, Prof. Dr.-Ing. P. Mitschang², Dr. R. Klein²



Demonstrators

Interior Door Panel



DRAXLMAIER

Folding Bellows for Gangway Systems



HUBNER

Snowboard



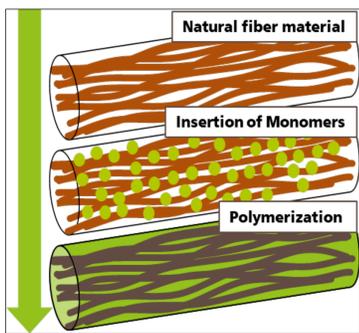
silbaerg SNOWBOARDS

Fraunhofer LBF

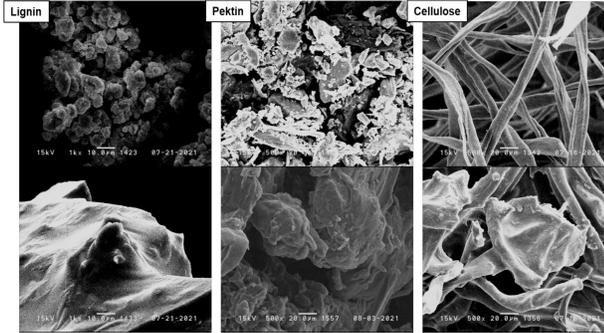
Objective Fiber Treatment

Determine the possible access point of modification during fiber production
Reduction of moisture absorption of natural hemp fibre

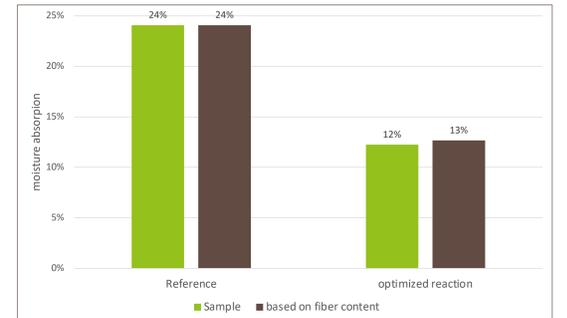
General approach of cavity polymerization



Compatibility of polymer with fiber components



Analysis of the moisture absorption of treated hemp fibers



Comparing the untreated hemp fibers with the treated and cavity filled natural fibers a reduction of 50% moisture absorption can be observed

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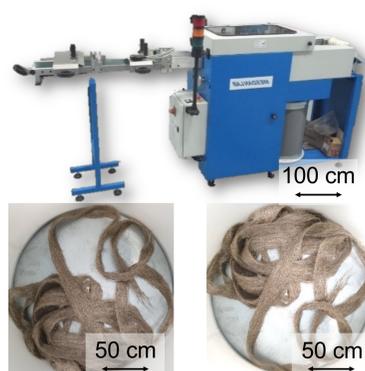
Objective Yarn Production

Determination of process parameters for spinning preparation, for the production of low-twist yarns from modified hemp fibers and unmodified rovings on a laboratory scale.

Forming Hemp Slivers



Drawing of Hemp Slivers



Production of Hemp Yarns

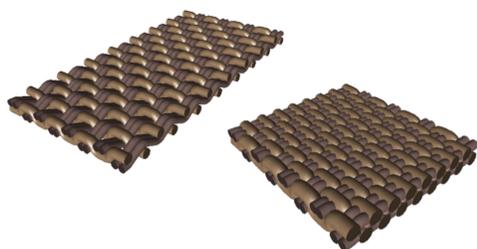


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Objective Fabric Production

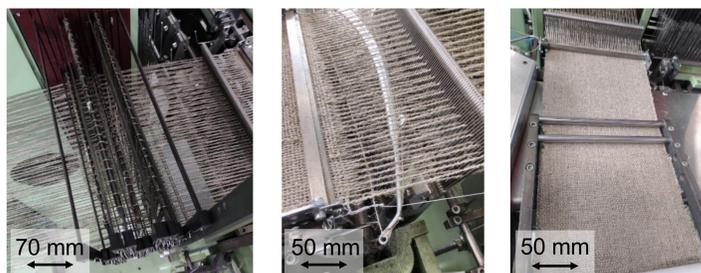
Determine the Production Parameters and Characteristics of a Hemp Fabric for Use in Fiber Reinforce Thermoplastic Composites

Rendering of Various Textile Densities



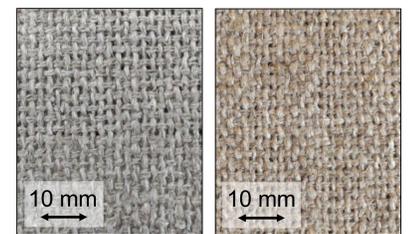
The rendering on the left is a plain weave with 5 warps and wefts per cm. The rendering on the right is 6 warps and wefts per cm.

Production of Fabric Samples



Samples were produced using a narrowband needle loom using 4 harnesses and a plain weave structure.

Detail of Fabric Samples with varying Fabric Weights



The sample on the left is a plain weave with 5 warps per cm and 4.6 fills per cm. The pattern on the right is 6 warps per cm and 4.4 picks per cm

Leibniz Gemeinschaft Leibniz-Institut für Verbundwerkstoffe

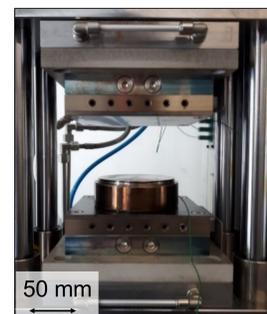
Objective Consolidation Process

Identification of Process Parameters for Manufacturing of Natural Fiber Reinforced Thermoplastic Composites

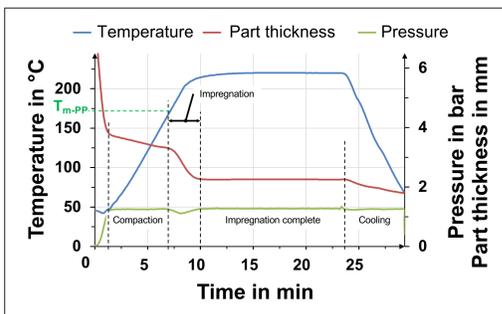
Filmstack made of Flax-Fabric and PP-Film



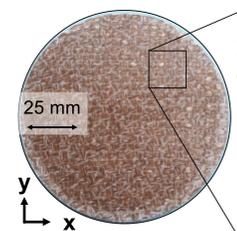
Tool with Thermocouple in a Laboratory Press



Temperature, Pressure and Part Thickness during Organic Sheet Manufacturing



Flax-PP Organic Sheet



Micro-section of Flax-PP Organic Sheet

