

## **Production technologies and process-oriented material evaluation for highly parallelized rotor blade production**

Subproject: Automated textile handling and controlled infusion and curing for industrialized rotor blade production

(Acronym: BladeFactory)

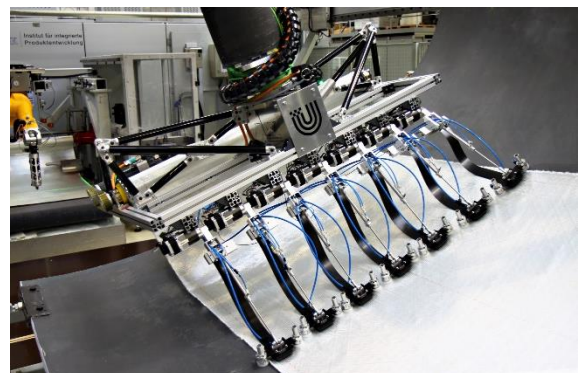
### **Project description**

The "BladeFactory" project is generally concerned with the parallelisation of processes, the industrialisation of production and intelligent control strategies in the manufacture of rotor blades for wind turbines. The goals are the reduction of production time and associated costs as well as the increase of quality.

Within the scope of the previous project "BladeMaker", a handling effector for the automatic lay-up of dry technical textiles for a 40-meter-long reference rotor blade was developed at the BIK. The effector is able to store tailored textiles on a winding core and to continuously lay-up and drape them by special draping modules with integrated gripping technology into a multi-curved mould. The effector is connected to a gantry robot.

The objectives of the BIK in the project "BladeFactory" are the increase of the process reliability by optimising the lay-up process and the increase of the flexibility of the effector. For a fully automated process, the previously developed and tested process steps are examined in detail to identify further savings potential in the area of production times and costs by recombining the respective concepts.

Furthermore, concepts for the automatic configuration of the effector are developed. This can lead to considerable advantages for certain process steps or complex mould geometries for which certain gripping and draping modules must be used. The effector should configure itself on the basis of the mould geometry e.g. by accommodating a draping unit and the required material.



A further objective is to adapt the technical textiles used for a continuous automated handling process. The use of different non-crimp glass fabrics is being investigated for lay-up and draping in complex geometries, such as the flatback area.

### **Project partner**

BASF Polyurethanes GmbH  
fibretech composites GmbH  
Fraunhofer IFAM  
Fraunhofer IWES  
Henkel AG & Co. KGaA  
Hexion Stuttgart GmbH  
Nordex Energy GmbH  
Saertex GmbH & Co. KG  
Siemens AG  
Siemens Industry Software GmbH  
SINOI GmbH  
SWMS Systemtechnik  
Ingenieurgesellschaft mbH

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