

### Industrial Production instead of Manufactory

## IWES optimizes Rotor Blade Production

Rotor blades are still made almost completely by hand. In the “BladeMaker” project, Fraunhofer IWES scientists and industrial and research partners are searching for automation solutions in order to make the manufacture of rotor blades more cost effective, quicker and with a higher quality.

Rotor blades account for about one quarter of the total cost of a wind energy turbine, a fact which results from the high proportion of manual labour involved. Significant cost reductions can be achieved through changing from small series production to large scale industrial production. For this reason, the main focus of the joint project “BladeMaker”, with a total of 18 partners and coordinated by the Fraunhofer IWES, is the complete manufacturing chain for rotor blade production.

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The research field of the Fraunhofer Institute for Wind Energy and Energy System Technology, IWES, covers the complete range of wind energy as well as the integration of renewable energies in supply structures.

Currently, around 500 scientists, employees and students work at the IWES. The annual budget for 2012 was approximately EUR 32.5 million.

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The project's target is to reduce production costs by well over 10 % and for the long term, to set up a "BladeMaker Demo-Centre" which will be a national and international centre for the research and development of rotor blade production. In order to achieve this ambitious target rotor blade design, materials and manufacturing processes will be taken into consideration. Florian Sayer of the Fraunhofer IWES explains: "In international competition rotor blade producers are under great cost pressures which we will tackle with automation."

The researchers at the Fraunhofer Institute will first of all analyze all of the work procedures and technologies of rotor blade production and assess automation potentials. Then, any promising automated manufacturing processes will be investigated and simulated. Finally, at the end of the five year project demonstrators will be created for the respective process steps and the "BladeMaker Blade" will be designed, optimized for automated production. "The BladeMaker design provides an insight into what can be achieved in automation," explains Sayer about the project.

The BladeMaker project began in October and will run until the end of September 2017. The project is funded with EUR 8 million by the German Federal Ministry for the Environment, Nature Conservation and Reactor Safety.

*Background rotor blade production:*

The state of the art in rotor blade production is the so called vacuum infusion process. For this purpose, two moulds or blade halves are reinforced with fibre-glass or carbonfibre matting. This work step is undertaken almost completely manually. Then a vacuum is generated and a resin injected bonds the mats. After hardening, the two halves are pieced together to form one blade and then varnished.

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