

**ReFoPlan**

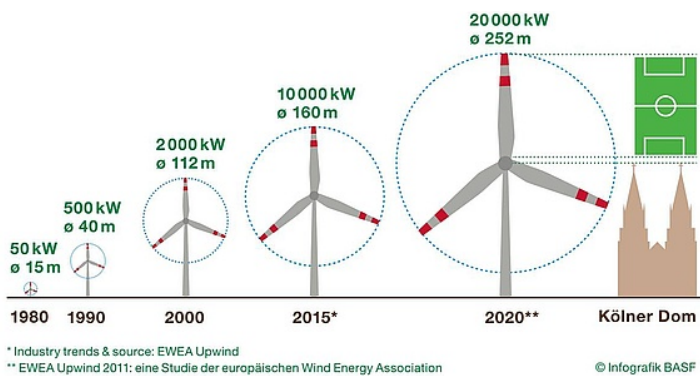
**Development of deconstruction and recycling standards for rotor blades**

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**Duration:** *07/2020 – 02/2022 (abgeschlossen)*

**Project partners:** *THINKTANK Industrielle Ressourcenstrategien, KIT-ITC, KIT-IIP, Fraunhofer ICT, Baumeister Rechtsanwälte, Composites United e.V.*

**Contact:** *Werner Baumann*



**Fig. 1 Development of WT size and power over time.**

DEVELOPMENT OF DISMANTLING- AND RECYCLING STANDARDS FOR ROTOR BLADES						
WP1 Rotor Blade-Construction	WP2 Risk Assessment of Fibres and Dust	WP3 On-site Waste Management	WP4 Processing of Rotor Blade Waste	WP5 Recycling of Processed Rotor Blade Waste	WP6 Organisational Responsibilities	WP7 Summary
KIT Fraunhofer ICT Baumeister Rechtsanwälte	KIT Composites United e.V. Baumeister Rechtsanwälte	Fraunhofer ICT KIT Baumeister Rechtsanwälte	Fraunhofer ICT KIT Composites United e.V. Baumeister Rechtsanwälte	KIT Composites United e.V. Baumeister Rechtsanwälte	Baumeister Rechtsanwälte	KIT Fraunhofer ICT Composites United e.V. Baumeister Rechtsanwälte

**Fig. 2 Work plan with participation of the project partners.**

The share of renewable energies in relation to gross electricity generation in Germany rose from around 7% in 2000 to around 50% in the first half of 2020. The major share of this increase is due to the expansion of wind turbines (WT), as an important component of the energy transition in Germany. After 20 years of operation, a large number of the first wind turbines (see Fig. 1) will no longer be subsidized under the Renewable Energy Sources Act (EEG) in the next few years, so that an increased dismantling of these turbines is to be expected.

In a study published in 2019 by the German Federal Environment Agency (UBA), a need for research regarding the recycling of rotor blades was identified and the project "Development of deconstruction and recycling standards for rotor blades" was initiated by UBA.

Rotor blades are mainly made of fiber composites, in particular glass fiber reinforced plastics (GRP). To a lesser extent, highly stressed areas in particular are reinforced with belts made of a carbon fiber composite.

Such complex rotor blade designs require coherent dismantling and recycling concepts, which were identified in this project and evaluated technically, economically and legally with regard to high-quality recycling. In addition, high-quality recycling of as many components of a rotor blade as possible should take place without causing damage, whereby legal aspects, organizational responsibility, and health and environmental aspects were considered (see Fig. 2).

In addition to the project partners, the project was accompanied by an advisory board consisting of representatives from industry and science, as well as federal agencies and federal authorities.

Publications of the project results are available at:

[https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte\\_92-2022\\_entwicklung\\_von\\_rueckbau- und\\_recyclingstandards\\_fuer\\_rotorblaetter\\_0.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte_92-2022_entwicklung_von_rueckbau- und_recyclingstandards_fuer_rotorblaetter_0.pdf)



Institut für Technische Chemie  
Institut für Industriebetriebslehre und Industrielle Produktion



Prof. Beckmann  
*Fachanwalt für Verwaltungsrecht*