

## Eis detection on wind turbines using AI-assisted image processing



### Project Description:

Icing on wind turbine rotor blades leads to failures every year, and thus to considerable financial losses. Timely and accurate determination of the absence of ice on the rotor blades would lead to a reduction in downtimes. Currently, the project ‚EisAuge‘ is currently working on the processing of information for the icing detection on rotor blades. For this purpose, the plant is equipped with modern sensor technology that records and evaluates image data continuously and at high frequency as needed to increase the energy yield and economic efficiency of a wind turbine.

Objective of BIK in the ‚EisAuge‘ project is to develop a plug&play solution system that uses colour images and modern artificial intelligence (AI) methods to optically determine the actual state of the various rotor blades. The system consists of a camera system, the AI algorithm and the cloud. A suitable concept for night lighting is being implemented for the camera system in order to guarantee the functionality of the system even in the dark. The AI system is based on continuously recorded image data from ongoing operations, which are of sufficiently high quality to allow the algorithms to be trained. An investigation into the sensitivity of the developed AI model to environmental influences and weather conditions is being carried out. Transfer strategies are also being researched in order to make the AI models more adaptable and, if necessary, to optimise the learning of new wind park characteristics. A corresponding visualisation via a web interface is being developed for the cloud in order to present the stored data in a visually appealing way and thus enable insightful analyses.



### Project partners:

BSB Bremer Software & Beratungs GmbH

BIBA - Bremer Institut für Produktion und Logistik GmbH

wpd windmanager GmbH & Co. KG (associated)

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Dieses Vorhaben wurde aus Mitteln des Europäischen Fonds für regionale Entwicklung (EFRE) gefördert.



Europäische Union  
Investition in Bremens Zukunft  
Europäischer Fonds für regionale Entwicklung



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