

# **Application of Ultrasonic Measurement on Concrete Foundations of Modern Wind Energy Plants: Approaches and Findings**

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## **SUMMARY**

For dynamically and highly stressed wind energy plants effective quality control is of vital importance. It is known that dangerous defects in the concrete foundations are not just made by external influences, such as temperature changes or by time dependent material behavior, but also through covert construction defects and design errors. A recording of the damage inside the wind energy plant foundations shows that the damage is much more complicated than in the visible cracks. With the method of acoustic discharge measurement, internal damage and material defects in the wind energy plant foundations can be seen before cracks or water damage are visible on the surface. The precise knowledge of the location and the extent of such anomalies in the foundations are important for the safety of the structure and the temporal evolution. The already performed test measurements on special test blocks and real wind turbines confirm that this method has a great potential in the assessment of wind turbine foundations. However, the gained knowledge also shows that the interpretation requires a certain degree of experience and must be further improved. In these conditions, quality assurance and calibration for survey measuring instruments play a special role.

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