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Design considerations and field performance of wind turbine foundations

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Foundations for wind turbine generation systems come in various designs, allowing for reliable and robust foundations. This paper highlights structural field performance and areas of concerns of existing wind turbine foundations, based on field inspections performed on hundreds of foundations. Also, an overview of the various design considerations for wind turbine foundations is provided while highlighting different code and design guidelines requirements. The paper addresses in particular design of raft foundations for new construction and for those existing ones intended for reuse with upgraded turbines. One of the critical factors controlling the serviceability of wind turbine foundations is fatigue resistance to wind loading.

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