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Investigating Aeroelastic Performance of Multi-MegaWatt Wind Turbine Rotors Using CFD

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Recent trends in wind power technology are focusing on increasing power output through an increase in rotor diameter. As the rotor diameter increases, aeroelastic effects become increasingly important in the design of an efficient blade. A detailed understanding of the fluid elastic coupling can lead to improved designs; yielding more power, reduced maintenance, and ultimately leading to an overall reduction in the cost of electricity. In this work, a high fidelity Computational Fluid Dynamics (CFD) methodology is presented for performing fully coupled Fluid-Structure Interaction (FSI) simulations of wind turbine blades and rotors using a commercially available flow solver, *AcuSolve*. We demonstrate the technique using a 13.2 MW blade design.

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