Aero-Elastic Optimization of a 10 MW Wind Turbine

This article describes a multi-disciplinary optimization and analysis tool for wind turbines that is based on the open-source framework OpenMDAO. Interfaces to several simulation codes have been implemented which allows for a wide variety of problem formulations and combinations of models. In this article concurrent aeroelastic optimization of a 10 MW wind turbine rotor is carried out with respect to material distribution distribution and planform. The optimizations achieve up to 13% mass reduction while maintaining the same power production compared to the baseline DTU 10MW RWT.

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