Latest results from the EU project AVATAR: Aerodynamic modelling of 10 MW wind turbines - DTU Orbit (15/12/2018)

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This paper presents the most recent results from the EU project AVATAR in which aerodynamic models are improved and validated for wind turbines on a scale of 10 MW and more. Measurements on a DU 00-W-212 airfoil are presented which have been taken in the pressurized DNW-HDG wind tunnel up to a Reynolds number of 15 Million. These measurements are compared with measurements in the LM wind tunnel for Reynolds numbers of 3 and 6 Million and with calculational results. In the analysis of results special attention is paid to high Reynolds numbers effects. CFD calculations on airfoil performance showed an unexpected large scatter which eventually was reduced by paying even more attention to grid independency and domain size in relation to grid topology. Moreover calculations are presented on flow devices (leading and trailing edge flaps and vortex generators). Finally results are shown between results from 3D rotor models where a comparison is made between results from vortex wake methods and BEM methods at yawed conditions.

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