AVATAR: AdVanced Aerodynamic Tools for lArge Rotors

An EERA (European Energy Research Alliance) consortium started an ambitious EU FP7 project AVATAR (AdVanced Aerodynamic Tools of lArge Rotors) in November 2013. The project lasts 4 years and is carried out in a consortium with 11 research institutes and two industry partners. The motivation for the AVATAR project lies in the fact that future 10 to 20 MW turbine design model analysis will importantly violate known validity limits of today’s aerodynamic and aero-elastic models in aspects like compressibility and Reynolds number effects, laminar/turbulent transition and separation effects, all in combination with a much more complex fluid-structure interaction. Further complications enter by the possible use of active or passive flow devices. AVATAR’s main aim is then to develop enhancements for aerodynamic and aero-elastic models suitable for large (10MW+) wind turbines analysis. The turbine modelling improvements will be demonstrated on a new 10MW reference turbine design model description. The first results from the AVATAR project are presented in this paper.

General information
State: Published
Organisations: Department of Wind Energy, Aeroelastic Design, Energy research Centre of the Netherlands - ECN, GE Global Research, GE Deutschland, Centre for Renewable Energy Sources, Fraunhofer-Gesellschaft, Centro Nacional de Energías Renovables, University of Liverpool, National Technical University of Athens, Polytechnic University of Milan, Wind Energy Research, TUDelft, ForWind, University of Stuttgart, LM Wind Power
Pages: 291-310
Publication date: 2015

Host publication information
Title of host publication: Proceedings of 33rd ASME Wind Energy Symposium
Volume: 1
Publisher: American Society of Mechanical Engineers
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015