

PROGRESS IN CFD FOR WIND AND TIDAL OFFSHORE TURBINES

E. FERRER[†] AND A. MONTLAUR^{*}

[†] Universidad Politécnica de Madrid (UPM)
Escuela Técnica Superior de Ingenieros Aeronáuticos de Madrid (ETSIA)
Plaza Cardenal Cisneros 3, E-28040 Madrid, Spain
esteban.ferrer@upm.es

^{*} Universitat Politècnica de Catalunya (UPC)
Escola d'Enginyeria de Telecomunicació i Aeronàutica de Castelldefels (EETAC)
Esteve Terradas, 5, 08860 Castelldefels
adeline.de.montlaur@upc.edu

Key words: Computational Fluid Dynamics (CFD), offshore wind turbines, tidal turbines, wind farms, renewable energy.

ABSTRACT

The present mini-symposia follows the successful mini-symposia held in Barcelona-2014 at the ECCM 5-ECFD 6 conference and aims at presenting progresses in *CFD for wind and tidal offshore turbines*. Previous research has been compiled by the organizers in a monograph [1].

The International Energy Agency (IEA) concluded in The World Energy Outlook 2008 [2] that the current energy consumption and production is “patently unsustainable environmentally, economically, and socially”. Social concern and international agreements (e.g. Kyoto 1997, Durban 2011, Paris 2015) are pushing forward the development of renewable energy technologies for sustainable and renewable energy generation. In particular, offshore wind and tidal turbines have seen increasing interest from academia, industry and government bodies as offshore sites present huge energy potential e.g. [3], [4].

The new engineering challenges presented by these technologies, together with the difficulty to undertake experimental test under offshore environments, have risen the interest on Computational Fluid Dynamic (CFD) to design appropriate turbines and blades, understand fluid flow physical phenomena associated to offshore environments, predict power production, and optimize wind farm layout design, among others [5].

This mini-symposia invites CFD researchers from academia and industry to share their expertise and research interest regarding CFD challenges and novel techniques for offshore wind and tidal applications.

REFERENCES

- [1] E. Ferrer, A. Montlaur (Book Editors): "*CFD for Wind and Tidal Offshore Turbines*", Springer Tracts in Mechanical Engineering, ISBN 978-3-319-16201-0, (2015)
- [2] International Energy Agency, World Energy Outlook, (2008)
- [3] Garrett, C., and P. Cummins, The power potential of tidal currents in channels. *Proc. Roy. Soc. A* 461: 2563-2572, (2005)
- [4] Breton, SP., Moe, G., Status, plans and technologies for offshore wind turbines in Europe and North America. *Renewable Energy*, 34 (3): 646-654 (2009)
- [5] Barthelmie, RJ, et al., Modelling and Measuring Flow and Wind Turbine Wakes in Large Wind Farms Offshore. *Wind Energy* 12 (5): 431-444 (2009)