

AKE 9: Wind Energy

Time: Wednesday 11:00–11:30

Location: U A-Esch 1

Invited Talk

AKE 9.1 Wed 11:00 U A-Esch 1

Floating Offshore Wind - A state of the art review — ●FRANK ADAM — University of Rostock, Chair of Wind Energy Technology, Rostock, Germany

Floating substructures for wind turbines are commonly credited for enabling the offshore wind industry, so far focused on fixed substructures, to expand into deeper waters. As per Arent et al. (2012), 77% of global offshore wind potential is located in water depths deeper than 60m. To reach areas with those water depths floating systems are needed. Compared to fixed offshore wind turbines or onshore wind turbines such solutions have different issues. The issues are e.g. higher motions of the whole system because of less foundation stiffness, wind

farms far away from the coastline and longer grid connection to shore as well as dynamic cables to connect the devices with each other and the substation. The advantages of floating substructures are e.g., that they could be cost competitive in comparison to onshore renewable energy devices as well as that the need of huge installation vessels can be avoided because of an integrated installation procedure of the substructure and the wind turbine on top. The presentation will give a state of the art review of existing floating offshore substructures incl. a focus on current research and development topics. For example scaling effects for combined wind and wave tests with scales of 1:50 up to 1:100 are an issue. Other topics for the presentation will be the servo-hydro-aero-elastic coupled calculation methods and issues with regard to fabrication methods.