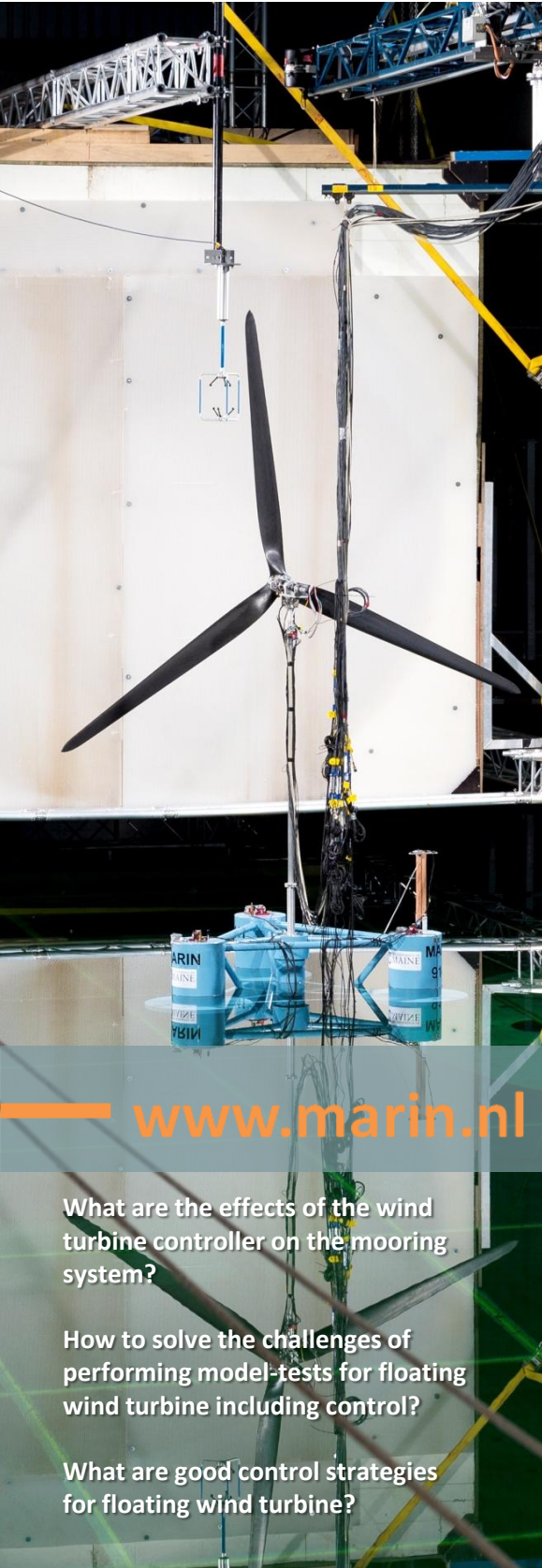


LIONS HAT JIP

Laboratory Investigation Of Numerical Solutions for floating Horizontal Axis Turbine Joint Industry Project

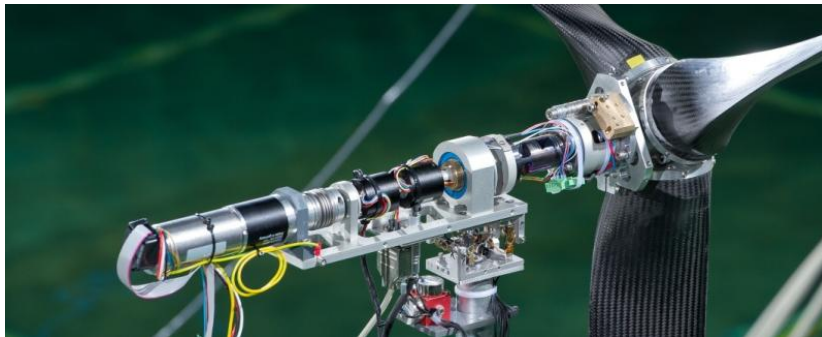


LIONS HAT

Laboratory Investigation Of Numerical Solutions for floating Horizontal Axis Turbines

In greater water depths floating offshore wind turbines can be an alternative to fixed wind turbines. In this context, the development of a cost-efficient floating wind turbine relies on a proper prediction of loads on the turbine, its floating foundation and its mooring system. Several research and commercial codes are capable of simulating simultaneously the motions of the floating support together with the dynamics of the wind turbines in wind and waves. These simulations include the effect of the wind turbine controller. Recently, physical model tests of scaled-down prototypes consisting of the wind turbine with a controller mounted on top of a floating support platform have been successfully conducted in a basin with wind and waves.

Due to basin constraints, model tests in combined wind and waves require the adaption of the rotor, the mooring and its control system. Consequently, discrepancies between the prototype in the basin and the full scale system are introduced in this process. In this project, a numerical model of the physical model in the basin will be made. This calibrated model will serve the comparison with the results of model tests and as well as the verification against the results of simulations of the full-scale prototype without adaptations. In other words, an important deliverable of this project will be the 'model of the model' approach for floating wind turbines.



Rotor's experimental set-up with blade pitch control.

Target starting date: Q1, 2015.

Target completion date: Q4, 2016.

Are you interested?

Please contact: Feike Savenije of ECN (NL), or,
Sebastien Gueydon of MARIN (NL), or,
Erik-Jan de Ridder of MARIN (NL).

E: savenije@ecn.nl T: +31 (0)224 564 679

E: s.gueydon@marin.nl T: +31 (0)317 493 290

E: e.d.ridder@marin.nl T: +31 (0)317 493 205

www.marin.nl

What are the effects of the wind turbine controller on the mooring system?

How to solve the challenges of performing model-tests for floating wind turbine including control?

What are good control strategies for floating wind turbine?