ABOUT THE COURSE

OpenFAST is a wind turbine simulation tool which builds on FAST v8. It was created with the goal of being a community model developed and used by research laboratories, academia, and industry. It is managed by a dedicated team at the National Renewable Energy Lab. FAST v8 is a computer-aided engineering tool for simulating the coupled dynamic response of wind turbines. FAST join aerodynamics models, hydrodynamics models for offshore structures, control and electrical system (servo) dynamics models, and structural (elastic) dynamics models to enable coupled nonlinear aero- hydro-servo-elastic simulation in the time domain. The FAST tool enables the analysis of a range of wind turbine configurations, including two- or three-blade horizontal-axis rotor, pitch or stall regulation, rigid or teetering hub, upwind or downwind rotor, and lattice or tubular tower. The wind turbine can be modeled on land or offshore on fixed-bottom or floating substructures. FAST is based on advanced engineering models derived from fundamental laws, but with appropriate simplifications and assumptions, and supplemented where applicable with computational solutions and test data.

WHO SHOULD ATTEND

Engineers & scientists involved in the design and analysis of offshore floating wind turbine structures including foundations. Personnel from oil companies, class societies and offshore structures builders will benefit from attending this course. The course is innovative in both content & structure with careful balance of theory & practice.

COST

The registration fee of the workshop will be £395 + VAT (UK only)

COURSE MATERIAL

The lecture notes will be sent in advance

PAYMENT

Payments can be made by cheque (made payable to ASRANet Ltd.), cash or bank transfer. Please enquire for details.

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ONLINE

Training on FAST Program

20th May 2021

(A Maritime Company for Courses, Conferences and Research)

PROGRAMME SCHEDULE

Thursday 20 May 2021

09.00 - 10.30 Lecture 1: Basic introduction and wind modelling

- Introduction of OpenFAST (its functions and development)
- Download and run OpenFAST
- Modules in OpenFAST
- Essential inputs for a simulation
- Generation of turbulent wind field
- Configuration of InflowWind
- Examples for different wind conditions (steady, uniform, turbulent)

10.30 - 11.00 *Break*

11.00 - 12.30 Lecture 2: Fully coupled simulation of an onshore wind turbine

- Aerodynamic modelling (AeroDyn14/15)
- Structural modeling of blades and tower using BModes
- Controller definition
- Output definitions
- Examples

12.30 - 13.30 *Lunch*

13.30 - 15.00 Lecture 3: Fully coupled simulation of fixed-bottom offshore wind turbines

- Modelling of the substructures in SubDyn
- Modelling of hydrodynamics in HydroDyn
- Start-up and emergency shutdown simulations
- Examples of monopile, tripod and jacket type substructures

15.00 - 15.30 *Break*

15.30 - 17.00 Lecture 4: Fully coupled simulation of floating offshore wind turbines

- Modelling of hydrodynamics of the floating platform
- Modelling of mooring lines in FEAMooring or MoorDyn
- Free-decay simulations

Examples of spar and semisubmersible platforms

CV of Lecturer

Dr Yang Yang

Dr Yang obtained his PhD degree from University of Shanghai for Science & Technology (USST). His doctoral thesis is on' Seismic analysis of offshore wind turbines'. He is an outstanding student in his undergradute class of USST where he did his bachelor's degree in Power Machinery and Engineering.He is now a visiting scholar at the Liverpool John Moores University (LJMU),UK where he is responsible for various projects namely (i) Development of a fully coupled tool for a multi-body floating offshore wind turbines(FOWT),(ii) Development of FOWT controller considering the platform motion feedback;(iii) Identification of damage hotspots of the FOWT and (iv) Development of a damage diagnosis approach for the FOWT.