Wind turbine technology

Wind power is one of the fastest growing sectors of the world’s electrical power industries. This course offers an unbiased insight into the modern wind turbine’s design process, techniques, disciplines and tools. Once the basics of wind turbines’ architecture definition have been explained, a focus on the design process of machines, in the context of wind farm operations, will be given. The trainers will guide the audience through the basics of wind energy conversion and the evolution of the design process behind today’s giant wind turbines. The modules will highlight the importance of accurate design loads prediction and effective control, alongside their effect on wind turbines’ mechanical design. How design options may affect cost of energy is illustrated and future technology trends are reviewed.

Knowledge and understanding of wind turbine design is becoming more important, every day, when looking at the operational context. The second part of the training will therefore offer an overview of the methods to gauge machine selection and suitability, together with upgrade options like lifetime extension and controller re-fit. The course offers a significant depth of understanding of the technology background, but does not assume any prior knowledge of wind energy.

Who should attend?
- Industry professionals wishing to broaden their knowledge
- Individuals or companies involved in wind farm or turbine development and operation
- Professionals of any discipline entering the industry and seeking specific skills:
  - Project managers
  - Developers
  - Civil and structural designers
  - Turbine designers
  - Investors
INTRODUCTION & FUNDAMENTALS OF WIND TURBINE TECHNOLOGY - DAY 1 (10:00-17:30)

- Introducing DNV GL Renewable Advisory
- Introduction to Wind Technology
- Fundamentals of Wind Energy Conversion: Introduction to Rotor Aerodynamics
- Fundamentals of Wind Energy Conversion: Site conditions
- Turbine Architecture: Overview of Design Concepts
- Turbine Architecture (continued): Focus on Turbine Loading part 1
- Turbine Architecture (continued): Focus on Turbine Loading part 2
- Turbine Architecture (continued): Focus on Mechanical design
- Turbine Architecture: Turbine Architect and cost of energy driven designs
- Turbine Architecture (continued): Focus on Control System Elements
- Turbine Architecture (continued): Focus on Electrical Systems

WIND TURBINE DESIGN IN THE CONTEXT OF WIND FARMS - DAY 2 (09:00-17:30)

- Turbine Architecture (continued): Overview of foundations
- Turbine Architecture (continued): Overview of Certification
- Wind Farm Design Process: Overview of the Windfarm Development Process
- Wind Farm Design Process: Wind Turbines Selection
- Wind Farm Design Process: Overview of Turbines in the Market
- Wind Farm Design Process (continued): Effect of Environmental Conditions on Site Suitability
- Wind Farm Design Process (continued): Integrity Driven Turbine Site Suitability
- Wind Farm Design Process (continued): Site Suitability Tool (including demo)
- Wind Turbines in the Context of Farm Operations: Wind Turbines Performance & Availability Monitoring
- Wind Turbines in the Context of Farm Operations: SCADA
- Wind Turbines in the Context of Farm Operations: Condition Monitoring Systems
- Wind Turbines in the Context of Farm Operations: Wind Turbines Online Digital Twin (including demo)

WIND TURBINE DESIGN IN THE CONTEXT OF WIND FARMS - DAY 3 (09:00-13:00)

- Wind farms: Overview of project certification
- Wind Farm Upgrades: Route Map Approach to Assets Optimization
- Wind Farm Upgrades: Life Extension
- Wind Farm Upgrades: Controller Re-fit
- Wind Farm Upgrades: Repowering
- Future Technology Trends: Wind Turbine Trends

REGISTRATION/BOOKING AND ENQUIRY DETAILS

Date and location: 9-11 April 2019, One Linear Park, Avon Street, Temple Quay, Bristol-UK, BS2 0PS
Price: Before the 11th of March 2019 Eur 1,550. After the 11th of March 2019 Eur 1,800
Bookings/Registration contacts: Edoardo Cicirello mailto: edoardo.cicirello@dnvgl.com; Direct (+44) 07500038994

Future Technology Trends: Wind Technology Trends (Windfarm control)