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MEDOW Summer School - Wind Farm Planning

Lecturer: Niels-Erik Clausen (Associate Professor) and Tom Cronin (Special advisor)

To start the MEDOW Summer School training event for all researchers within the MEDOW project, the DTU researchers Niels-Erik Clausen and Tom Cronin conducted a two-hours lecture on wind farm planning. Both lecturers are involved in a number of research projects at the leading mission-driven institution for wind energy – the DTU Riso Campus Department for Wind Energy - as well as in the Master programme on Wind Energy.

The purpose of this session was the presentation of all steps addressed during the planning, construction, operation and destruction of wind farms. During the planning process for a specific site the wind resource is firstly assessed, in general by means of measurements and models. The Wind Atlas Analysis and Application Programme (WAsP) which was developed at DTU Wind Energy since 1987 is an important tool for wind farm developers around the world to conduct these tasks. Furthermore, social acceptance, grid connection, project economics and political support are addressed. Regarding environmental studies, the lecturers stressed that noise emissions by the turbines have to be studied thoroughly in order to avoid forced shutdown during low wind speeds when background noise is less dominant over the turbine noise emission. The MEDOW researchers learned, that spatial planning both for onshore and offshore takes into account protected nature resorts, landscape and visual impact, flora and fauna especially bird migration, ship routes, ferries lines and fishing areas among others.

In the second part of the lecture, Mr. Cronin emphasized again four phases of a wind farm project: development, construction, operation/maintenance and destruction. The time window is split into ten years for development, 1-2 years for construction, 20-25 years of operation and less than one year for destruction. The heart of each project is the wind turbine itself as well as its characteristics: main drivers nowadays are the maximum energy yield for specific wind profiles, the design lifetime, reduction of top head mass (THM) especially offshore and certification in most of the countries. The lecturers emphasized the importance of the grid connection for each wind farm project both for on- and offshore. This fact motivates additionally the research done in the MEDOW project focussing the effective grid integration of offshore wind power. The session was accompanied by vital discussions among the lecturers and researchers.