



NORCOWE Summer School 2015

in cooperation with NOWITECH

When: **August 17th - 21th, 2015** (Monday - Friday).
Venue: Hardingasete, Norheimsund, Hardanger, Norway.



Harvesting wind energy in a harsh environment



Overall program for the NORCOWE 2015 Summer School:

Monday:

The wind farm development process -The steps in designing a wind farm from site identification, consenting, planning, manufacturing, installation and operation. Laws, rules and standards

Jan Fredrik Stadaas, Statoil

Tuesday morning:

Environmental data for planning and design -Environmental conditions relevant for offshore wind farms. What is used in planning and design? Wind, waves and current data. How to acquire, how they are presented (formats, mean versus variations etc...) How to use, quality issues. Measurements on site versus models and remote sensing.

Birgitte Furevik, Met

Tuesday afternoon:

Harvesting the wind energy -Principles for extracting wind energy using a turbine. The HAWT versus VAWT and other concepts. Special issues related to offshore use. Consequences of upscaling (1 – 5 – 10MW). Main components of a turbine. Touch upon mechanical and electric issues.

Trond Kvamsdal, NTNU

Wednesday morning:

The design challenges -Issues to consider in designing an offshore wind turbine. Focus on support structure and how to account for environmental loads. Some park issues, wake effects and infrastructure.

Jørgen Krokstad, Statkraft

Wednesday afternoon:

Social event: trip to Folgefonna glazier

Thursday morning:

Control of wind turbines and wind farms -Why is control needed? Optimum power production, load reduction etc. Strategies for control of individual turbines. Control of wind farms for maximum power.

Torben Knudsen, Aalborg University

Thursday afternoon:

Installation, operations and maintenance -Issues related to installation of fixed and floating platforms, access for maintenance, alternative maintenance strategies, light and heavy maintenance. Operation of wind farms.

Jan Fredrik Stadaas, Statoil

Friday morning:

The economics of wind power -How to compute LCOE. Sensitivities to resource estimates, investment costs etc. Trends in cost development, The importance of unit size, learning curves, R&D etc.

Jørgen Krogstad, Statkraft