

First International Conference on Wind Turbine Noise

Wind Turbine Noise: Perspectives for Control

G. Leventhall; Consultant in Noise Vibration and Acoustics



Relaxa Hotel Stuttgarter Hof, Berlin - Monday 17th October and Tuesday 18th October 2005
Organised by INCE/Europe in collaboration with the European Acoustics Association.

The urgent need to reduce dependence on fossil fuels is being met, in part, by the development of wind turbines, either singly or in multiple arrays, both onshore and offshore. At the present time there are about 70,000 turbines installed world-wide, increasing rapidly.

Europe is leading in the development of wind-generating capacity, expected to rise from less than 30,000 MW in 2003 to 75,000 MW in 2010 and possibly 180,000 MW in 2020. Germany and Spain are currently the primary producers of wind power in Europe, with about approx. 25,000 MW of installed capacity. Denmark produces the greatest proportion of its energy requirements from wind and also dominates the global export market.

Development of onshore wind power results in wind turbines closer to habitation, leading to the possibility of noise problems, such that a frequent objection raised in planning procedures is that of noise and vibration.

This conference aims to bring together the latest information on noise and vibration from wind turbines to give an unbiased framework from within which future developments can be assessed.

It will also be a venue for researchers on wind turbine noise and its effects to meet together, and also to meet with those who design wind turbine installations, both in industry and in the planning process.

Provisional Programme

Opening paper

A review of wind turbine noise
 Helmut Klug (Germany)

Sources and Control

Understanding the acoustical behaviour of a wind turbine by means of acoustic imaging
 K. Haddad, V. Benoit (France)

Development of noise reduction technology for a 500kW prototype wind turbine
 G. Henderson (New Zealand)

Mitigation measures for night time wind turbine noise
 F. van den Berg (The Netherlands)

CFD-CAA study of a generic Savonius rotor for wind turbine
 S. Timouchev (Russia)

SIRROCO: Constrained Aerodynamic & Aeroacoustic Design of Wind-Rotor Airfoils
 Th. Lutz, A. Herrig, W. Würz, K. Braun, E. Krämer (Germany)

SIROCCO: Silent Rotors by Acoustic Optimisation
 G. Schepers, T. Curvers, S. Oerlemans (The Netherlands), K. Braun, T. Lutz, A. Herrig, W. Wuerz (Germany), B. Méndez López (Spain)

SIROCCO. Localisation and quantification of noise sources on a wind turbine
 S. Oerlemans (The Netherlands),
 B. Méndez López (Spain)

SIROCCO. Trailing edge noise measurements of wind turbine aerofoils in open and closed test section wind tunnels
 A. Herrig, W. Würz, Th. Lutz, K. Braun, E. Krämer (Germany),
 S. Oerlemans (The Netherlands)

Performance and noise from a wall-mounted wind mill driving a refrigerator/heat pump unit
 K. Asfar, H. Radaydeh, B. Shaddad (Jordan)

Analysis of the sound characteristics of large stall-controlled wind power plants in inland locations
 H. Harders, H. J. Albrecht (Germany)

Two-medium theory of aerodynamic sound sources and the practical problems of wind turbine noise
 A. T. Fedorchenko (Russia)
vNoise measurements according to IC 61400-11. How to use the results
 B. Søndergard (Denmark)

Noise of Wind Power Turbine V80 in a Farm Operation
 M. Golec, Z. Golec, C. Cempel (Poland)

Regulation of Wind Turbine Noise in the Western United States

M. Bastache (USA)

Propagation and Modelling: Comparison of software predictions of wind turbine generator sound levels with measured levels for Australian conditions and wind farms

C. Tickell (Australia)

Modelling of noise from wind farms and evaluation of the annoyance of the noise

E. Sloth (Denmark)

Prediction of wind turbine noise propagation over complex terrain in all kinds of weather with Nord 2000

B. Søndergard (Denmark)

Numerical simulations of wind fields over the Baltic Sea with applications to sound propagation

K. Törnblom, C. Larsson (Sweden)

Wind gradient statistics up to 200m altitude over flat ground

F. van den Berg (The Netherlands)

A detailed study of the propagation and modelling of the effects of low frequency seismic vibration and infrasound from Wind Turbines

P. Styles, R. England, I. Stimpson, S. Toon, D. Bowers, M. Hayes (UK)

Wind mapping of airborne noise propagation (mapping of upwind and downwind airborne noise)

C. Sennat (France)

The use of 10 m wind speed measurements in the assessment of wind farm noise

P. Botha (New Zealand)

Perception and effects

Low frequency noise and wind turbine noise levels

M. Hayes (UK)

Sound properties of importance for perception and annoyance of wind turbine noise

K. Persson-Waye, E. Pedersen (Sweden)

Masking of wind turbine sound by vegetation noise

K. Bolin (Sweden)

Human response to wind turbine noise in the living environment - annoyance and moderating factors

E. Pedersen, K. Persson-Waye (Sweden)

How the "mythology" of infrasound and low frequency noise related to wind turbines might have developed

G. Leventhall (UK)

An Exploration of Public Opinion of Wind Farms Situated Close to a Populated Area-The Awhitu Wind Farm proposal

C. Watts (New Zealand)

Wind Turbines Off-Shore. Low frequency underwater noise from offshore wind turbines: Detection ranges and potential implications for marine mammals

O. Damsgaard Henriksen (Denmark)

Underwater noise emissions of offshore wind turbines

K. Betke, K.-H. Elmer, J. Gabriel, W.-J. Gerasch, R. Matuschek, T. Neumann (Germany)

Sound propagation around offshore wind turbines measurement techniques and analysis method

M. Boué (Sweden)

For further information see:

www.windturbinenoise2005.org

(((Noise))) measurements

[Emission/ Immission]

⇒ Prediction of acoustic noise – Consultancy – Immission control certificate

for wind turbines



Deutsches Windenergie-Institut GmbH

Ebertstr. 96
D-26382 Wilhelmshaven
Germany
Tel.: +49 (0)44 21 - 48 08-0
Fax: +49 (0)44 21 - 48 08-43
acoustics@dewi.de

For further information on this and other services please visit our website:

⇒ www.dewi.de

With its longstanding experience and comprehensive know-how in the field of **acoustic noise measurement, noise prediction, immission control certificate, etc.**, DEWI assists its customers in obtaining the necessary certificates of meeting noise immission standards [immission control certificates]. We advise which type of measurement is required/ recommended: emission or immission. All measurements are carried out in accordance with the latest standards and guidelines [IEC, Technische Richtlinie (FGW), TA-Lärm, MEASNET].

DAR-accredited acc. to ISO17025 for acoustic noise measurements and predictions; measurement laboratory acc. to § 26 BImSchG (German Noise Protection Act) for measuring emission/immission of wind turbines; chairmanship of IEC standard committee and the working group "Noise

