The Wind Turbine “Noise” Problem - Is it Infrasound, Low Frequency Noise, or Amplitude Modulation?

John Yelland MA DPhil (Oxon) MInstP FIET MIOA AMASA

It's hard to admit to serious errors…(6)

- Asbestos
- Radium Girls
- Tobacco
- Thalidomide
- Primodos
- <u>Wind turbines</u>

Infrasound and Low Frequency Noise from wind turbines inflict serious adverse health effects on a significant minority of wind farm neighbours.

Dr Leventhall:

> *"I can state quite categorically that there is no significant infrasound from current designs of wind turbines. To say that there is an infrasound problem is one of the hares which objectors to wind farms like to run."*

Dr Yelland:

> *"I firmly believe that the primary cause of the more severe symptoms of Wind Turbine Syndrome is the very high levels of infrasound and low frequency noise energy emitted by wind turbines."*

Dr Leventhall says it’s all your own fault

1. Introduction Some people become ill in the vicinity of wind turbines and an assumption is that this is due to energy radiating from the turbines to the person. The most common radiation to the person is noise, with electrical fields second. But a “visual radiation” is also important. A “response radiation” from the person back to the turbine is not normally considered, but does occur, mainly developing from how a person responds to the wind turbine (Fig 1). An affected person may send a distress response back to the turbine, as they see the turbine as the focus of their problems. Or they may feel that the turbine is a beautiful construction, which they enjoy looking at. The physical input which comes from the turbine is returned as an emotional output, such as annoyance, pleasure or indifference.

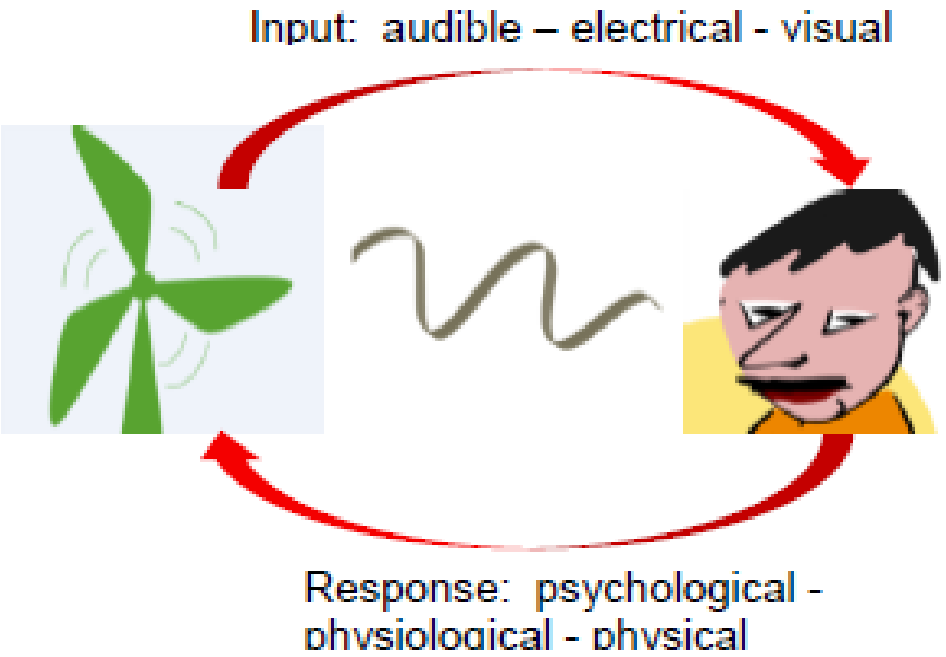


Fig 1 Turbine and human interaction

The Industry's "Enhanced Annoyance" Theory: Dr Leventhall says it's all your own fault

1. Introduction Some people become ill in the vicinity of wind turbines and an assumption is that this is due to energy radiating from the turbines t erson. The most common radiatio is noise, with electrical fi ual radiation" r bine r, son (Fig 1). An send a distress response rbine, as they see the turbine as us of their problems. Or they may feel that the turbine is a beautiful construction, which they enjoy looking at. The physical input which comes from the turbine is returned as an emotional output, such as annoyance, pleasure or indifference.

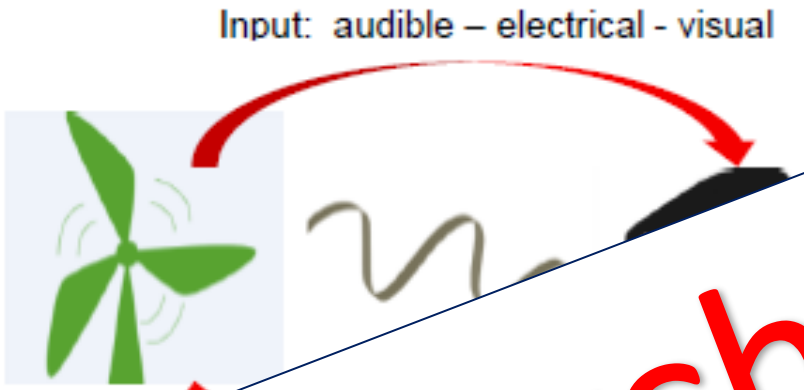


Fig 1 Turbine uman interaction

Psychobabble

The following reportedly affected
animal species
are incapable of having a
considered opinion on
climate change, landscape or
visual amenity impacts,
potential property devaluation
or anything else…

Aborted Mink Pups in a Freezer

Mink

Sheep

Pigs

Geese

Goats

Whales ?

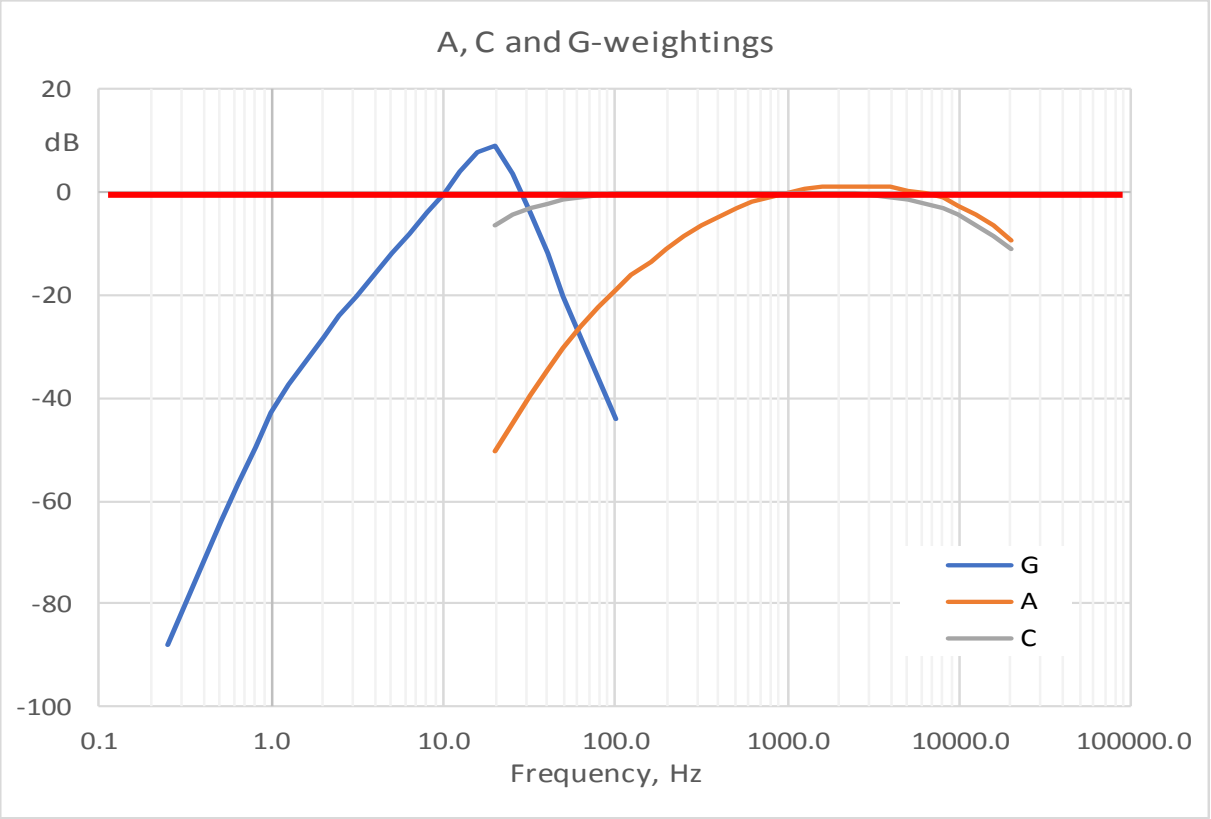
Bats

Dogs

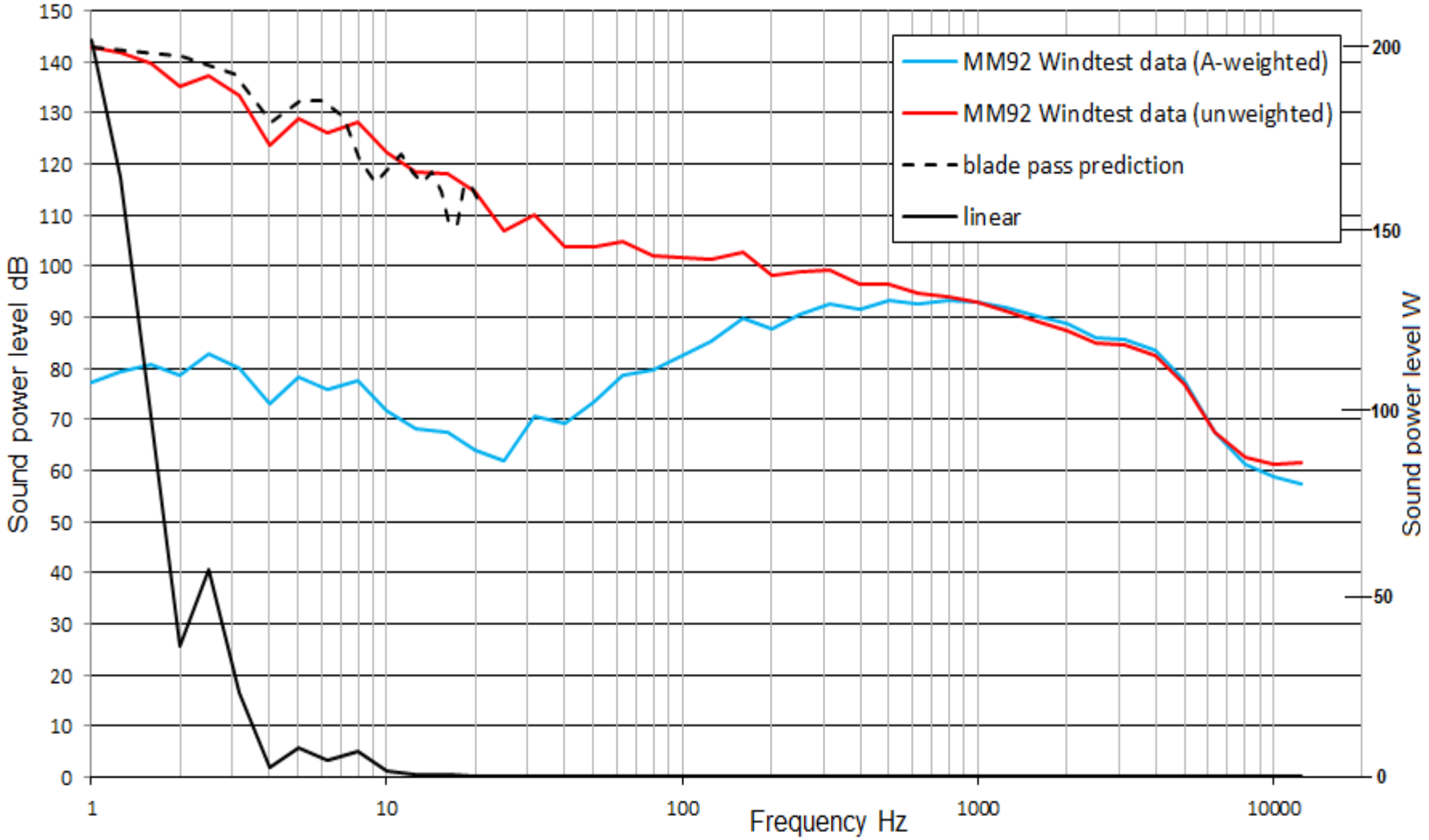
Cows

Horses

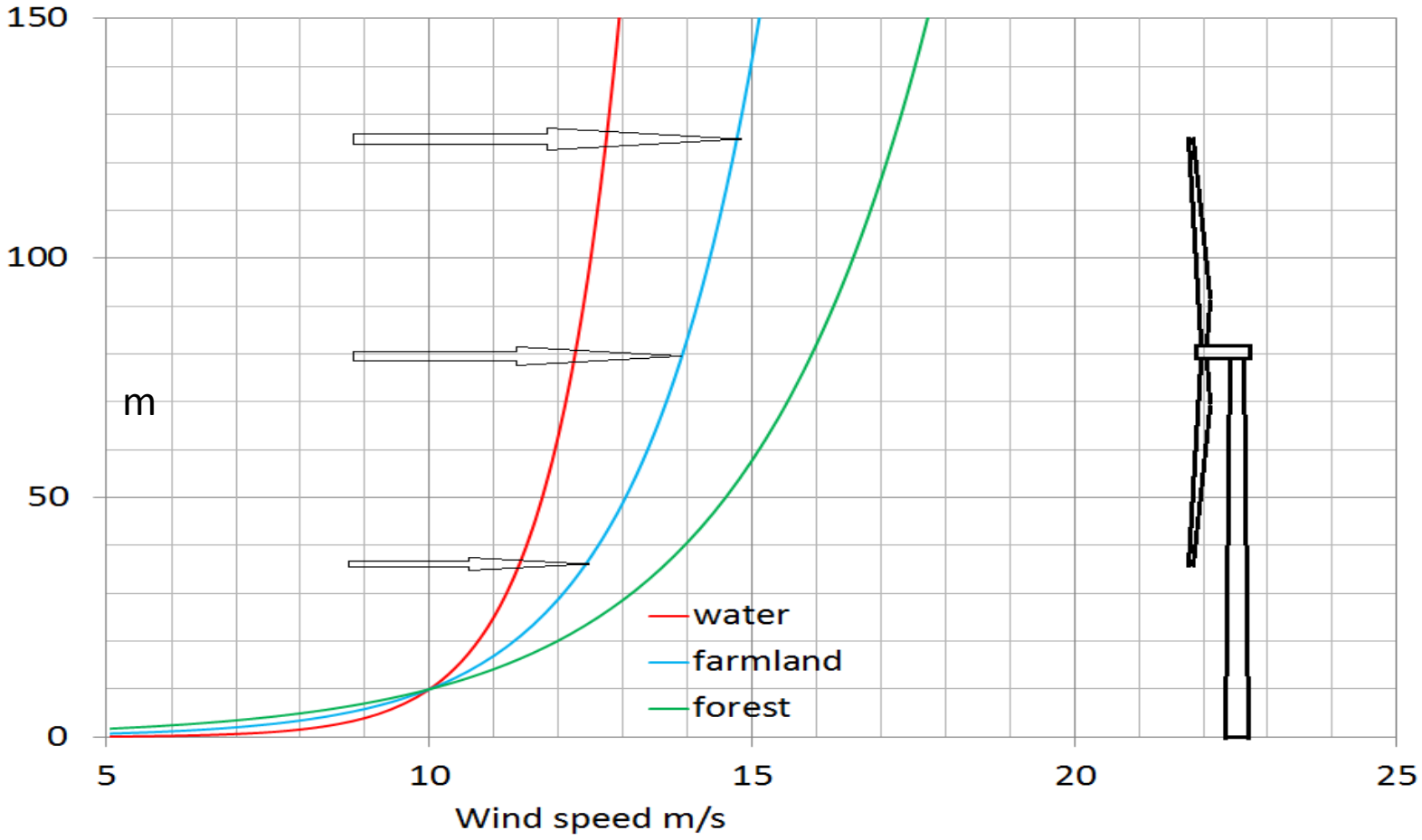
A-, C- and G- weighting are not capable of measuring infrasound. Z weighting is essential (red line)



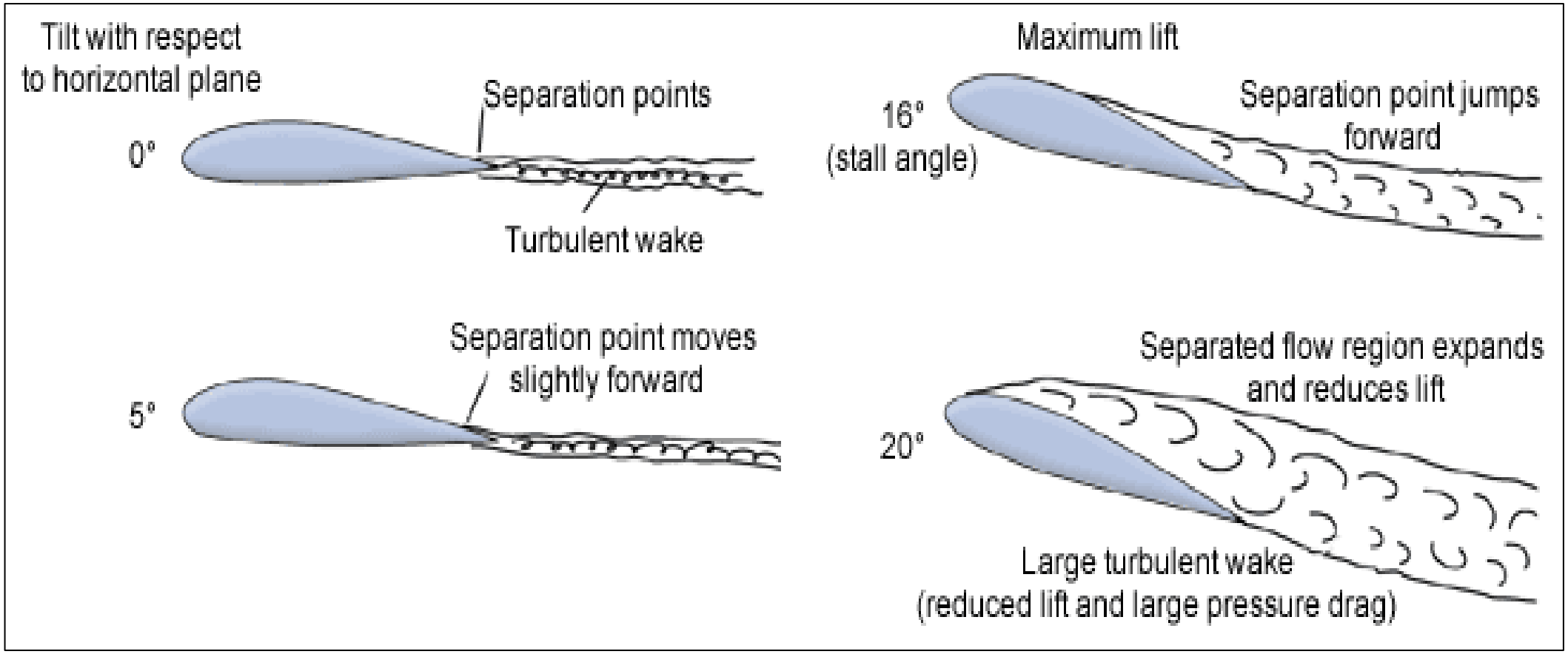
Plotted from Windtest GmbH Senvion MM92 Test Data



Wind shear



Aerofoil Attack Angle



Aerofoils at increasing angles of attack (credit: NASA).

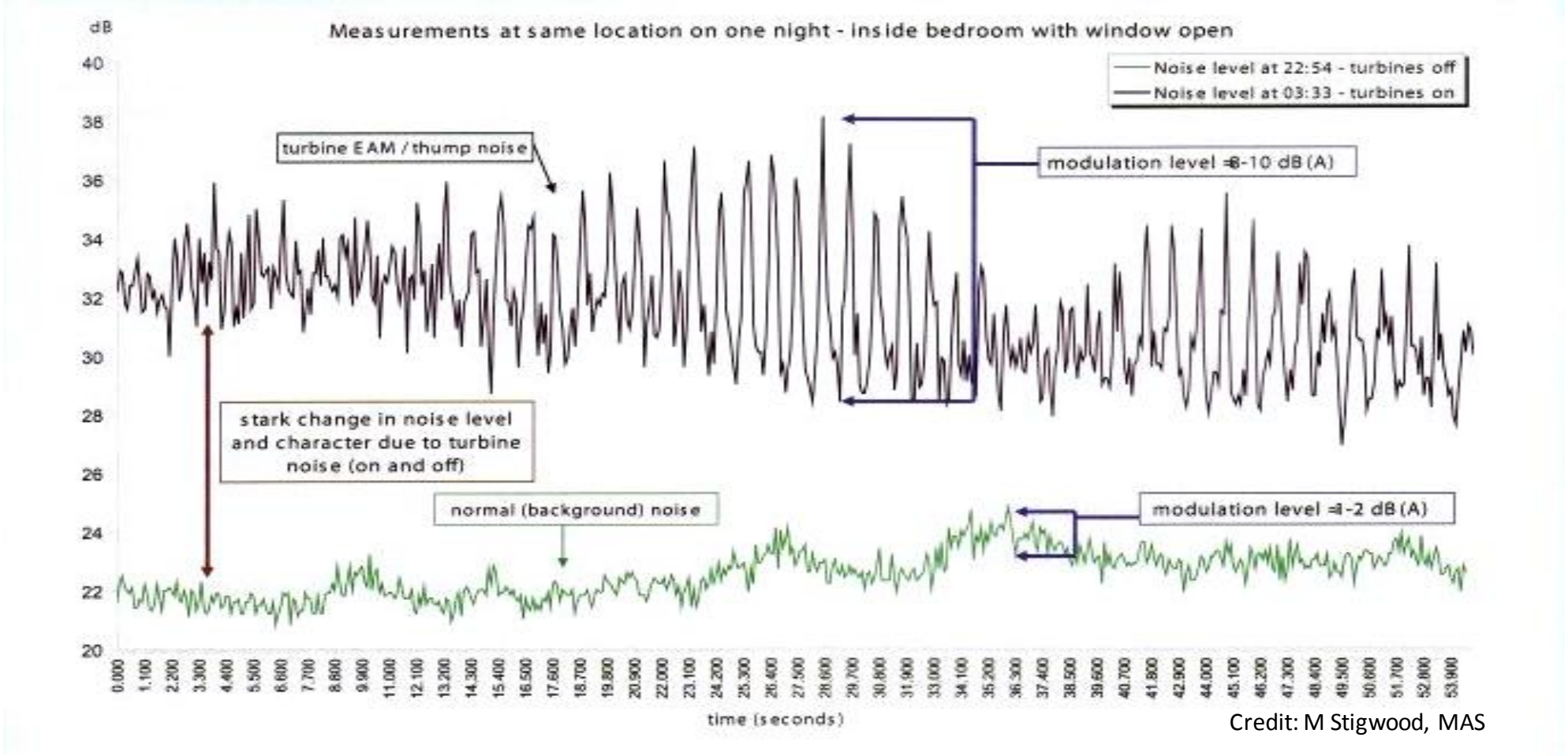
renewableUK
The voice of wind & marine energy

www.RenewableUK.com

Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effect

December 2013

Excessive Amplitude Modulation



Credit: M Stigwood, MAS

Audible Noise and Flapping Blades

Figure by Oerlemans of Siemens Wind Turbine division & photo of blades waiting for transportation.

Blade Flexibility and Elasticity

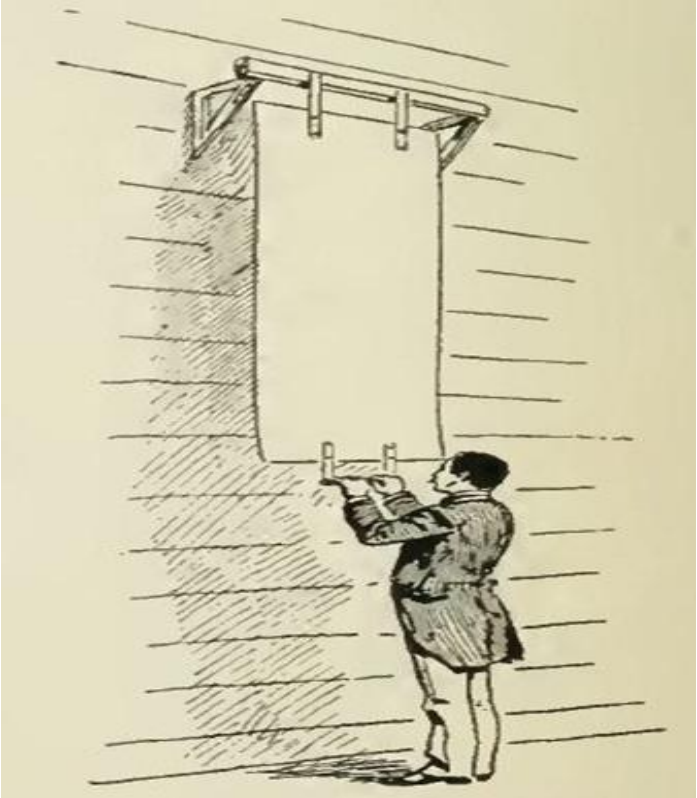
This is a triple exposure of a blade undergoing a static deflection test...

This is an entire Vestas rotor in China; the Chinese have a much more exciting way of delivering them than we do. The point of the picture is, again, how thin and flexible the blades are.

Animated Floppy Blades

Victorian Theatrics

Thunder sheet



Floppy Towers (Vortex Shedding)

It’s the **POWER** and the **ENERGY** that matter

- The wind industry claim there is no infrasound from modern turbines. Remember slide 2?
- Competent independent acousticians know that most of the energy in wind turbine acoustic emissions is concentrated below 20 Hz. See slide 8.
- So why has the wind industry not measured infrasound levels down to 0.2 Hz to prove that they are right and we are wrong?
- They have, at least once. Again remember slide 8 (MM92 test data)? But not quite low enough in frequency.

In Summary…

1. Only the inclusion of infrasound can explain the severe AHEs suffered by many wind farm neighbours; it is notable that the wind industry do not publish unweighted noise measurements at infrasound frequencies.
2. The “enhanced annoyance” theory now promulgated by the wind industry is demonstrable nonsense, but for those want to believe it we must gather formal evidence of serious harm to non-human species.
3. We need to create an international independent noise working group comprising (i) specialists in the physics, acoustics and medical aspects of WTN and WTS, and (ii) proven WTN victims and their GPs
4. The group will require funding to procure the measuring equipment necessary the demonstrate the true ILFN outputs of wind turbines.
5. Governments must be enlightened in such a way that they cease their blind support of the wind industry and cease to ignore the evidence.

Thank you for listening – any questions?