Pressure versus Suction side aerofoil noise emission

Student Project Proposal

APPLY

Contact person:

Erik Sloth

E-mail:

ERSLO@Vestas.com

Short description of the project:

- Aerofoil noise emission models use boundary layer properties as scaling parameters assuming suction and pressure side noise emission to be identical for identical boundary layer properties on the two sides of the aerofoil.
- Project aim to investigate this approach for asymmetric aerofoils, analytical and test based

Scope:

Current aerofoil noise models assume noise emission from SS and PS to be identical when boundary layer thickness on the two sides is identical. Assumption is on both noise level and frequency shape.
However – turbulence length scale differ between the two sides, so can this really be true.

Project includes acoustic wind tunnel campaign planning and testing of both boundary layer properties and noise emissions as observed applying acoustic array technology for observing both sides of the aerofoil.

Test results will be analyzed according to measured boundary layer properties and will in addition be compared with TNO modelling of same aerofoil.

Other information (not mandatory):

- Master thesis
- Application deadline
- Link to articles

Keywords

Wind turbine noise, Simulation, Acoustic wind tunnel testing, Aerofoil noise emission, Acoustic array.

Surface pressure as function of AoA & Frequency