Airfoil design for a stall-regulated wind turbine blade

Background

Winfoor is a spin off from the Lund University, Sweden. Behind the company is a multidisciplinary group of researchers from the fields of mathematics, fluid mechanics and structural mechanics. The team is passionate about building a company based on vision and expertise, with the purpose of integrating new technologies in the wind energy sector.

The company has developed Triblade, a disruptive technology for wind turbine rotor blades that has the potential to impact the entire wind power industry. The new technology is a 3-in-1-blade that will allow rotor blades to be longer, stronger and much lighter than current offerings, while reducing production costs and increasing ease of transport and installation.

These are game changing improvements that gives Winfoor a unique opportunity in today’s global wind turbine rotor blade market. The technology may also play a decisive role in driving the development of next generation of larger, more efficient wind turbines and to accelerate the transition to greater use of renewables worldwide.

Objective

The existing airfoils used in wind turbine blades do not fulfills all the required characteristics of the Triblade design.

The goal of the project is to design a new airfoil for a fixed speed, stall-regulated wind turbine blade using an inverse design method and CFD calculations.

Description of work

The main task will be to investigate the available inverse airfoil design methods (i.e. using the prescribed flow parameters to get the resulting airfoil). Use the most suitable method to design a new airfoil that fulfills the Triblade design requirements. The performance of the new designed airfoil will be then evaluated.
by using CFD.

Suitable background

Final year M.Sc. student with background in fluid dynamics and a keen interest in CFD and aerodynamics.

Number of student 1
Estimated time needed: 20 weeks

Contact

Rikard Berthilsson
Email: rikard@winfoor.com
Telephone: +46 707 754 099

Ali Al Sam
Email: Ali.Al_Sam@energy.lth.se
office: +46 46 222 40 44