Mac Gaunaa - DTU Orbit (17/02/2019)
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Aerodynamic design

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Research outputs:

Advanced Wind Tunnel Boundary Simulation for Kevlar Wall Aeroacoustic Wind Tunnels
Research output: Research - peer-review › Paper – Annual report year: 2018

CFD simulations of a conceptual Rain Erosion Teste
Research output: Research › Report – Annual report year: 2018

Dynamic stall model modifications to improve the modeling of vertical axis wind turbines
Research output: Research › Report – Annual report year: 2018

Fast trailed and bound vorticity modeling of swept wind turbine blades
Research output: Research › Conference article – Annual report year: 2018

Investigation of droplet path in a rain erosion tester
Research output: Research › Conference article – Annual report year: 2018

Wind tunnel tests of an airfoil with 18% relative thickness equipped with vortex generators
Research output: Research › Conference article – Annual report year: 2018

The flow upstream of a row of aligned wind turbine rotors and its effect on power production
Research output: Research › Journal article – Annual report year: 2016

Aerodynamic Optimization of Vertical Axis Wind Turbine with Trailing Edge Flap
Research output: Research › Article in proceedings – Annual report year: 2016

Cylindrical vortex wake model: skewed cylinder, application to yawed or tilted rotors
Research output: Research › Journal article – Annual report year: 2015

Full scale wind turbine test of vortex generators mounted on the entire blade
Research output: Research › Conference article – Annual report year: 2016

Impact of a wind turbine on turbulence: Un-freezing turbulence by means of a simple vortex particle approach
Research output: Research › Journal article – Annual report year: 2016

Modelling of Vortex-Induced Loading on a Single-Blade Installation Setup
Research output: Research › Conference article – Annual report year: 2016
Sizing and control of trailing edge flaps on a smart rotor for maximum power generation in low fatigue wind regimes:
Control of trailing edge flaps on a smart rotor for maximum power generation
Research output: Research - peer-review › Journal article – Annual report year: 2015

Toward an engineering model for the aerodynamic forces acting on wind turbine blades in quasisteady standstill and blade installation situations
Research output: Research - peer-review › Conference article – Annual report year: 2016

What is the critical height of leading edge roughness for aerodynamics?
Research output: Research - peer-review › Conference article – Annual report year: 2016

Analysis of wind turbine aerodynamics and aeroelasticity using vortex-based methods
Research output: Research › Ph.D. thesis – Annual report year: 2015

Aerodynamic response of an airfoil section undergoing pitch motion and trailing edge flap deflection: a comparison of simulation methods
Research output: Research - peer-review › Journal article – Annual report year: 2014

Aeroelastic large eddy simulations using vortex methods: unfrozen turbulent and sheared inflow
Research output: Research - peer-review › Conference article – Annual report year: 2015

Creating a benchmark of vertical axis wind turbines in dynamic stall for validating numerical models
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Cylindrical vortex wake model: right cylinder
Research output: Research - peer-review › Journal article – Annual report year: 2014

Empirical modeling of single-wake advection and expansion using full-scale pulsed lidar-based measurements
Research output: Research - peer-review › Journal article – Annual report year: 2014

Increase in the Annual Energy Production due to a Retrofit of Vortex Generators on Blades
Research output: Research › Sound/Visual production (digital) – Annual report year: 2016

Superposition of vortex cylinders for steady and unsteady simulation of rotors of finite tip-speed ratio
Research output: Research - peer-review › Journal article – Annual report year: 2015

Wind turbine blade vibration at standstill conditions — the effect of imposing lag on the aerodynamic response of an elastically mounted airfoil
Research output: Research - peer-review › Journal article – Annual report year: 2014

Analysis of aeroelastic loads and their contributions to fatigue damage
Research output: Research - peer-review › Conference article – Annual report year: 2014

Development of new tip-loss corrections based on vortex theory and vortex methods
Research output: Research - peer-review › Conference article – Annual report year: 2014

First-order aerodynamic and aeroelastic behavior of a single-blade installation setup
Research output: Research - peer-review › Conference article – Annual report year: 2014

Investigation of a new model accounting for rotors of finite tip-speed ratio in yaw or tilt
Research output: Research - peer-review › Conference article – Annual report year: 2014
Self-induced vibrations of a DU96-W-180 airfoil in stall
Research output: Research - peer-review › Journal article – Annual report year: 2013

Sizing and Control of Trailing Edge Flaps on a Smart Rotor for Maximum Power Generation in Low Fatigue Wind Regimes
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

The Effect of Mounting Vortex Generators on the DTU 10MW Reference Wind Turbine Blade
Research output: Research - peer-review › Conference article – Annual report year: 2014

Validation of vortex code viscous models using lidar wake measurements and CFD
Research output: Research - peer-review › Poster – Annual report year: 2014

Validation of vortex code viscous models using lidar wake measurements and CFD
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Vortex-induced vibrations of a DU96-W-180 airfoil at 90° angle of attack
Research output: Research - peer-review › Journal article – Annual report year: 2014

Developing the basis for the design of a 10 MW lightweight rotor
Research output: Research › Sound/Visual production (digital) – Annual report year: 2013

Indicial lift response function: an empirical relation for finite-thickness airfoils, and effects on aeroelastic simulations
Research output: Research - peer-review › Journal article – Annual report year: 2013

Rotor Performance Enhancement Using Slats on the Inner Part of a 10MW Rotor
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Rotor Performance Enhancement Using Slats on the Inner Part of a 10MW Rotor
Research output: Research › Sound/Visual production (digital) – Annual report year: 2013

The DTU 10-MW Reference Wind Turbine
Research output: Research › Sound/Visual production (digital) – Annual report year: 2013

Vortex methods to answer the need for improved understanding and modelling of tip-loss factors
Research output: Research - peer-review › Journal article – Annual report year: 2013

Analysis and modeling of unsteady aerodynamics with application to wind turbine blade vibration at standstill conditions
Research output: Research › Ph.D. thesis – Annual report year: 2012

An improved tip-loss correction based on vortex code results
Research output: Research - peer-review › Article in proceedings – Annual report year: 2012

An improved tip-loss correction based on vortex code results
Research output: Research - peer-review › Poster – Annual report year: 2012

Application of engineering models to predict wake deflection due to a tilted wind turbine
Research output: Research - peer-review › Article in proceedings – Annual report year: 2012

Application of engineering models to predict wake deflection due to a tilted wind turbine
Research output: Research - peer-review › Poster – Annual report year: 2012
ATEFlap Aerodynamic Model, a dynamic stall model including the effects of trailing edge flap deflection
Research output: Research › Report – Annual report year: 2012

Closed loop control of a flap exposed to harmonic aerodynamic actuation
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Design and Wind Tunnel Testing of a Thick, Multi-Element High-Lift Airfoil
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Development of new tip-loss corrections based on vortex theory and vortex methods
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Development of new tip-loss corrections based on vortex theory and vortex methods
Research output: Research › Poster – Annual report year: 2012

Light Rotor: The 10-MW reference wind turbine
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Modelling of unsteady airfoil aerodynamics for the prediction of blade standstill vibrations
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Modelling the influence of yaw using a simple vortex rotor model
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Modelling the influence of yaw using a simple vortex rotor model
Research output: Research › Poster – Annual report year: 2012

Quantification of the Effects of Using Slats on the Inner Part of a 10MW Rotor
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

Quantification of the Effects of Using Slats on the Inner Part of a 10MW Rotor
Research output: Research › Poster – Annual report year: 2012

Simulations of a rotor with active deformable trailing edge flaps in half-wake inflow: Comparison of EllipSys 3D with HAWC2
Research output: Research › peer-review › Article in proceedings – Annual report year: 2012

A computational efficient algorithm for the aerodynamic response of non-straight blades
Research output: Research › Conference abstract in proceedings – Annual report year: 2011

A computationally efficient method for determining the aerodynamic performance of kites for wind energy applications
Research output: Research › Article in proceedings – Annual report year: 2011

Comparison of wind tunnel results for two active aerodynamic load control devices
Research output: Research › Article in proceedings – Annual report year: 2011

Design and test of a thick, flatback, high-lift multi-element airfoil
Research output: Research › Conference abstract in proceedings – Annual report year: 2011
Design og optimering af vingetipper for vindmøller: Slutrapport
Research output: Research › Report – Annual report year: 2011

Hvordan kan vindmøller nedbringe en færges luftmodstand?
Research output: Communication › Net publication - Internet publication – Annual report year: 2011

Indicial Response Function for Finite-Thickness Airfoils, A Semi-Empirical Approach
Research output: Research › peer-review › Article in proceedings – Annual report year: 2011

Status of airfoil design and plans for wind tunnel tests of new thick airfoils
Research output: Research › Conference abstract in proceedings – Annual report year: 2011

A Comparison of Two Devices for Distributed Active Load Control of Wind Turbine Blades
Research output: Research › Article in proceedings – Annual report year: 2010

Actuator disc simulations of influence of wind shear and ground proximity on power production of wind turbines
Research output: Research › Article in proceedings – Annual report year: 2010

Actuator Disc Simulations of Influence of Wind Shear on Power Production of Wind Turbines
Research output: Research › Article in proceedings – Annual report year: 2010

A near wake model for deformable trailing edge flaps implemented the in multi body aero-servo-elastic code HAWC2
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

DAN-AERO MW: Comparisons of airfoil characteristics for two airfoils tested in three different wind tunnels
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

DAN-AERO MW: Detailed aerodynamic measurements on a full scale MW wind turbine
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

Deformable trailing edge flaps for modern megawatt wind turbine controllers using strain gauge sensors
Research output: Research › peer-review › Journal article – Annual report year: 2010

Stability Investigation of an airfoil section with active flap control
Research output: Research › peer-review › Journal article – Annual report year: 2010

The DAN-AERO MW experiments
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

The DAN-AERO MW Experiments: Final report
Research output: Research › Report – Annual report year: 2010

Thick Multiple Element Airfoils for use on the Inner Part of Wind Turbine Rotors
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

Unsteady two-dimensional potential-flow model for thin variable geometry airfoils
Research output: Research › peer-review › Journal article – Annual report year: 2010

Wind Tunnel Test of a Closed Loop Controller for an Airfoil with Trailing Edge Flaps
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010
Wind tunnel test on airfoil Riso-B1-18 with an Active Trailing Edge Flap
Research output: Research - peer-review › Journal article – Annual report year: 2010

Wind turbine blade vibration at standstill conditions - the effect of imposing lag on the response of an elastically mounted airfoil
Research output: Research - peer-review › Article in proceedings – Annual report year: 2010

Wind turbine blade vibration at standstill conditions – the effect of imposing time lag onto aerodynamic response
Research output: Research › Poster – Annual report year: 2010

A dynamic stall model for airfoils with deformable trailing edges
Research output: Research - peer-review › Journal article – Annual report year: 2009

Aeroviscoelastic stability of an airfoil section equipped with trailing edge flap
Research output: Research › Conference abstract in proceedings – Annual report year: 2009

Design and test of a controllable rubber trailing edge flap
Research output: Research › Conference abstract in proceedings – Annual report year: 2009

Design of a wind turbine rotor for maximum aerodynamic efficiency
Research output: Research - peer-review › Journal article – Annual report year: 2009

Load reduction using pressure difference on airfoil for control of trailing edge flaps
Research output: Research › Article in proceedings – Annual report year: 2009

Stability limits for a full wind turbine equipped with trailing edge systems
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

Theory and design of flow driven vehicles using rotors for energy conversion
Research output: Research › Article in proceedings – Annual report year: 2009

Thick Airfoils and High Lift
Research output: Research › Book chapter – Annual report year: 2009

Can CP be increased by the use of winglets? - or - A theoretical and numerical investigation of the maximum aerodynamic efficiency of wind turbine rotors with winglets
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Design and verification of airfoils resistant to surface contamination and turbulence intensity
Research output: Research › Article in proceedings – Annual report year: 2008

Implementing a dynamic stall model for airfoils with deformable trailing edges
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Increased Aerodynamic Efficiency on Wind Turbine Rotors using Winglets
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Integrating deformable trailing edge geometry in modern Mega-Watt wind turbine controllers
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Investigation of stability issues for an adaptive trailing edge system
Research output: Research › Article in proceedings – Annual report year: 2008
Investigation of Stability Issues for an Adaptive Trailing Edge System
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

Latest results and future activities at Risø DTU within trailing edge flaps
Research output: Research › Sound/Visual production (digital) – Annual report year: 2008

Load alleviation on wind turbine blades using variable airfoil geometry
Research output: Research › Sound/Visual production (digital) – Annual report year: 2008

Verification of airfoil design with focus on transition
Research output: Research › Book chapter – Annual report year: 2008

Vinger med flapper: Hvor tæt er vi på at kunne efterligne fuglens vinger?
Research output: Research › Conference abstract for conference – Annual report year: 2008

3D Navier-Stokes simulations of a rotor designed for maximum aerodynamic efficiency
Research output: Research - peer-review › Article in proceedings – Annual report year: 2007

A dynamic stall model for airfoils with deformable trailing edges
Research output: Research - peer-review › Journal article – Annual report year: 2007

Can winglets increase Cp? ...and if so, how much
Research output: Research › Paper – Annual report year: 2007

Determination of the maximum aerodynamic efficiency of wind turbine rotors with winglets
Research output: Research - peer-review › Conference article – Annual report year: 2007

Estimation of possible increase in Cp by use of Winglets
Research output: Research › Book chapter – Annual report year: 2007

Kan en vind dreven bil køre i modvind?
Research output: Research › Paper – Annual report year: 2007

Load alleviation on wind turbine blades using variable airfoil geometry
Research output: Research › Conference abstract for conference – Annual report year: 2007

Load alleviation on wind turbine blades using variable airfoil geometry. Adapwing 1 and 2
Research output: Research › Conference abstract for conference – Annual report year: 2007

Load alleviation through adaptive trailing edge control surfaces: ADAPWING overview
Research output: Research - peer-review › Article in proceedings – Annual report year: 2007

Vindtunnelforsøg med højfrequente trykmålinger
Research output: Research › Paper – Annual report year: 2007

Wind tunnel test of the Risø-B1-18 airfoil with piezo ceramic actuators to vary the shape
Research output: Research › Paper – Annual report year: 2007

Wind tunnel test on wind turbine airfoil with adaptive trailing edge geometry
Research output: Research - peer-review › Article in proceedings – Annual report year: 2007
Wind turbine airfoil design considering aerodynamic and structural characteristics in 3D blade design
Research output: Research › Paper – Annual report year: 2007

Investigation of the effect of deformable trailing edge geometry control systems on flutter velocity (paper and poster)
Research output: Research › Article in proceedings – Annual report year: 2006

Load alleviation on wind turbine blades using variable airfoil geometry
Research output: Research › Article in proceedings – Annual report year: 2006

Load alleviation on wind turbine blades using variable airfoil geometry
Research output: Research › Conference abstract for conference – Annual report year: 2006

New airfoil family considering structural stiffness and compatibility
Research output: Research › Book chapter – Annual report year: 2006

Performance of the Risø-B1 airfoil family for wind turbines
Research output: Research › Article in proceedings – Annual report year: 2006

Unsteady 2D potential-flow forces on a thin variable geometry airfoil undergoing arbitrary motion
Research output: Research › Report – Annual report year: 2006

Load reduction potential using airfoils with variable trailing edge geometry
Research output: Research › Article in proceedings – Annual report year: 2005

Load reduction potential using airfoils with variable trailing edge geometry
Research output: Research › Conference abstract in proceedings – Annual report year: 2005

Measurements on the Thunder TH-6R actuator
Research output: Research › Report – Annual report year: 2005

Modellerung af pitchmoment på fleksible vinger med stor udbøjning
Research output: Research › Book chapter – Annual report year: 2005

Performance of the Risø-B1 airfoil family for wind turbines (poster)
Research output: Research › Conference abstract in proceedings – Annual report year: 2005

Potential load reduction using airfoils with variable trailing edge geometry
Research output: Research › Journal article – Annual report year: 2005

Udvikling af model for 3D induktions- og stallmodellering
Research output: Research › Book chapter – Annual report year: 2005

Design and verification of the Risø-B1 airfoil family for wind turbines
Research output: Research › Journal article – Annual report year: 2004

A Beddoes-Leishman type dynamic stall model in state-space and indicial formulations
Research output: Research › Report – Annual report year: 2004
Design and verification of the Risø-B1 airfoil family for wind turbines
Research output: Research - peer-review › Article in proceedings – Annual report year: 2004

Design and verification of the Risø-P airfoil family for wind turbines
Research output: Research - peer-review › Article in proceedings – Annual report year: 2004

Open-jet wind tunnel validation and measurements on a NACA 0012 airfoil
Research output: Research › Report – Annual report year: 2004

Open-jet wind tunnel validation using a NACA 0012 airfoil
Research output: Research - peer-review › Article in proceedings – Annual report year: 2004

Stilstandslaster
Research output: Research › Book chapter – Annual report year: 2004

Unsteady aerodynamic in 2D and 3D using indicial function concepts
Research output: Research › Conference abstract for conference – Annual report year: 2004

Wind tunnel tests of Risø-P-15 and Risø-P-21
Research output: Research › Report – Annual report year: 2004

Aeroelastic simulation of a wind turbine airfoil by coupling CFD and a beam element model
Research output: Research › Conference abstract in proceedings – Annual report year: 2003

Computation of modal aerodynamic damping using CFD
Research output: Research › Article in proceedings – Annual report year: 2003

Experimental Investigation of Unsteady Aerodynamic Forces on Airfoil in Harmonic Translatory Motion
Research output: Research - peer-review › Article in proceedings – Annual report year: 2003

Unsteady aerodynamic forces on a NACA 0015 airfoil
Research output: Research › Conference abstract for conference – Annual report year: 2003

Viscous and aeroelastic effects on wind turbine blades. The VISCEL project. Part 1: 3D Navier-Stokes rotor simulations
Research output: Research - peer-review › Journal article – Annual report year: 2003

Viscous and aeroelastic effects on wind turbine blades. The VISCEL project. Part 2: Aeroelastic stability investigations
Research output: Research - peer-review › Journal article – Annual report year: 2003

Viscous and Aeroelastic Effects on Wind Turbine Blades. The VISCEL project. Part I: 3D Navier-Stokes Rotor simulations
Research output: Research - peer-review › Journal article – Annual report year: 2003

Viscous and Aeroelastic Effects on Wind Turbine Blades. The VISCEL Project. Part II: Aeroelastic Stability Investigations
Research output: Research - peer-review › Journal article – Annual report year: 2003

Wind tunnel measurements on two Risø-B1 airfoils
Research output: Research › Article in proceedings – Annual report year: 2003

Wind tunnel tests of Risø-B1-18 and Risø-B1-24
Research output: Research › Report – Annual report year: 2003
Unsteady Aerodynamic Forces on NACA 0015 Airfoil in Harmonic Translatory Motion
Research output: Research › Ph.D. thesis – Annual report year: 2002

Computation of aerodynamic damping for wind turbine applications
Research output: Research › Article in proceedings – Annual report year: 2002

Experimental Investigation of Airfoil Subjected to Harmonic Translatory Motions
Research output: Research › peer-review › Article in proceedings – Annual report year: 2002

Vindenergi og vindmøller
Research output: Research › Conference abstract for conference – Annual report year: 2002

Experimental investigation of airfoil subject to harmonic edge-and spanwise movement
Research output: Research › peer-review › Article in proceedings – Annual report year: 2001

Aeroelastic Analysis of Airfoil Section
Research output: Research › peer-review › Article in proceedings – Annual report year: 1999

Projects:

Development of the next-generation engineering aerodynamic models for wind turbine rotors
Project: PhD

Aeroelastisk analyse af vindmøllerotor
Project: PhD

Unsteady Flow Modeling and Experimental Verification of Active Flow Control Concepts for Wind Turbine Blades
Project: PhD

Simulation of Moving Trailing Edge Flaps on a Wind Turbine Blade using Navier-Stokes based Immersed Boundary Method
Project: PhD

Wind Turbine Aerodynamics and Aeroelasticity using Vortex Based Methods
Project: PhD

Analysis and modeling of unsteady aerodynamics with application to wind turbine blade vibration at standstill conditions
Project: PhD

Wind Turbine with Trailing Edge Flaps for Load Alleviation
Project: PhD

Adaptive Trailing Edge Flap, control for enhanced load alleviation
Project: PhD

Optimization of Rotors - using Advanced Aerodynamic and Aeroelastic Models and Numerical Optimization
Project: PhD

National Wind Tunnel
Project: Research
Power Pack  
Project: Research

Blade Dragon 2.0  
Project: Research

Light Rotor  
Project: Research

Tree-code algorithm for large scale vortex method simulation  
Project: Research

Virtual Campus Hub  
Project: Research

Standardiserede Power Packs til forbedret aerodynamik i vindmøller - PowerPack  
Project: Research

Light Rotor  
Project: Research

Aeroelastic analysis of wind turbine rotor  
Project: Research

Activities:

Kuren mod klimaproblemet - Et bud på løsningen fra et teknisk-videnskabeligt vindenergi-synspunkt  
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

The Poul la Cour Tunnel: A new aerodynamic and aeroacoustic wind tunnel dedicated to wind energy  
Activity: Talks and presentations › Conference presentations

An Engineering 2D Vortex-based Model for VAWT Aerodynamics  
Activity: Talks and presentations › Conference presentations

Improved Roughness Model for 2D Viscous-Inviscid Panel Methods  
Activity: Talks and presentations › Conference presentations

Test possibilities in the Poul la Cour Tunnel  
Activity: Talks and presentations › Conference presentations

Investigation of the flow in a rain erosion tester  
Activity: Talks and presentations › Conference presentations

Press clippings:

Hvordan kan vindmøller nedbringe en færges luftmodstand?  
Press/Media: Press / Media
Hvorfor drejer vingerne samme vej på alle vindmøller, og hvorfor ligger vindmøller altid på en række?
Press/Media: Press / Media

Hvorfor har vindmøller tre vinger?
Press/Media: Press / Media

Kan vindmøller ændre Jordens rotation?
Press/Media: Press / Media

Modvindsbil
Press/Media: Press / Media