

Introduction and Global description of Main Wind Energy Aspects

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Resume of Gerard Schepers

Education

- 1986:Delft University of Technology, Department of Aerospace Technology, graduate at High Speed Aerodynamics
- 2003: A propadeuse degree in mathematics teaching from Windesheim University of Applied Sciences
- November 27th 2012: Doctor's degree obtained at Delft University of Technology

Appointments:

- Researcher at the Energy Research Center of the Netherlands (ECN) department of Wind Energy: 1986-present
- Summer 2010 and 2011: visiting professor at Korean Universities
- Since 2012: HBO professor at University of Applied Sciences Leeuwarden

Main Topics:

- Rotor Aerodynamics, Windfarm Aerodynamics, Mechanical loads, Aeroacoustics, Wind Tunnel Testing, Wind Turbine Blade Design.
- Researcher in various national/international research projects
- Coordinator of 6 joint European research projects and 3 joint mondial IEA research projects.
- Involved in various industry related projects.
- December 2007-December 2009: Temporary stationed at Suzlon Blade Technology for consultancy activities during 4 days/month
- Responsible for ECN training 'Rotor Aerodynamics' (as given for 13 wind energy industries (status: December 2012))
- Since 2007 contributing as a lecturer to the following annual lecture series:
 - 'Wind Energy' of the SET (Sustainable Energy Technology) program of the Technical Universities of Eindhoven and Twente
 - 'Aerodynamics AE4-W12' program of the Technical University of Delft

Scientific journal papers and books:

- Author or co-author of more than 20 peer-reviewed scientific articles and more than 100 conference papers and technical reports and 1 book chapter

A nice NHL movie on a modern
wind energy project

<http://vimeo.com/33887492>

Part 1a: Overall discussion of main wind energy aspects

- **Why, history, basic concepts, challenges**
- **Market developments (present, future)**
- **Fundamentals of Wind Energy**
- **Main characteristics of Horizontal Axis Wind Turbines**
 - Technology, state of the art
 - Blades, number of blades
 - Materials (in relation to loads and fatigue)
 - Control (power and rotor speed)
 - Drive train (gear box/generator)
 - Safety systems
 - Noise

Part 1b: Overall discussion of main wind energy aspects

- **Off-shore windfarms**
 - Why off-shore?
 - Differences with on-shore
 - Upscaling
 - Wind farm effects, optimization of lay-out , electrical components and losses
 - Wind integration
 - O&M developments, access technology
 - Support structures
 - Transport and installation
- **Cost aspects**