

COURSES IN:
🇩🇰 DENMARK
🇹🇷 TURKEY
🇳🇴 NORWAY
🇵🇱 POLAND

INTRODUCTION
TO WIND ENERGY

ENGINEERS

Market

TECHNOLOGY

Specialists

PROJECT
DEVELOPMENT

WIND ENERGY COURSES

FOR MANUFACTURERS, SUBCONTRACTORS,
OWNERS, INVESTORS AND PARTNERS IN
THE WIND INDUSTRY

Quantification

Wind energy
basic

Q3/Q4 2016

Specialists



wind farm



ENERGY AND
CLIMATE
ACADEMY



Introduction to the wind industry:

Wind Energy Course for Engineers	5 days	page	4
Wind Energy Course for Generalists	3 days	page	5
Wind Energy Course, Offshore	2 days	page	6

For specialists:

Wind Farm Project Development	3 days	page	7
Operation and Maintenance of Wind Farms	3 days	page	8
Wind Resource and Site Risk management	3 days	page	9
Quantification of Risk in Wind Power Projects	1 day	page	10
Wind resource assessment using the WAsP software	3 days	page	11

Team of lectures:

Meet our lecturers	page 12-13
Our Partners	page 14-15



With a background and years of experience in the electrical drive train of Wind turbines, it was really interesting to get updated on the rest of the parts needed to build a wind turbine, how to select the right wind site and to get market information and expectations from experts. This course gave me the insight and the lecturers were inspiring and very experienced.”



Joe Andersen
Senior Consultant
JA Inter-Trade

“As a newcomer to the wind industry, the course gave me a kick-start into my new job in a quick and effective way. My understanding of the mechanisms and challenges of the sector is now much deeper.”



Adam Piotrowski
Communication and
administration support
BIC Group

“DURING THE COURSE I HAVE GAINED A MUCH BETTER UNDERSTANDING OF THE PROCESSES, THAT LIES BEHIND THE ESTABLISHMENT OF A WIND FARM AND THE SIGNIFICANCE OF THE WIND ELECTRICITY IN THE MODERN ENERGY WORLD.”

Finn Kjelstrup Coordinator/
Project Manager, Northsea
Offshore Service Group



“Participating in the course gave me a solid technical understanding of the wind industry and the systems related to it.”

Sabrina Petersen, Coordinator, Engineering
LM Wind Power

“I found the course to be very exciting indeed and it gave me a much better understanding of what to look for, when we do our wind data analysis and today I feel better equipped for the talks with our partners and customers on wind and site subjects.”



Thomas Dyhr
Technical Project Manager,
Windar Photonics



As a newly appointed Project Manager the course was very helpful understanding the wind industry. The lecturers were experienced and inspiring in a relaxed way. The knowledge I got is helping me talking to colleagues and customers.”

Mads R. Druedahl
Project Manager,
Nissens



Changes to the program may occur. Please see our webpage for further information

Course Purpose

For specialists in the industry, who wants a broader knowledge of the wind industry to understand the relationship between the different aspects. Introducing newly hired engineers to the complex mechanics of wind turbine technology and introduce them to the wind turbine business in general.

Course Objectives

To introduce newly hired engineers to the world of wind energy thus save time and energy on attaining this knowledge within the first years of their employment. Both the participants and his/hers colleagues will save time.

The "Wind Energy Basic" course will enable the new employee to communicate with their new colleagues more efficiently and earlier in their process.

Improve the already existing skills such as welding, hydraulics, gear, production control etc. and introduce the participants to the special features of wind turbines. During the course the participants will receive a systematic presentation of all the work areas of engineers in the wind energy business.

Who should attend

- Newly hired engineers
- Engineers looking to improve their skillset and update their knowledge on the most recent developments within Wind Energy.

Description of working sessions

The course takes place over 5 days. It begins on Monday at 9:00 am and ends at Friday at 2:00 pm. All sessions will be conducted in an open and positive dialogue with the participants.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information about the faculty.

Prices and information

€ 3.200 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Travels costs are not included in the price. Accommodation is not included in Denmark. Accommodation in Turkey is included in the price.

Venue

10. - 14. October, Vejle, Denmark

2. – 5. November, Szczecin, Poland

28. November – 02, December. Istanbul, Turkey

5. December – 9. December, Oslo, Norway

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind Energy Basics for Engineers

Welcome and introduction

Multiple Choice questionnaire

The Wind Industry

- History and character
- Energy and environmental politics
- The tendencies for the future

The participants are introduced to each other and Energy and Climate Academy. Based on a multiple choice questionnaire the participants will do their personal testing on their knowledge to the subject in the entire course. The history of the wind industry is explained along with the most important mile-stone events that brought the industry to where it is today.

Wind Turbine Mechanics

- Blades
- Nacelle
- Tower
- Controller
- Foundation

Loads on Wind Turbines

The mechanical and electrical components in a modern wind turbine are introduced. Loads and load cycles are explained in a simplified manner.

Grid Connection

Generators

Power Quality

Power over run

The function of the asynchronous generator is explained. And other types of generators are introduced. The implications of connecting wind turbines to the grid and how they interact with other suppliers of electricity. The special Danish phenomenon of power over run is explained.

Design basis

- IEC61400-1
- Design load cases
- Load simulations, examples
- Load analysis**
- Ultimate loads
- Fatigue
- Important load cases

Control and regulation

- General information about control and regulation
- Active stall regulation
- Pitch/variable speed with a double-fed asynchronous generator

Multiple Choice results

Evaluation of the course

Wind Energy

The kinetic energy of the wind

Wind spectrum

Power curve and energy yield

Calculation of a project.

A brief description of the physics in wind is given to understand the complexity of predicting the future production of a wind turbine. Terms such as wind speed average, gusts, turbulence are explained. Terrain influence and analysis is demonstrated by means of the wind atlas calculation methodology. Finally a full wind study is introduced.

Wind Turbine Applications

Aerodynamics

Stall- Pitch and variable speed

Various brands of wind turbines

A thorough explanation to the aerodynamics of a wind turbine blade is given. We even learn what makes the bumble bee fly, before we go the more serious debate about pros and cons of stall- pitch and variable speed regulation. Furthermore, the most common and some creative brands on and off the market are introduced.

Wind Power Projects

- Buyers of wind power plants
- The milestones of a project
- Operation and maintenance

Based on examples from the real world, various types of customers and factors that play a role in a wind power plant are introduced. The important contracts in a project is explained and discussed. Finally the participants get a summary of answers to the multiple choice questionnaire, before we finish by evaluating the outcome of the course.

Wind turbine design loads - physics and modelling

Wind

- Aerodynamics
- Structural dynamics
- Dynamic tuning
- Aero elasticity
- Control

WIND ENERGY FOR GENERALISTS



Course Purpose

For specialists in the industry, who wants a broader knowledge of the wind industry to understand the relationship between the different aspects. Improve the knowledge of Wind Energy in general, allowing for better communication between departments consisting mainly of engineers and their non-engineer counterparts.

Course Objectives

Provide the employee in a Wind Energy organization insight into the technical aspect of Wind Energy, including:

- The physics related to generating electricity
- Introduction to the technical terms
- Insight into the challenges faced by their engineering colleagues
- The role of wind energy in relation to the power grid
- Introduction to various brands of wind turbines

Who should attend?

Any employee in a Wind Energy organization. Employees at companies and organizations working together with wind energy companies.

Description of working sessions

The course takes place over 3 days. All sessions will be conducted in an open and positive dialogue with the participants.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information about the faculty.

Prices and information

€ 1.950 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Travels costs are not included in the price. Accommodation is not included in Denmark. Accommodation in Turkey is included in the price.

Venue

- 10. – 12. October, Vejle, Denmark
- 2. – 4. November, Szczecin, Poland
- 28. – 30. November, Istanbul, Turkey
- 5. December – 7. December, Oslo, Norway

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind Energy Basics for Generalists

Welcome and introduction

Multiple Choice questionnaire

The Wind Industry

- History and character
- Energy and environmental politics
- The tendencies for the future

The participants are introduced to each other and Energy and Climate Academy. Based on a multiple choice questionnaire the participants will do their personal testing on their knowledge to the subject in the entire course. The history of the wind industry is explained along with the most important mile-stone events that brought the industry to where it is today.

Wind Turbine Mechanics

- Blades
- Nacelle
- Tower
- Controller
- Foundation

Loads on Wind Turbines

The mechanical and electrical components in a modern wind turbine are introduced. Loads and load cycles are explained in a simplified manner.

Grid Connection

Generators

Power Quality

Power over run

The function of the asynchronous generator is explained. And other types of generators are introduced. The implications of connecting wind turbines to the grid and how they interact with other suppliers of electricity. The special Danish phenomenon of power over run is explained.

Wind Energy

The kinetic energy of the wind

Wind spectrum

Power curve and energy yield

Calculation of a project.

A brief description of the physics in wind is given to understand the complexity of predicting the future production of a wind turbine. Terms such as wind speed average, gusts, turbulence are explained. Terrain influence and analysis is demonstrated by means of the wind atlas calculation methodology. Finally a full wind study is introduced.

Wind Turbine Applications

Aerodynamics

Stall- Pitch and variable speed

Various brands of wind turbines

A thorough explanation to the aerodynamics of a wind turbine blade is given. We even learn what makes the bumble bee fly, before we go the more serious debate about pros and cons of stall- pitch and variable speed regulation. Furthermore, the most common and some creative brands on and off the market are introduced.

Wind Power Projects

Buyers of wind power plants

The milestones of a project

Operation and maintenance

Multiple Choice results

Evaluation of the course

Based on examples from the real world, various types of customers and factors that play a role in a wind power plant are introduced. The important contracts in a project is explained and discussed. Finally the participants get a summary of answers to the multiple choice questionnaire, before we finish by evaluating the outcome of the course.

Course Purpose

Providing the participants with knowledge to deal with the issues and special challenges in producing wind energy offshore.

Course Objectives

This course will give insight into the technologies involved in modern offshore wind power production and knowledge about how offshore production differs from onshore.

Part of the course will address the challenges in transporting the energy from offshore to the power grid.

There will also be a segment focusing on preparation, operation & maintenance, health & safety, environment and quality, all in relation to offshore energy production.

Who should attend?

Employees in energy organizations interested in learning more about offshore technology, knowledge about general wind energy production is an advantage but not a requirement.

Description of working sessions

The course takes place over 2 days. All sessions will be conducted in an open and positive dialogue with the participants.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information about the faculty.

Prices and information

€ 1.375 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Accommodation and travels costs are not included in the price.

Venue

21. - 22. September, Esbjerg, Denmark

26. – 27. October, Szczecin, Poland

For other countries to be decided. Please contact us for further information.

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind Energy Basic, Offshore

Welcome and presentations

Introduction to Offshore Wind

The Offshore Wind Market
Wind Theory
Offshore Wind Turbines

Project Planning

The Weather Window
Building a project in reality

Offshore Wind Turbines and logistics

Offshore Wind Turbines
Coffee break and commute to the Port of Esbjerg (only in Denmark)
Live impression of logistic challenges in Offshore Technology
Commute back to venue.

Project in reality

Building a project in reality
Operation and Maintenance, Unique Conditions
Q&A
Evaluation and winding up the course.



WIND FARM PROJECT DEVELOPMENT



Course Purpose

This course is designed to give insight into the different steps involved in developing a wind farm.

Course Objectives

Provides the participants with knowledge about the different aspects of developing a wind farm, such as:

- The ideal locations for wind farms
- Insight into the different stakeholders involved such as:
- Land owners
- Turbine manufacturers
- Grid operators

Who should attend?

Anyone interested in the development of wind farms.

Description of working sessions

The course takes place over 3 days. All sessions will be conducted in an open and positive dialogue with the participants.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information about the faculty.

Prices and information

€ 2.275 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Travels costs are not included in the price. Accommodation is not included in Denmark. Accommodation in Turkey is included in the price.

Venue

12. – 14. December, Istanbul, Turkey

For other countries to be decided. Please contact us for further information.

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind Energy Course for Developers

Welcome

Multiple choice

The overview of project development

Site selection

- Grid connection
- Land agreement
- Permits

Realization

- Transport to site
- Construction
- Cranes
- Erection of WTGs
- Commissioning

Site selection

- Site evaluation
- Wind assessment
- Environmental impact
- Turbine selection

Finance and legal aspects

- Feasibility studies
- Legal and financial setup
- Supply Contracts and PPA

Operation

- O&M agreement
- Insurance agreement
- Site management

Right answers for the Multiple Choice questionnaire

Evaluation of the course



OPERATION AND MAINTENANCE OF WIND FARMS



As the number of windfarms increases, so does the demand for managers to handle the planning, operation and maintenance. Today the personnel primarily get the competencies to handle these tasks through on the job training, but this course offers a formalized education in this area.

You will gain insight into:

- Operation & Maintenance philosophy
- Basic theories
- Principles
- Methods
- Work-tools
- Roles
- Leadership

You will be able to formulate, analyze, audit, and exercise management and organization according to applicable rules and standards in the “Operation & Maintenance of Offshore Wind Farms.

Who should attend

The course is designed for employees and managers who already have or wish to get the responsibility for operation and maintenance of a windfarm.

BLENDED LEARNING

The course is designed as blended learning, which combine net-based learning with 3 days of classroom training.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information about the faculty.

Prices and information

€ 2.400 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Accommodation and travels costs are not included in the price.

Venue

29.11 - 01.12.2016 Vejle, Denmark

For other countries to be decided. Please contact us for further information.

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind Farm Operation & Maintenance

1st day	2nd day	3rd day
Welcome <ul style="list-style-type: none"> • Safety briefing. • Presentation of the course and participants. The wind turbine generator components <ul style="list-style-type: none"> • DS/EN 61400-3 2009 Wind Farm onshore/offshore <ul style="list-style-type: none"> • LCA – Life Circle Assessment Stakeholder <ul style="list-style-type: none"> • Stakeholder theory • Analysis and overview Authorities <ul style="list-style-type: none"> • Overview based on Danish regulators Operation and Maintenance phases <ul style="list-style-type: none"> • Long term – Strategic Maintenance • Medium term – Tactical Maintenance • Short term – Operational Maintenance 	Operation and maintenance “The Daily work and planning” Reflection’s from first day. <ul style="list-style-type: none"> • Questions Risk Management <ul style="list-style-type: none"> • Operational safety Yield and performance <ul style="list-style-type: none"> • Operational level Maintenance and service <ul style="list-style-type: none"> • Yearly service • Fault correction • Main component change Fault patterns – the nature of faults <ul style="list-style-type: none"> • Route Cause 	Operation & Maintenance strategy “Improving the plan” Reflection’s from first and second day. <ul style="list-style-type: none"> • Questions Supply chain management <ul style="list-style-type: none"> • Suppliers • Logistic • Components Safety first <ul style="list-style-type: none"> • Culture and risk analysis Asset Management <ul style="list-style-type: none"> • Optimization • Planning Cases from the real world



WIND RESOURCE AND SITE RISK ASSESSMENT

Course Purpose

This course establishes an in-depth knowledge of key issues in wind resource and site risk management.

Course Objectives

Providing the participant insight into the basics of atmospheric, wind speed measurement and flow modeling, and also give insight into the latest advancements in these fields.

The possibilities of remote sensing and CFD (computational fluid dynamics) will be explained.

Different concepts of power curve verification described. Uncertainties and exceedance statistics of wind resource assessment, key elements from an investor's point of view.

Who should attend?

Specialists, engineers and managers working with wind resource planning and calculation as well as site risk assessment.

Description of working sessions

The course takes place over 3 days. All sessions will be conducted in an open and positive dialogue with the participants.

The lecturers

The lecturers are all experienced and highly recognized for their knowledge and have worked internationally. See last pages for information the faculty.

Prices and information

€ 2.400 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Accommodation and travels costs are not included in the price.

Venue

To be decided

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Wind resource and site risk assessment

Wind - Atmospheric engine and atmospheric boundary layer

Meteorological classification / Atmospheric scales
Global and local wind systems
Extreme winds and Tropical cyclones
Cycles
El Niño
North Atlantic Oscillation
Climatic change
Internal boundary layer
Turbulence and shear
Atmospheric stability

Measurements

Cup anemometer
Classification
Calibration
Mounting
Developing a measurement campaign: Position, height and number of masts
Data checking and QC
Icing
Ultra-sonics, propeller anemometer
Remote sensing: Sodar and Lidar
Bankability/Traceability

Wind resource

Distributions: Weibull/Bi-Weibull
Variation: diurnal, seasonal, interannual variation
Long-term correction

Flow modelling

The basics of WAsP: Advantage and short-coming
Park and Wake losses
Best practice: Input
SRTM
Landcover data
Best practice: Analysis:
Forests
Ruggedness Index RIX
Heat flux
The basics of CFD: Advantage and short-coming
Bolund experiment
Uncertainty and losses, exceedance statistics P50/P90

Power curve

IEC 61400-12-1
(edition 1 2005 and draft as per 2012) and 2 (draft as per 2012)
Site calibration
Turbulence and shear
Nacelle anemometry
Uncertainty

Risk assessment

IEC 61400-1:
Turbulence
Shear
Inflow
Extreme wind
Gumbel
Wasp Engineering
European Wind Turbine Standard EWTS
WAT/WindPRO compliance module

QUANTIFICATION OF RISK IN WIND POWER PROJECTS



The ability to quantify and manage the different elements of risk associated with Wind Energy Projects is paramount to any investor or financial advisor. Lecturers with decades of experience with wind power projects and science give the participants deeper knowledge to the nature of risk variables on technology, climate and legal structure of project agreements.

This course takes experienced due diligence performers to the next level. We do not teach you the basics, but provide you with new knowledge and tools for mitigating and quantifying risk.

Prices and information

€ 775 excl. vat. This includes tuition, course materials, course certificate and all meals during the day. Accommodation and travels costs are not included in the price.

Venue

24. October, Oslo, Norway

For other countries to be decided. Please contact us for further information.

Enrollment

Please go to www.energyandclimateacademy.com

PROGRAM: Quantification of Risk in Wind Power Projects

08:30 – 09:00	Registration
09:00 – 09:15	Welcome and presentation
09:15 – 10:30	Svend Enevoldsen presents the technology. How does it work? What technologies are used? What technology can we expect in the future? Is certification a quality stamp? How does an engineer calculate lifetime of a component?
10:30 – 10:45	Break
10:45 – 12:00	Jørgen Højstrup explains what we cannot see but only feel – Wind. Where does it come from? How can we calculate the future wind? How hub height matters?
12:00 – 12:45	Lunch
12:45 – 14:00	Jørgen Højstrup: The impact of climate change. What causes deviations? Why are two wind assessment studies not with exactly the same result? How to implement the uncertainty of a wind study in the budget?
14:00 – 14:15	Jakob Østervang describes the legal documents for a wind power project. What is a product warranty? Requirements to a land agreement, is it suitable for the future? Does the manufacturers warranty and the insurance cover everything?
15:30 – 16	Panel discussion



WIND RESOURCE ASSESSMENT USING THE WAsP SOFTWARE



Course purpose

The fundamentals of wind resource and energy yield assessments, employing the WAsP software. The course provides a systematic and complete introduction to the WAsP software and the wind atlas methodology. At the end of the course, the student will know how to avoid the most common pitfalls in wind resource and energy yield assessments, and will have a basic understanding of the biases and uncertainties of the wind atlas methodology.

Course objectives

The course focuses on wind resource and energy yield assessments using the WAsP software, i.e.:

- wind farm production
- wind farm efficiency
- micro-siting of wind turbines
- power production of wind turbines
- wind resource mapping
- wind atlas generation
- wind climate estimation
- best practice and uncertainty

Who should attend

The 3-day WAsP course is intended for engineers, scientists

and others, primarily working within the field of wind energy, who require a working knowledge of the WAsP software.

Description of working sessions

Aspects of the theories underlying the programs will be presented, but the course will stress practical experience, best practice and examples on the use of WAsP.

The lecturers

The course will be presented by experienced members of DTU Wind Energy faculty.

Prices and information

2400€ per participant excl. VAT. This includes tuition, course materials, certificate of participation, lunch and light refreshments during the day.

Venue

22. - 24. November, DTU, Risø Campus, Denmark

Enrollment

Please go to www.wasp.dk/Courses-and-Certification
In addition, WAsP tools for wind data analysis, map digitisation and editing

Time	Day 1	Day 2	Day 3
09:00 – 10:30	Welcome to course Introduction and theory	Welcome to Day 2 Terrain elevation and flow modelling Complex terrain, RIX and CFD	Welcome to Day 3 Case study: participants carry out a complete example of WAsP analysis and application
11:00 – 12:30	Terrain description and the WAsP Map Editor	Wind measurements, analysis of wind data and the WAsP Climate Analyst	Case study, continued
12:30 – 13:30	Lunch	Lunch	Lunch
13:00 – 15:00	Land cover, terrain roughness and wind profiles	WAsP analysis: Wind atlas generation WAsP application: Wind resource prediction	Case study, continued Presentation and discussion of case study
15:30 – 17:00	Shelter from buildings and natural obstacles WAsP and SRTM maps	Wind farm calculations	Best practice and uncertainties WAsP Engineering, WAT, Fuga Q & A session Course evaluation + certificates

THE TEAM OF LECTURERS AT ENERGY AND CLIMATE ACADEMY – WIND ENERGY



EGON V. POULSEN

MARINE & POWER STATION ENGINEER
Egon is a full time working partner in Alpha Wind Energy ApS. He started his career in the wind industry as Chief Supervisor for Vestas in California in 1983 and has since then obtained world wide experience with wind power projects all over the world. From 1995 through 2005 he was active in Offshore Wind Projects.



THORBEN G. NIELSEN

B.SC. CIVIL ENGINEERING
Thorben is working as Head of Regional Wind & Site Engineering at Siemens Wind Power. He started his career in the wind industry in 1995 at LM Windpower followed by 10 years for Vestas in Denmark and Spain involved in technical and sales activities.



BIRGER T. MADSEN

MECHANICAL ENG. B.SC.
Birger is a legend in the wind industry. He is the one who brought wind power to Vestas and was the founder of Danish Wind Industry Association. In 1986 he started BTM Consult after leaving Vestas. BTM Consult was a world renowned consultancy producing market analysis and forecasting and was acquired by the US company Navigant in 2011.



TORBEN JUUL LARSEN

M.SC. MECHANICAL ENGINEER.
Working as a senior scientist at DTU-Wind Torben co-authored his first scientific paper in 2003 about Status of Aero elasticity of Wind Turbines. Torben is in the forefront on theory and practice when it comes to loads and dynamics on wind turbines.



CLAUS SCHROEDER

M.SC. ELECTRONICS
For more than a decade Claus has worked with both hard- and software for controlling wind turbines and used in basically all the major brands world-wide.



WIEBKE LANGREDER

DIPL. ING. APPLIED PHYSICS, M.SC.
RENEWABLE ENERGY SYSTEMS TECHNOLOGY. Wiebke has 20 years' experience in wind resource and risk assessment working for several international manufacturers. Her specialties are extreme winds and long-term corrections. Wiebke has been continuously involved in training activities world-wide. Today she is COO of the independent consultancy Wind Solutions.



NEDZAD DEDIC

M.SC. MECHANICAL ENGINEER
Working at Ramboll in Esbjerg Denmark, Nedzad has experience from several conceptual and detailed foundation studies concerning structural design and analysis of foundation structures for offshore wind turbine generators.



KAJ LINDVIG

Kaj Lindvig has a wide experience from 15 years as top manager and board member within the Wind Power Business, but he has also worked for the Oil & Gas sector, Maritime companies and project executing companies providing him with a very broad knowledge.

**SVEND W. ENEVOLDSEN**

MARINE ENGINEER, B.SC. BUSINESS DEVELOPMENT ENGINEER

With more than 30 years as an executive in the Danish wind industry, and lecturer for more than 1800 engineers in the wind industry, Svend is an experienced consultant, who since 1995 has been working world wide for Banks, OEM's, Insurance Companies, UN, Governments, Universities and others in his company Ecology Management.

**FERHAT BİNGÖL**

Ph.D. IN WIND ENERGY

Works as an Assist.Prof. at Izmir Institute of Technology, Izmir, Turkey since 2014. Dr. Bingöl has a M.Sc. and Ph.D. degree from Technical University of Denmark and previously, worked as a scientist at the DTU Wind Energy Department. He has participated as lecturer in WASP family courses several times over 5 years. His interests are revolve around complex terrain, lidars, satellite wind measurements and GIS.

**JAKOB ØSTERVANG**

ATTORNEY AT LAW

Serving as partner in one of the largest Danish law firms Bech Bruun, Jakob is highly experienced in wind energy transactions and has received various international achievements, hereunder been named "a leading lawyer for Energy & Infrastructure" by IFLR1000. He has advised clients in connection with transactions involving wind turbines in Denmark, Germany, Italy, China, the USA, Poland, Estonia, Sweden and the Netherlands. Jakob is also a member of Bech-Bruun's business team ChineseDesk.

**MADS BAY RASMUSSEN**

ATTORNEY AT LAW.

Vice President, Head of Legal (General Counsel) at MHI Vestas Offshore Wind. Mads is an international attorney with management experience and commercial mindset. Extensive expertise within international onshore and offshore wind energy projects and transactions. Mads has negotiated and processed transactions in Europe, The Middle East, Asia, South and Central America.

**ÖMER EMRE ORHAN**

MASTER OF SCIENCE AND Ph.D. IN AEROSPACE ENGINEERING

He is manager for Wind and Solar Engineering at Borusan EnBW Energy in Turkey. During the last 4 years he has worked actively for the completion of almost 300 MW wind projects and development of more than 3000 MW green field wind projects. Previously Ömer worked for the German consultant company Fichtner and Alstom Hydro in Barcelona.

**SØREN "SAFETY" PEDERSEN**

BTecMan & MarEng

Worked 6 years in DONG Energy Wind Power. Started on the Horns Riff 2 construction – warranty O&M period with the turbine supplier. Design Specialist on O&M facilities and strategies in Denmark, Germany and France. Global Wind Organization Training Committee member for DONG Energy Wind Power in developing the first basic safety training education.

**JØRGEN HØJSTRUP**

Ph.D. IN METEOROLOGY, M.SC. ELECTRONICS ENGINEERING, ACOUSTICS

Having produced about 200 scientific papers on wind and worked as senior scientist and lecturer in Denmark and USA, Jørgen is acknowledged as an authority on wind world-wide.

**LARS HØST JOHANSEN**

M.SC. MECHANICAL ENGINEER

Close to a decade Lars worked as product engineer at Vestas before he joined Dong Energy Wind department, where he serves as TD Roadmap Engineer.

OUR PARTNERS

Turkey



WindDecision® was formed in late 2014 to create a new generation of consultancy in the wind energy market. Most international consultancies prefer to assist their customers with engineering knowledge, and experience, but there are occasions where this approach falls short or is inadequate. Sometimes, conventional methods may not work and transferring newest scientific knowledge to engineering applications becomes a necessity.

WindDecision® provides support to its customers with target oriented, scientific research. The objective of WindDecision® is to bring the most state-of-the-art scientific knowledge to engineering using decision making software and other engineering tools, such as review reports, technical documents, white papers and technical courses. WindDecision® offers services through its full-time employees and associates from Denmark, Greece, Germany and UK who will listen to you and suggest a scientific research timeline to reach a solution by employing all necessary expertise.

Norway



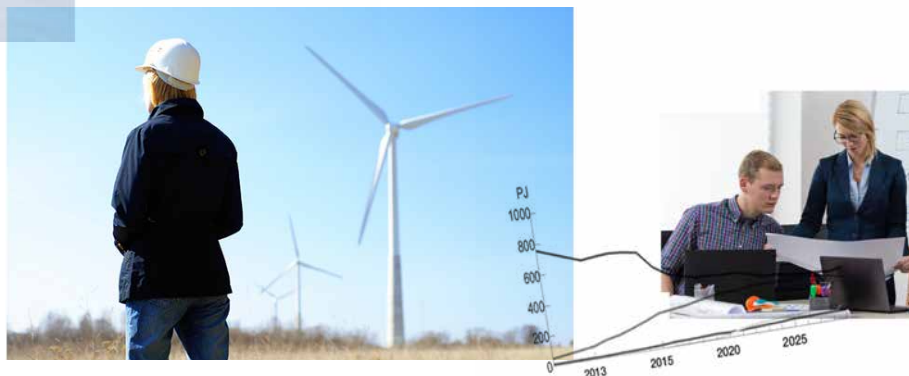
The Norwegian Wind Energy Association (**NORWEA**) is the voice of the Norwegian wind and ocean energy industry. NORWEA has, since it was established in 2006, promoted the utilization of renewable energy from wind in Norway. We are ideally situated in the heart of Oslo ensuring close proximity to Norwegian decision makers.

With approximately 130 members: developers, contractors, electricity providers, wind turbine manufacturers, component suppliers, research institutes, finance and insurance companies, lawyers, consultants and research institutions, NORWEA represents the entire value chain of the industry. We are the industry's key meeting place for wind and ocean energy academics, political discussions and industrial collaboration.

Our stated objective is to work for the establishment and preservation of a mature and long-term market for wind power as well as for the marine renewable energy industry.

NORWEA produces a large variety of information tools and manages campaigns aimed at raising awareness about the benefits of wind and ocean renewable energy, dispelling the myths about wind and ocean energy and providing easy access to credible information.

NORWEA organizes numerous regular events: conferences, seminars and workshops, together with and for the industry.



Poland



MUS Innovation Centre SPV (MUSIC) is a company established by the Maritime University of Szczecin (MUS). It was established in response to growing interest in solutions that arise at the MUS – one of the most recognizable maritime universities in the world.

Its main goal is to provide university technologies, knowledge and R&D infrastructure to the market.

MUSIC offers:

A full portfolio of the Maritime University inventions - include navigation, mechanical, engineering and technical solutions, from the maritime sector, shipbuilding, port, energy and IT. Assistance in applying for EU funds in Poland. Research and development activities / outsourced services. R&D services based on modern laboratories. Elaboration of opinions - for insurers, classification societies, and audits - innovation, technology, research and development, legal and organizational, energy. Elaboration of opinions - for insurers, classification societies, and audits - innovation, technology, research and development, legal and organizational, energy. Search for business and scientific partners in Poland, valuation of business opportunity or technology.



Rafal Malujda Law & Patent Office

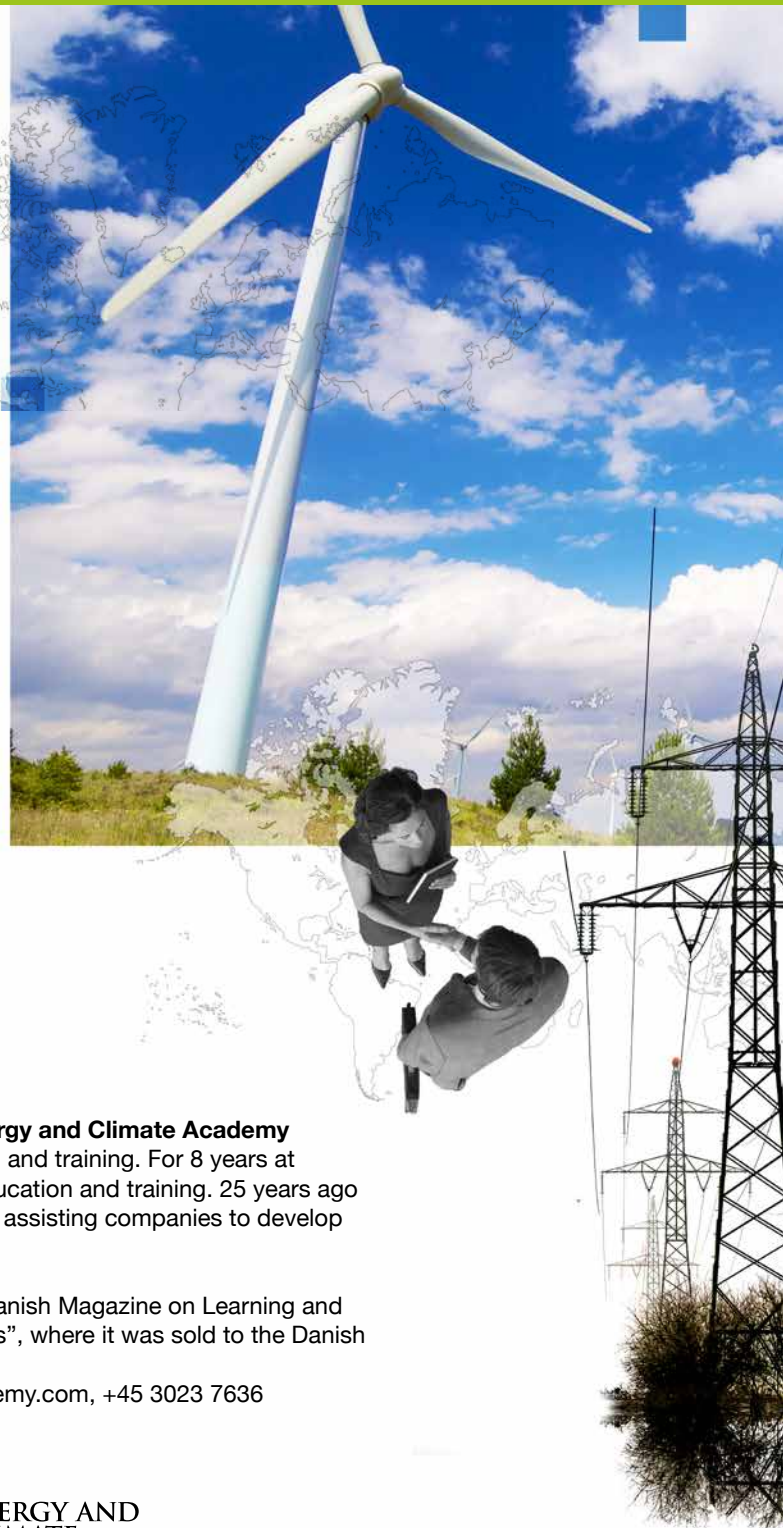
Established in 2009 by Rafal Malujda, attorney-at-law and patent attorney. Main areas of specialization is Technology transfer, ICT, Marine, Energy and trade. We are a very dynamic, but boutique and highly specialized law office, active both nationally and abroad. We are providers of safe harbor's for our clients in the very turbulent environment and times. For our clients, a team of lawyers and tax advisors is available.

We know – how to manage your case, anywhere in the world, involving our co-operating correspondent lawyers if necessary.

We are ready to assist in the following areas regarding Energy sector, including Renewable energy sector such as: Legal issues related to advances technologies, including data processing in the frame of Smart Grids and Smart Metering.

Technology transfer, IP strategy, licensing and patent agreements. On shore wind farms (single and multiple turbine installations). Off shore wind farms and associated marine environmental issues. Site acquisition for off shore wind farm. Corporate and contractual structures for investment in roof based solar schemes. Private distribution networks including renewable energy supply to participants.





About Energy and Climate Academy

The mission for Energy and Climate Academy, ECA, is to raise the level of knowledge within energy, climate and environmental matters by courses, seminars and study tours.

ECA aims at this by offering and market post-graduate and international education within the areas of energy and climate. This will be done in cooperation with Danish and international suppliers of knowledge at a professionally and academic high level.

The function of ECA is to participate in the development of the educational processes, perform marketing, manage the practical matters and be the liaison between the users and the suppliers of knowledge.

It is not the intention for ECA to accumulate professional knowledge within energy, climate and environmental matters. It is vital that ECA at any given time can cooperate with those, who are the leading institutions and key lecturers in the areas on a global level.



Torben Kirkegaard, CEO and founder of Energy and Climate Academy

Torben has 35 years of experience in education and training. For 8 years at Grundfos he was responsible for worldwide education and training. 25 years ago he founded Kirco Training Agency, consultancy assisting companies to develop their human resources in an effective way.

He has been owner and editor of the leading Danish Magazine on Learning and Development 1989 to 2013, "Human Resources", where it was sold to the Danish Association of Human Resource Managers.

Torben Kirkegaard, tki@energyandclimateacademy.com, +45 3023 7636



ENERGY AND
CLIMATE
ACADEMY

