

INTERNATIONAL VDI-CONFERENCE

Maintenance of Wind Turbines

Technology leaders will present their results of the following topics:

- Changes in customer and market requirements for the maintenance of wind turbines
- Comparative studies and cost assessments of different maintenance and service concepts
- Available manpower, required qualifications and professional development strategies
- Monitoring methods, damage identification and forecasting
- Damage mechanisms and maintenance & repair of different components

Benefit from the experience of these renowned companies:

• Acciona Energy • Avelon • Bird & Bird • Blue Water Shipping • Chalmers University of Technology • Deutsche Windtechnik • Fraunhofer IWES • GE Energy • LINCOLN • LM Windpower • MARSH • Muehlhan • Oliver Wyman Consulting • Prüftechnik Condition Monitoring • Vestas Offshore

Place and Date:

Hamburg, Germany
May 8th and 9th, 2012

Moderation and Conference President:

Prof. Dr.-Ing. Andreas Reuter
Director Fraunhofer Institute of Wind Energy and Energy
System Technology (IWES), Bremerhaven, Germany

+ WORKSHOP:

International
O&M Contracts:
Typical features,
legal risks and
contractual solutions

Hamburg,
May 10th, 2012

09:30 a.m. Registration**10:30 a.m. Chairman's welcome & opening address**

Prof. Dr.-Ing. Andreas Reuter, Director Fraunhofer IWES, Bremerhaven, Germany

10:45 a.m. Market trends and visions for maintenance up to 2030

The Oliver Wyman study summarizes the results from in-depth discussions with industry experts on the developments and trends in the operations & maintenance (O&M) business in the wind industry:

- Important market characteristics and development
- Changes in customer requirements
- Changes in competitive environments
- Maintenance functioning as the industry's "cash cow"
- Opportunities and risks for players in the wind power industry

Henning Thormählen, Associate Partner, Oliver Wyman Consulting, Munich, Germany

REQUIREMENTS MADE ON MAINTENANCE AND PLANT MONITORING**11:25 a.m. General insurance conditions of the market – Combination of insurance coverage and maintenance contracts**

- Essential standards and guidelines
- Fire and lightning protection for wind turbines
- Depreciation factors encouraging the use of preventative maintenance
- Case study: contents of various maintenance contracts

Dipl.-Ing./Dipl.-Wirt.-Ing. Ralf Skowronnek, Department Manager, Technical Insurances/Renewable Energies, MARSH GmbH, Hamburg, Germany

12:05 p.m. Life cycle and operating costs of wind turbines

- Greater need for frequent maintenance because of high technical availability of wind turbines
- An overview on cost assessment performed for the life of wind turbines
- Considerable risk factors
- Solutions aimed at improving maintenance efficiency

Prof. Lina Bertling, Professor for Sustainable Power Systems, Chalmers University of Technology, Gothenburg, Sweden

12:45 p.m. Lunch Break

EXPERT RECOMMENDATION ON MAINTENANCE AND ITS LOGISTICS**02:15 p.m. Service supplied by the vendor**

- Flexible service offerings, customisable to customer needs
- Highly qualified remote services offered by the vendor
- Asset management approach, based on the expert know-how of Service- & OEM-Engineers
- LOCAL infrastructure combined with GLOBAL processes & technology
- Legal aspects and warranties

Martin Rüter, Central Europe Wind Services Director, GE Energy, Salzbergen, Germany

02:55 p.m. Service supplied by third parties other than vendors

- Legal aspects and warranties
- Scope of supply
- Accessibility of service departments and teams
- Transparency and documentation of finished jobs
- Financial benefits of changing over to another service provider
- Which companies are best for what type of turbine?

Ulrich Schomakers, CEO, Availon GmbH, Rheine, Germany

03:35 p.m. Logistics in onshore and offshore maintenance

- Spare part management and IT systems
- Significant cost drivers to be identified and avoided
- Accommodation and working offshore
- Service teams and O&M service

Jacob Kjærgaard, Business Development Manager, Port Services, Blue Water Shipping/ **Andrew Fenn**, Manager Subsea Division, Dive & ROV activities, Esbjerg, Denmark

04:15 p.m. Networking and Coffee Break

04:45 p.m. Offshore maintenance and repair

- Organizing an Offshore Service Business unit
- Important safety aspects of offshore maintenance
- Planning and scheduling of offshore maintenance
- Efficiency Projects

Lars Albæk Nielsen, Vice President for Offshore Service, Vestas Offshore, Aarhus, Denmark

05:25 p.m. Outlook: Different requirements for Operation and Maintenance concepts in Spain

- Current market situation in Spain: operators and explanation of project structures
- Influences of the described structures and obligations to O&M
- A global philosophy of O&M: all services from one source
- Advantages and disadvantages of a global philosophy and evolutionary trends in maintenance

Dr. Ilya Hartman, Director Europe, Acciona Energy;
Cristobal Couret, Director O&M Wind, Acciona Energía, Madrid, Spain

06:05 p.m. Maintenance personnel: Available manpower, required qualifications and professional development strategies


- Essential qualifications for maintenance personnel
- Current market situation for maintenance personnel

- Already possible and necessary professional development
- Promising strategies to develop qualifications
- Outlook: An interdisciplinary approach

Matthias Brandt, Management Board, Deutsche Windtechnik AG, Bremen, Germany

06:45 p.m. Reception

At the end of the first conference day we kindly invite you to our evening reception. Enhance your personal network and use the relaxed and informal atmosphere for in-depth talks with other participants and speakers.

 The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

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SECOND DAY

**MONITORING METHODS /
DATA MANAGEMENT AND ANALYSIS**

09:00 a.m. Monitoring methods, damage identification and forecasting

- Vibration analysis/machine diagnostics/condition monitoring
- Important monitoring points and sites in wind power plants
- Monitoring function using an oil particle counter
- Successful damage forecasting methods

Dr. rer. nat. Edwin Becker, Head of Service and Diagnostic Center,
Marcel Kenzler, Head of Monitoring Center, Prüftechnik Condition Monitoring GmbH, Ismaning, Germany

09:40 a.m. Reliability-based maintenance using data management and analysis

- Strategies for successful maintenance
- Establishing of a comprehensive data base for reliability analysis
- Use of the failure data base to analyze system reliability
- Experience, conclusions and optimization potentials to be identified

Dipl.-Ing. M.Sc. Stefan Faulstich, Project Manager, Reliability and Maintenance Strategies, Fraunhofer Institute of Wind Energy and Energy System Technology (IWES), Kassel, Germany

10:20 a.m. Networking and Coffee Break

10:50 a.m. Key Issues for international O&M Contracts for Wind Turbines

- Essential contents for maintenance contracts
- Structuring service levels and sanctions for their breach
- Guarantees for availability of wind turbines?
- Cross-border contracts
- Special issues for offshore maintenance

Dr. Christian Kessel, Partner, Bird & Bird LLP, Frankfurt/Main, Germany

MECHANISMS PRONE TO CAUSE TROUBLE, MAINTENANCE PERFORMED ON SELECTED COMPONENTS

11:30 a.m. Maintenance and repair performed on rotor blades

- Routine rotor blade servicing
- Condition-based controls, lightning protection measurements
- Successful damage detection and assessment
- Case study: typical rotor blade damage
- Overhaul, repair and replacement of rotor blades

Randall Hoeflein, Vice President, Service and Logistics, LM Windpower, Amsterdam, Netherlands

12:10 p.m. Lunch Break

01:25 p.m. Maintenance concepts for corrosion protection systems of wind tower structures

- Where should we expect corrosion to occur on wind tower structures?
- Examples of corrosion damage found on land-based and offshore towers
- Difficulties arising in the maintenance and repair of corrosion protection systems
- Examples of implemented repair and maintenance procedures

Dr.-Ing. habil. Andreas Momber, Certified Paint Inspector, Muehlhan AG, Hamburg, Germany

02:05 p.m. Tribology and central lubrication systems for wind turbines

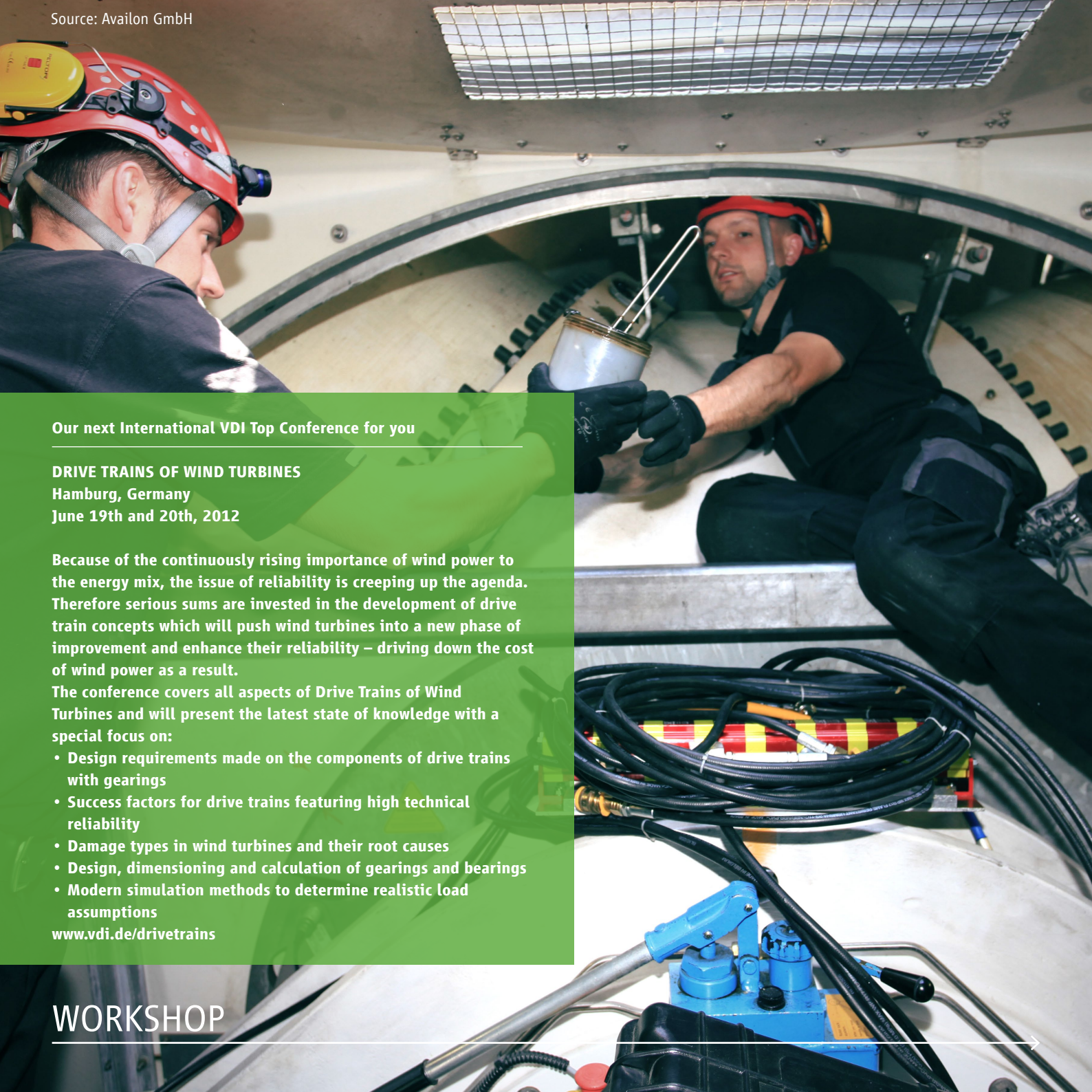
- Tribology in wind turbines
- Central lubrication systems in various types of wind turbines
- Which components require what scope and type of maintenance and repair?
- Variable control of maintenance using tribological systems
- Optimizing tribology in wind turbines

Michael Slembeck, Head of Business Group Renewable Energy, LINCOLN GmbH, Walldorf, Germany

02:45 p.m. Closing Remarks

Prof. Dr.-Ing. Andreas Reuter, Director Fraunhofer IWES, Bremerhaven, Germany

03:00 p.m. End of Conference



Our next International VDI Top Conference for you

DRIVE TRAINS OF WIND TURBINES

Hamburg, Germany

June 19th and 20th, 2012

Because of the continuously rising importance of wind power to the energy mix, the issue of reliability is creeping up the agenda. Therefore serious sums are invested in the development of drive train concepts which will push wind turbines into a new phase of improvement and enhance their reliability – driving down the cost of wind power as a result.

The conference covers all aspects of Drive Trains of Wind Turbines and will present the latest state of knowledge with a special focus on:

- Design requirements made on the components of drive trains with gearings
- Success factors for drive trains featuring high technical reliability
- Damage types in wind turbines and their root causes
- Design, dimensioning and calculation of gearings and bearings
- Modern simulation methods to determine realistic load assumptions

www.vdi.de/drivetrains

WORKSHOP

WORKSHOP

INTERNATIONAL O&M CONTRACTS: TYPICAL FEATURES, LEGAL RISKS AND CONTRACTUAL SOLUTIONS

OBJECTIVE:

Knowing the typical features, risks and contractual solutions of Operation and Maintenance (O&M) contracts has a special value for everyone working in the field of maintenance. An understanding of judicial basic knowledge opens up the possibility to avoid legal arguments and conflicts, which cause considerable follow-up charges. The awareness about legal consequences has a positive effect on the actions and decisions of the persons concerned, e.g. O&M service provider, wind farm operator, energy provider etc.

In our workshop the participants will receive an overview of legal general conditions of different countries and contractual aspects, which are relevant for the maintenance of wind turbines. This topic is of special interest to service provider, energy provider as well as wind farm operator supplying services on an international basis. After the workshop the attendees are able to identify and classify the construction of O&M contracts, legal risks and the requirements for their contractual coverage.

WORKSHOP TRAINER:

Dr. Christian Kessel, LL.M. (London) is a partner of the international law firm Bird & Bird LLP in Frankfurt am Main, Germany and admitted as a Rechtsanwalt (lawyer) in Germany and as a solicitor in England and Wales. He has wide experience in the drafting and negotiation of complex corporate contracts (in particular in major projects) and general terms and conditions (commercial contracts) as well as corporate/M&A. One of his major areas he is specialized in is the renewable energies sector, in particular wind energy (offshore and onshore). He also advises on the relevant planning law and energy law issues. In the offshore wind sector he has been involved in some of the most important and high volume transactions in Germany. He also deals with legal issues concerning the construction of power supply/transmission lines and electricity interconnectors as well as the North Sea Supergrid. He is a member of the legal advisory board of the German Wind Energy Association (BWE) and advises the EU Commission on the harmonization of the European private law (CFR-net).

TARGET GROUP:

The Workshop "International O&M contracts: Typical features, legal risks and contractual solutions" is addressed to service provider of operation and maintenance, energy provider, wind farm operator, consulting engineers, technical experts, financial institutions and insurances from all over the world.

CONTENTS: 9:00 a.m. to approx. 5:00 p.m.

1. Advantages and disadvantages of the laws in different countries:
Some typical examples
2. Cross-border O&M contracts - Case studies: Which law shall apply?
3. Key issues to be addressed in O&M contracts
4. Balancing typical risks in O&M contracts
5. Availability guarantees
6. Sanctions for non-compliance: Penalties and liquidated damages
7. Service Level Agreements: Scope of work or liabilities
8. Acceptance of maintenance services
9. Warranties and liabilities: Different requirements in different countries – An overview
10. Offshore issues

Closing Remarks

THE PARTICIPANTS ARE INVITED TO ASK QUESTIONS AND TO PRESENT THEIR CASES FOR FURTHER DISCUSSIONS.

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APPLICATION

TERMS AND CONDITIONS

Applications for conference attendance must be made in writing. Confirmation of your registration and the associated invoice will be mailed to you. Please do not pay your conference attendance fee until you will have received our invoice and its invoice number to be stated for transfer.

Conference venue:

Hotel Atlantic Kempinski
An der Alster 72-79
20099 Hamburg, Germany
Phone: +49 40 288-80
www.atlantic.de

Hotel room reservation:

A limited number of rooms have been reserved for the benefit of the conference's participants at the Hotel Atlantic Kempinski and at the Hotel ibis Hamburg Alster Centrum, Holzdamm 4–12+16, 20099 Hamburg, Germany, PHONE: +49 40 24 829-701, www.ibishotel.com. Please refer to "VDI Conference".

VDI Wissensforum service package: The conference package includes the conference documents, beverages during breaks, lunch and the social evening event on May 8th, 2012. The workshop package includes the workshop documents, beverages during breaks and lunch. Documents will be handed out to participants at the conference desk of site.

Conference attendance conditions and terms: By way of your registration you accept the conference attendance conditions and terms of VDI Wissensforum GmbH as binding. Any cancellation of your registration must be made in writing. We will charge you only an administrative fee of € 50.00 plus German VAT if you cancel your registration earlier than 14 days ahead of the conference date. Any cancellation that reaches us after this deadline will entail the conference attendance fee as stated in our invoice to be charged in full. The date of the post office stamp of your written cancellation will be the decisive criterion. In that case, we will gladly mail you the conference documents on request. Subject to agreement, you may name a substitute participant. Individual parts and sections of conferences and seminars cannot be booked. You will be informed without delay if an event has to be cancelled for unforeseeable reasons. In that instance, you will be entitled only to a refund of your conference attendance fee if already paid. We reserve the right to exchange speakers and/or change the programme sequence in exceptional cases. In any case, the liability of VDI Wissensforum GmbH is restricted exclusively to the conference attendance fee.

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INTERNATIONAL VDI-CONFERENCE

Maintenance of Wind Turbines

VDI Wissensforum | VDI-Platz 1 | D-40468 Düsseldorf
www

Avoiding damage
and optimizing costs
with preventative
maintenance
concepts

Please choose your price category

PARTICIPATION FEE + VAT PRICE LEVEL 1

VDI-Conference May 08th-09th 2012
(02KO145012) € **1.290,-**

Workshop May 10th, 2012
(02SE181001) € **840,-**

Package: Conference + Workshop € **1.880,-**

PERSONAL VDI MEMBERS + VAT PRICE LEVEL 2

VDI-Conference May 08th-09th 2012
(02KO145012) € **1.190,-**

Workshop May 10th, 2012
(02SE181001) € **790,-**

Package: Conference + Workshop € **1.830,-**

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VDI Wissensforum GmbH
Customer's Service-Centre
P.O. Box 10 11 39
40002 Düsseldorf, Germany
Phone: +49 211 6214-201
Fax: +49 211 6214-97154
Email: wissensforum@vdi.de
Internet: www.vdi.de/maintenance