19 – 20 June 2012, Paris, France

SKF 7th Annual Wind Farm Management Conference

The challenge of increasing profitability on expanding and aging wind farm fleets

Welcome!

Dear friends of wind energy,

Welcome to Paris and to the seventh annual SKF Wind Farm Management Conference.

It is a real pleasure to see how this annual event has developed into a natural meeting point for sharing knowledge and experiences of wind farm operation and maintenance. The very open atmosphere between key actors in the wind industry, seeing them join forces and openly share experiences and learn from each other, is both very rewarding and stimulating for us. This helps making wind farms more efficient and competitive, which benefits the whole industry as well as each participating party.

SKF recently reorganized our structure and formed a full Renewable Energy Business Unit integrating all the functions (sales, manufacturing, engineering) needed to serve the industry. This change covers the full industry life cycle from the birth of a new turbine concept until many years later when the turbine is taken out of operation. The objective is very similar to the objective of this conference: stimulate exchange, cross-fertilisation and drive alignment for the renewable energy industry to help reduce the cost of renewable energy. At the top of the agenda we see improved reliability and efficiency in operations and maintenance of wind farms.

I hope you will find this year's programme stimulating and useful, and that you will have the opportunity to meet new, interesting contacts from the industry during the conference.

SKF and our partners in the conference programme committee, Dong Energy, Renewable Energy Systems, Boralex, and E.ON Renewables wish you a fruitful conference, with the ambition that you will leave Paris with solid improvement ideas that can further contribute to the competitiveness of wind energy and your own business.

Kind regards,

Kent Viitanen
President
SKF Renewable Energy Business Unit

Conference programme

Tuesday 19, June 2012

8.00–9.00 Registration at hospitality desk

9.00–9.15 Welcome and introduction
Mr. Benoit Leconte
Director, SKF Industrial Market, Regional Sales and Service
SKF France

9.15–9.20 Moderator comments
Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

9.20–9.50 Development and trends in the international wind energy market
Mr. Justin Wu
Head of Wind Industry Research
Bloomberg New Energy Finance

9.50–10.35 Coffee break and networking

Life Cycle Cost a mystery?

10.35–10.55 O&M benchmarks for existing farms
Ms. Ulla Pettersson
Director
e for energy

10.55–11.15 PAS 55 and asset management; from concept to competence
Mr. William Reynolds
Knowledge Manager
SKF Asset Management Services

11.15–11:35 Using SCADA-based condition monitoring to predict failures and prevent unexpected costs
Dr. Michael Wilkinson
Engineer
GL Garrad Hassan

11.35–12.05 **Panel debate among speakers**
Moderator: Mr. Jens Bode
Head of Business Development
SKF Renewable Energy Business Unit

12.05–13.05 Lunch buffet

Managing the end of warranty

13.05–13.25 End of warranty inspection
Mr. Strange Skriver
Chief Technical Consultant
Danish Wind Turbine Owners Association

13.25-13.45 Life after manufacturer`s warranties
Mr. Dick Williams
President
Shell WindEnergy Inc.

13.45-14.05 Successful negotiations with turbine suppliers – best practices and case examples
Mr. Thilo Langfeldt
Partner & Managing Director
Strategy Engineers GmbH & Co. KG Germany Filial

14.05-14.25 Moving from OEM dependence to operator led O&M strategy
Mr. Christian Völcker
Manager O&M and Offshore Logistics
E.ON

14.25–14.55 **Panel debate among speakers**
Moderator: Mr. Harry Timmerman
Product Manager, SKF WindCon
SKF Reliability Systems

14.55–15.40 Coffee break and networking

More power from existing assets

15.40–16.00 EVW2-Maximizing availability and reliability of wind turbines
Mr. Khalid Rafik, M.Sc.,
Reliability and Maintenance Strategies
Fraunhofer IWES

16.00-16.20 Analysis-driven asset optimization
Mr. Christopher Gray
Managing Director
Uptime Engineering GmbH

16.20–16.40 Can owners improve wind farms' profitability?
Mr. Patrick Decostre
General Manager, Europe
Boralex Inc.

16.40-17.10 **Panel debate among speakers**
Moderator: Mr. Tim Morgan
Head of Asset Strategy
E.ON

17.10–17.25 Closing of the day
Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

19.30– Conference dinner
Host: Mr. Inge Aasheim

Wednesday 20, June 2012

Future technology, increase yield versus reliability

9.00–9.20 From gearbox to direct drive design
Mr. Peder Riis Nickelsen
Head of Product Lifecycle Management
Siemens Wind Power

9.20–9.40 Alstom turbine technology going offshore
Mr. David Benveniste
Offshore Product Marketing Manager
Alstom Wind

9.40–10.00 New technologies from an operator's point of view
Mr. Peter Stratford
Engineering Manager, Offshore
RES Group

10.00–10.20 Design consultant's view on future turbine technology
Mr. Werner Göbel
Managing Director
Change Engineering

10.20–10.50 **Panel debate among speakers**
Moderator: Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

10.50–11.35 Coffee break and networking

Knowledge transfer

11.35–11.55 The operations of O&M Business of China Wind Power Group
Mr. Bill Wu
Vice General Manager
The O&M Company of China Wind Power Group

11.55–12.15 Technology for grid integration of wind energy
Dr. Adrian Timbus
Principal Scientist,
ABB

12.15–12.35 Advancing condition-based maintenance:
CMS-data based prognosis of residual component life
Dr. Katharina Fischer
Postdoctoral Researcher
Chalmers University of Technology

12.35–12.50 Closing of Conference/Introduction to 2013 conference
Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

12.50-13.50 Lunch buffet and departure

Members of the programme committee:

DONG energy BORALEX res power for good e·on Climate & Renewables

Conference presentations

Tuesday 19, June 2012

Topic Welcome and introduction
Time: 9:00–9:15
Presenter: Mr. Benoit Leconte
Director, SKF Industrial Market
Regional Sales and Service France
SKF France

Topic: Moderator opening
Time: 9:15–9.20
Presenter: Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

Topic: Development and trends in the international wind energy market
Time: 9:20–9:50
Presenter: Mr. Justin Wu
Head of Wind Industry Research
Bloomberg New Energy Finance

Wind energy is becoming increasingly cost competitive against traditional energy sources with new markets opening up and more governments embracing it. However, as costs have fallen and competition intensified, this has placed enormous pressure on the industry and supply chain. The presentation will examine the outlook for the global wind industry over the next 5-10 years, including supply, demand, costs and pricing, and business strategies for survival and expansion.

Topic: O&M benchmarks for existing farms
Time: 10:35–10:55
Presenter: Ms. Ulla Pettersson
Director
e for Energy

Wind Power is a source of power generation without any fuel costs. When the investments are made and the wind farm is in operation, the costs for Operation, Maintenance and Refurbishment (OM&R) are the only costs that can be influenced. These costs will have a major impact on the profitability of the wind farm and are not only related to the technical configuration but also to geographical, organizational and contractual factors. This makes it hard for a wind farm owner to compare the OM&R costs in order to identify the best areas for improvements.

e for energy Mgmt Consulting and PA Consulting Group have – in cooperation with major utilities – developed a benchmarking method and run benchmarking programmes for participating utilities to compare their costs for OM&R of their wind farms. The method and programme will be presented, with special focus on how onshore and offshore wind farms can be compared and if Economy Of Scale has any impact on the costs for OM&R.

Topic: PAS 55 and asset management: From concept to competence
Time: 10:55–11:15
Presenter: Mr. William Reynolds
Knowledge Manager
SKF Asset Management Services

PAS 55 gives us some insight into what is required to implement asset management. It helps us understand some of the key enablers that lead to good asset management practices. But what competences are required to deliver the promise of PAS 55 and the benefits of asset management? This presentation discusses in simple terms some of the models implicit in PAS 55 and how they can be used to identify the competences required to deliver effective asset management.

Topic: Using SCADA-based condition monitoring to predict failures and prevent unexpected costs
Time: 11:15–11:35
Presenter: Dr. Michael Wilkinson
Engineer
GL Garrad Hassan

SCADA-based condition monitoring uses 10-minute average data already collected at wind turbines to detect deteriorating machine health and predict impending failures. This has the advantage that no additional sensors or equipment need to be installed in the turbines. Two techniques will be described: a physical model approach and an artificial intelligence method. The methods have proven to be successful when accompanied with an understanding of the engineering aspects of the turbines and knowledge of the failure modes. The presentation will describe the methods and show the results of a validation on a range of turbine types and sizes.

Topic: Panel debate among speakers
Time: 11:35–12:05
Moderator: Mr. Jens Bode
Head of Business Development
SKF Renewable Energy Business Unit

Topic: End of Warranty Inspections
Time: 13:05–13:25
Presenter: Mr. Strange Skriver
Chief Technical Consultant
Danish Wind Turbine Owners Association

The Danish Wind Turbine Owners Association was founded in 1978, when the first wind turbines suffered from major damages. From 1990 the technical department has carried out End of Warranty inspections on more than 2800 wind turbines, which makes the EoW the most important inspection for a wind turbine. The EoW scope is mainly a visual inspection, but options can be: endoscope inspections, detailed blade inspection, oil filter inspections, vibration analysis, oil analysis and thermography. The report format can vary depending on the size of the wind park to inspect. Presenting findings from a large wind park requires different types of reports. The presentation handles the case: EoW inspections on 91 wind turbines on Horns Reef 2 during summer 2011.

Topic: Life after manufacturer's warranties
Time: 13:25–13:45
Presenter: Mr. Dick Williams
President
Shell WindEnergy Inc.

The wind industry is growing up and needs to mature quickly from a development-centered to a long-term, operations-centered business. As the manufacturers' warranties expire, it is increasingly difficult to hold maintenance costs to predicted flat or slightly increasing levels, given repair costs involved with blades, drive trains, and power control equipment. This session will look at unique ways to better understand the health of the equipment, devise long-term maintenance plans with more predictability, and the procurement strategy behind extended service contracts. Although the future is a daunting challenge, we see it filled with many interesting opportunities.

Topic: Successful negotiations with turbine suppliers – best practices and case examples
Time: 13:40–14:05
Presenter: Mr. Thilo Langfeldt
Partner & Managing Director
Strategy Engineers GmbH & Co. KG Germany Filial

The procurement process for wind turbines is the only phase where an investor can significantly influence the lifetime profitability of a wind park. The success of a wind turbine procurement process depends very much on how well prepared the buyer is before entering the supplier negotiations. Strategy Engineers' well-proven, five-step approach to procurement has been applied across several industries and includes i.a. the definition of a clear target, creation of market transparency, preparation of a request for quote document (RFQ) with functional specifications, utilization of maximum competition, analysis of quotes and supplier negotiations. The presentation describes key elements of each of the five process steps, highlights success factors and lessons learned and includes case examples that visualize how to utilize important levers to achieve real procurement excellence.

Topic: From OEM reliance to an operator-led O&M Strategy
Time: 14:05–14:25
Presenter: Mr. Christian Völcker
Manager O&M and Offshore Logistics
E.ON Climate & Renewables

With global capacity in operation onshore and offshore today exceeding 4 GW, E.ON Climate & Renewables can look back on more than 15 years of experience running wind farms. As an owner-operator, we are convinced that being involved in O&M of our assets is essential. This session illustrates a few areas where we have reduced reliance on the OEM. It presents examples of taking more control in order to arrive at improved results. Let the facts speak for themselves: The days of wind farm operations being a black box are over.

Topic: Panel debate among speakers
Time: 14:25–14:55
Moderator: Mr. Harry Timmerman
Product Manager, SKF WindCon
SKF Reliability Systems

Topic: Maximizing availability and reliability of wind turbines through a common Datapool
Time: 15:40–16:00
Presenter: Mr. Khalid Rafik, M.Sc.
Reliability and Maintenance Strategies
Fraunhofer IWES

Modern onshore wind turbines (WT) attain high technical availability. Evaluation of maintenance work in previous projects shows high WT availability requires additional maintenance work and costs. There is a considerable scope for optimising reliability and maintenance procedures by using available knowledge and past experience. Thus, necessary steps have to be introduced by standardizing the data management and building a common failure Datapool. Besides statistical analyses of the Datapool, an additional approach to optimise WT O&M strategies is a Multi-Agent-System, which models several competitive aspects (e.g. maximum energy output, low labour costs etc.) in order to identify optimal decisions.

Topic: Analysis-driven asset optimisation
Time: 16:00–16:20
Presenter: Mr. Christopher Gray
Managing Director
Uptime Engineering GmbH

The profitability of wind turbines depends strongly on the levels of performance and availability achieved during long-term field operation. Younger wind farms and newer turbine designs may not achieve the expected energy yields due to non-optimised initial configuration or downtime associated with infant mortality failures. Older assets are more likely to be affected by degradation effects leading to a reduction in efficiency and increased risk of the components wearing out.

Achieving optimised performance is challenging and can consume significant resources, particularly for operators with a large number of geographically diverse assets of varying age, type and specification. Intelligent analysis of operational data leading to focused inspection and service activities has proven to be a cost effective approach to asset optimisation.

Topic: Can owners improve wind farms' profitability?
Time: 16:20–16:40
Presenter: Mr. Patrick Decostre
General Manager, Europe
Boralex Inc.

Building on extensive experience in traditional energy production, including hydroelectric and thermal power (biomass and gas), Boralex is investing since 10 years in the wind energy sector firstly in France then in Canada. With its industrial focus, Boralex has honed one-of-a-kind expertise in the operation and optimisation of energy assets. Behind technical aspects, the success can only be achieved with an open, stimulating and respectful corporate culture. Through practical examples, this presentation will illustrate how Boralex is optimising assets during or after the warranty period bringing results that overtake former turbine manufacturers' performances.

Topic: Panel debate among speakers
Time: 16:40–17:10
Moderator: Mr. Tim Morgan
Head of Asset Strategy
E.ON

Topic: Closing of the day
Time: 17:10–17:25
Presenter: Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

Wednesday 20, June 2012

Topic: From gearbox to direct drive
Time: 9:00–9:20
Presenter: Mr. Peder Riis Nickelsen
Head of Product Lifecycle Management
Siemens Wind Power

Siemens has traditionally been using gearboxes in combination with an asynchronous induction generator with a full power converter for the drive chain in commercial Siemens wind turbines. In parallel Siemens has, during a longer period, developed and tested wind turbines with direct drive technology. The overall consideration behind the direct drive technology has been to reduce the cost of electricity from wind turbines, taking into account all relevant aspects of both the cost and value chain. A significant driver has also been to reduce the complexity of the wind turbines. Siemens has now had direct drive turbines in operation for several years and is able to assess this technology based on design studies, and results from the extensive test programme that has been done as well as many turbines in operation. The conclusion is that the direct drive technology has a number of advantages compared to the more traditional geared technology.

Topic: Alstom turbine technology going offshore
Time: 9:20–9:40
Presenter: Mr. David Benveniste
Offshore Product Marketing Manager
Alstom Wind

From the very early stages of conception, Alstom's new turbine, the Haliade 6MW-150 has been an entirely new platform dedicated to offshore, focusing on yield and reliability: Robust, with the use of the long-proven Alstom Pure Torque™ technology; simple, with a limited number of rotating parts in its Direct Drive Permanent Magnet Generator; and efficient thanks to its 150 m rotor diameter.

But Haliade's design also integrated from the beginning optimised O&M to minimize scheduled downtime, and de-rating strategies based on redundancies to enable fault tolerance, ensuring that the turbine keeps producing energy in most cases.

Topic: New technologies from an operator's point of view
Time: 9:40–10:00
Presenter: Mr. Peter Stratford
Engineering Manager, Offshore
RES Group

How do we balance the potential benefits of new technology with the technical risks it may bring? Often in planning a wind farm we are faced with opportunities to use new types of wind turbines that may bring economic benefits, but which have very limited, or no track record. How do we evaluate this? The industry needs to innovate to reduce costs but how can a manufacturer persuade a developer / operator to take on new technology? This talk will discuss the issues that an operator should investigate in evaluating new technology, and what the manufacturers should be showing to potential clients: This includes the manufacturer's Product Development Process and a Reliability Case for the product. The developer / operator needs to have a thorough understanding of product development in order to identify risks to either the long-term asset or to the delivery program, and they also need to have a strong critical evaluation of the value that product certification brings.

Topic: Design consultant's view on future turbine technology
Time: 10:00–10:20
Presenter: Mr. Werner Göbel
Managing Director
Change Engineering

"We can't solve problems by using the same kind of thinking we used when we created them." In view of the wide range of earlier component failures in wind turbines this quote from Albert Einstein gains a new significance. Inspired by this message, the the presentation indicates previously neglected methodological approaches and shows the associated consequences. By means of examples it explains the necessity of changes in the design philosophy and process and communication across the interfaces between the different market participants and specialists. It provides a new view on interrelations between the performance of single subsystems and reliable energy production and gives an outlook about the efficiency increase and reliability improvement of future turbine designs free from today's technological limitations.

Panel debate: Increase yield versus reliability
Time: 10:20–10:50
Moderator: Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

Topic: The operations of O&M Business of China Wind Power Group.
Time: 11:35–11:55
Presenter: Mr. Bill Wu
Vice General Manager
The O&M Company of China Wind Power Group

As a wind farm service provider with more than 600 technicians who are taking care of 40 wind farms and projects located in 10 different provinces in China, China Wind Power Group is trying:

- to improve the production capability of wind turbines and lower the operation costs,
- to prolong the lifetime of turbines through proper maintenance and repair,
- to offer our customer one-stop service like the automobile business after-sale service,
- to maintain a long-term customer relationship,
- ultimately to have our customers rely on us on a daily basis.

Topic: Technology for grid integration of wind energy
Time: 11:55–12:15
Presenter: Dr. Adrian Timbus
Principal Scientist
ABB

Wind energy integration throws multiple challenges. One of the main challenges is high variability of wind power. The system must have capability to balance the uncertainty of wind as a source and keep the system stable by providing required active and reactive power at all times. The other major challenge is that large wind farms are usually far away from the load centres requiring efficient and reliable transmission systems. AC or DC transmission technologies are available to optimally handle this challenge. The presentation will look forward at state of the art technology for grid integration of wind energy.

Topic: Advancing condition-based maintenance: CMS-data based prognosis of residual component life
Time: 12:15–12:35
Presenter: Dr. Katharina Fischer, Postdoctoral Researcher
Chalmers University of Technology

To attain cost-effective maintenance is the main objective for research in the Wind Power Asset Management (WindAM) group at Chalmers University of Technology. In close cooperation with SKF and Göteborg Energi, approaches for optimally using information from condition-monitoring systems (CMS) in the maintenance process have been investigated. The main focus has been set on developing a methodology to predict the residual life of wind turbine components based on their age and data from online CMS. A lifetime-prognosis model has been implemented for the case of generator bearings in wind turbines using vibration data in order to investigate the applicability of the approach.

Topic: Closing of Conference/Introduction to 2013 Conference
Time: 12:35–12:50
Presenter: Mr. Stefan Karlsson
Head of Marketing & Strategic Development
SKF Renewable Energy Business Unit

Conference presenters

Presenter: Mr. David Benveniste
Alstom Wind

David Benveniste has been working for four years at Alstom after an early career as a consultant in strategy and management. In 2011 he joined the Wind division of Alstom to take charge of the product marketing for the newly developed offshore wind turbine Haliade 6MW-150. In his role he focuses on optimizing Alstom's offering to bring the most competitive offshore wind cost of energy for its clients. David Benveniste holds a background in aeronautics and space engineering, with a Master of Science from MIT (USA), and engineering degrees from the Ecole Polytechnique and Supaero (ENSAE).

Moderator: Mr. Jens Bode
SKF Renewable Energy Business Unit

Jens Bode is responsible for global wind energy business development within SKF Renewable Business Unit. Mr. Bode has a mechanical engineering degree and a Master of Business Marketing. Along his career within SKF which started in 1995, he has held a number of managerial positions in sales, engineering and marketing. Since 2010, Mr. Bode has specialised in business development for SKF for the wind industry.

Presenter: Mr. Patrick Decostre
Boralex Inc.

Patrick Decostre is General Manager at Boralex in charge of the development and the operations in Europe. He joined Boralex in September 2001 and was the first employee in Europe. He has developed the company from scratch to become one of the largest wind farms operators in France with an industrial focus. Formerly, he has worked six years in the EDF group successively as high voltage network dispatcher, business controller and industrial project manager. He holds an engineering degree from the Brussels university and a management degree from the Solvay business school.

Presenter: Dr. Katharina Fischer
Chalmers University of Technology

Katharina Fischer graduated in electrical engineering at Leibniz Universitaet Hannover, Germany, in 2002. In 2008, she finalized her Ph.D. degree in the field of thermo-mechanical failure of high-temperature fuel cells in the mechanical engineering faculty of the same university. Since 2009, Dr Fischer is a postdoctoral researcher at the Division of Electric Power Engineering, Department of Energy and Environment, at Chalmers University of Technology in Gothenburg. Her current research interests include reliability analysis and maintenance optimization for wind turbines.

Presenter: Mr. Werner Göbel
Change Engineering

Werner Göbel has spent more than three decades as application engineer and design consultant for wind turbines. Joining SKF in 1981 he has exerted an important influence on the design of nearly all bearing applications in wind turbines from GROWIAN and Éole up to the modern Multi-MW-Class. From 2009-2010 he worked as Managing Director of ILJIN GmbH were he built a motivated team of engineers, mathematicians and IT specialists focusing on drive train optimisation under holistic approach without disturbing communication interfaces. Early in 2010, he and his team joined the wind turbine developer AMSC Windtec GmbH. In April 2012 he started to serve the renewable energy industry as an independent engineering consultant with Change Engineering.

Presenter: Mr. Christopher Gray
Uptime Engineering GmbH

Christopher Gray is a company partner at Uptime Engineering, specialising in consultancy and software solutions for optimised reliability of technical systems. During his 15 year career he has worked in design, analysis and development engineering roles and with a variety of technologies. He led successful projects covering topics such as failure analysis, test optimisation, damage calculation and field monitoring. Chris is now focused on the development of methods and tools for SCADA-based wind turbine monitoring and has performed detailed performance analysis, fault diagnosis and prognosis for a very large number of wind turbines. He studied Aeronautical Engineering (BEng) and Renewable Energy Systems Technology (MSc).

Moderator: Mr. Stefan Karlsson
SKF Renewable Energy Business Unit

Stefan Karlsson, based at SKF Group Headquarters in Göteborg, Sweden, holds a Master of Science degree in Business Engineering and has close to 25 years experience with SKF group in marketing and sales management positions in different parts of the world. Since 2002 he has been driving and coordinating the business development of wind energy within SKF, and is since early 2012 Head of Marketing and Strategic Development within the newly established SKF Renewable Energy Business Unit.

Presenter: Mr. Thilo Langfeldt
Strategy Engineers GmbH & Co. KG
Germany Filial

Thilo Langfeldt has worked as a management consultant for more than 12 years mainly for clients from the energy, aerospace and automotive industry. He has helped his clients with i.e. strategy based transformation, performance improvement, procurement and sales/after sales strategy. Thilo has led negotiations with more than 10 wind turbine suppliers comprising over 500 MW onshore capacity including both turbine supply and service agreement. Thilo co-founded Strategy Engineers in Germany 2010 and is Managing Director of the Swedish branch focussing on strategy development and implementation for industries with complex technical products.

Presenter: Mr. Benoit Leconte
SKF France

Benoit Leconte has a mechanical engineering and business administration background and joined the SKF Group in 1987. Since this date he has mostly worked in the field of sales, marketing and business development. Benoit started with selling and promoting the SKF offerings to the French industrial market distributors, end-users and original equipment manufacturers. After that he focussed for 10 years on household appliance manufacturers as well as with tier one and tier two automotive suppliers; then mostly followed by numerous years in charge of the sales to European industrial original equipment manufacturers in the West European region. Today he is in charge of the SKF Regional Sales and Service activities in France.

Moderator: Mr. Tim Morgan
E.ON

Tim Morgan joined E.ON's Wind Farm Operations Team in 2004 as an onshore wind farm manager, overseeing 60 wind turbines across three sites. His responsibilities included managing both warranty and post-warranty service agreements and overseeing the transition to new third party maintenance set-up. Mr. Morgan then worked in a central technical support team, during which time he set up a fleet-wide engineering risk management system, and investigated gearbox technical issues. Currently he is Head of Asset Strategy at E.ON Climate & Renewables (EC&R) in Dusseldorf, responsible for coordinating O&M strategy and implementing projects to both reduce costs and improve performance, on over 4 GW of onshore and offshore wind farms. He has presented twice previously at the SKF Wind Farm Management Conference.

Presenter: Mr. Peder Riis Nickelsen
Siemens Wind Power

Peder Riis Nickelsen is the head of Product Lifecycle Management for Siemens Wind Power and has a degree in Mechanical Engineering. Peder has worked for Bonus and now Siemens Wind Power since 1993. Along his career, he has worked mainly with R&D and engineering but also been involved with project sales and execution and was strongly involved in the start up of the offshore projects. For the past 10 years, Peder has been the head of Engineering at Siemens Wind Power, which led to the position as head of Product Lifecycle Management when the department was founded in October 2011.

Presenter: Dr. Adrian Timbus
ABB

Adrian Timbus obtained his PhD at Aalborg University, Denmark, in 2007 and since then works for ABB Corporate Research, Baden-Daettwil, in Switzerland where he is currently a Principal Scientist. Dr. Timbus has worked for many years in the area of renewable energy, with focus on wind power and the issues related to its integration in power systems.

Presenter: Ms. Ulla Pettersson
e for energy

Ulla Pettersson worked 13 years as a senior consultant with Cap Gemini and four years as Head of the Energy and Resources Practice for the Stockholm office of PA Consulting Group. Her experience includes strategy development, business planning processes and performance improvement, including involvement in the development of a benchmarking methodology for wind power operations and maintenance.

In 2004 she founded "e for energy Management Consulting" and in 2008 the subsidiary "e for energy UK Management Consulting". Ulla understands the challenges of all energy sources, and especially the ones of renewable energy.

Presenter: Mr. Khalid Rafik, M.Sc.
Fraunhofer IWES

Khalid Rafik, Dipl.-Ing. M.Sc., has studied electrical engineering with specialisation in the field of communication, at the University of Kassel, Germany and completed the Master Programme of Information Technology. Since 2007 he worked as a research associate in the group reliability and maintenance strategies in the department Energy Economy and Grid Operation at the Fraunhofer Institute for Wind Energy and Energy Systems Technology (IWES), dealing with the reliability of wind turbines and the process modeling and optimisation of maintenance strategies.

Presenter: Mr. William Reynolds
SKF Asset Management Services

William Reynolds, MBA, MCMI is a Member of Institute of Asset Management and is a member of the ISO55001 review team. He has spent more than two decades in management positions within the maintenance function, responsible for the integrity of key assets for oil majors. Since the mid-nineties his responsibilities focused on the development of maintenance programmes designed to optimise asset performance. This work has taken him to 10 countries and exposed him to the maintenance practices in a variety of industries. He is now responsible for the development of SKF's asset management training program endorsed by the Institute of Asset Management.

Presenter: Mr. Strange Skriver
Danish Wind Turbine Owners Association

Strange Skriver was employed at Danish Wind Turbine Owners Association in 1990. The main tasks during these 22 years of work have been End of Warranty inspections. Besides EoW inspections he also performed many other tasks like; the inspection of gearboxes, endoscope inspections, work shop inspections, gear oil filter inspections, type approval of small wind turbines, member meetings, consulting and inspection training. Strange Skriver has carried out more than 3 200 inspections on wind turbines in the range from 3 kW to 3 600 kW of more than 50 different wind turbine manufacturers and in more than 20 countries worldwide.

Presenter: Mr. Peter Stratford
RES

Peter Stratford initially spent nine years in the car industry; focusing on design and analysis of noise & vibration-related systems, and statistical modeling for engine calibration. Since then he has had 10 years of technical roles in the wind industry. Initially this was in turbine rotor design with NEG-Micon / Vestas followed by a period of consultancy on subjects as varied as reliability methods, marine logistics and test rig design. Now, as Engineering Manager of RES Offshore, Peter has built up a team of 22 engineers supporting numerous offshore renewable energy projects throughout their lifecycle, including development, construction and operations. Involvement is across all engineering disciplines but retaining a particular interest in the design of the wind turbines.

Moderator: Mr. Harry Timmerman
SKF Reliability Systems

Harry Timmerman is responsible for SKF WindCon, a condition monitoring system for wind turbines. As Mechanical Engineer Harry started diagnosing wind turbines using vibration analysis in 1998 while working with SKF Española in Madrid. After four years as Sales Manager Iberia with the Johnson Corporation, he returned to SKF to develop the WindCon solution. From 2008 till 2010 he worked with SKF Japan in Tokyo as Business Development Manager supporting the wind segment in the Asia Pacific region. In his current role as WindCon Product Manager, Harry is globally responsible for the SKF WindCon product.

Presenter: Mr. Christian Völcker
E.ON Climate & Renewables

Christian Völcker holds a degree in Industrial Engineering and Management and has been working internationally in logistics and wind energy since 2004. He joined E.ON in 2006 as Project Manager in offshore wind. When E.ON Climate & Renewables was established as E.ON's global renewable energy unit in 2008, Christian took over a role focusing on O&M and offshore logistics in the central Asset Strategy team, working with all six regional businesses across Europe and North America. After a stint with the U.S. Operations team during 2011 supporting O&M strategy implementation, his focus is now on global O&M contracting and strategy.

Presenter: Dr. Micheal Wilkinson
GL Garrad Hassan

Michael Wilkinson has worked in the Asset Management and Optimisation Services group at GL Garrad Hassan since 2007. He is part of a team of engineers who have assessed 30 GW of operating wind farms worldwide. In this role he has provided a wide range of consulting services for owners, operators and investors in operational wind farms. His specific interests include SCADA data analysis, reliability and condition monitoring. He is a Chartered Engineer with a Doctorate in wind turbine condition monitoring.

Presenter: Mr. Dick Williams
Shell WindEnergy Inc.

Dick Williams joined Shell in 1980, working in a variety of engineering, operations, and commercial roles in Shell Pipeline Company, eventually becoming Commercial Manager. He was appointed President, Shell WindEnergy, in 2008. Shell's Wind activities include operating 10 wind farms, with a total capacity of 1 000 MW, including an offshore location in Europe, as well as some North American development projects. He maintains Professional Engineering licenses in three states. When not chasing windmills, he spends time with several charities, is on the board of Breakthrough Houston – an educational collaborative which nurtures high-achieving students from at-risk areas, is the founding Chairman of The Wind Alliance, and is the Chairman of the Houston Technology Center.

Presenter: Mr. Bill Wu
The O&M Company of China Wind PowerGroup

After spending 30 years with various companies both in China (20 years) and Canada (10 years), Bill Wu has extensive experience and unique understanding of the cultural differences and different business practices between Chinese and Western companies, especially in the after-sales and service industries such as automobile, electronics and wind power.

Mr. Wu led the marketing and service teams to set up the wind farms' O&M service business model for China Wind Power Group and the partnerships with the leading companies in the industry, such as SKF, Parker, China Transmission and Shanghai Electrics.

Presenter: Mr. Justin Wu
Bloomberg New Energy Finance

Justin Wu is Head of Wind Industry Research at Bloomberg New Energy Finance (BNEF), the world's leading provider of industry information and analysis to investors, corporations and governments in clean energy. He leads a global team of analysts responsible for producing and communicating research and analysis on the economics, policy, and strategic dynamics of the wind industry.

Based in Hong Kong, Justin joined the company in 2007 and was previously the lead Asia wind analyst, where he produced market research and consulting projects for the wind energy sector in China, Korea, Japan and Southeast Asia. He is a specialist in Chinese wind policy, the turbine manufacturing industry and US-China clean energy trade issues. Justin holds a MS in Politics from the School of Oriental and African Studies at the University of London and a BS in International Politics and Economics from Georgetown University's Edmund A. Walsh School of Foreign Service.

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Welcome to the world of SKF manufacturing!

Following the Wind Farm Management Conference in Paris, SKF proposes to focus one more day on wind turbine generators to learn more about the various solutions available from SKF for this specific application.

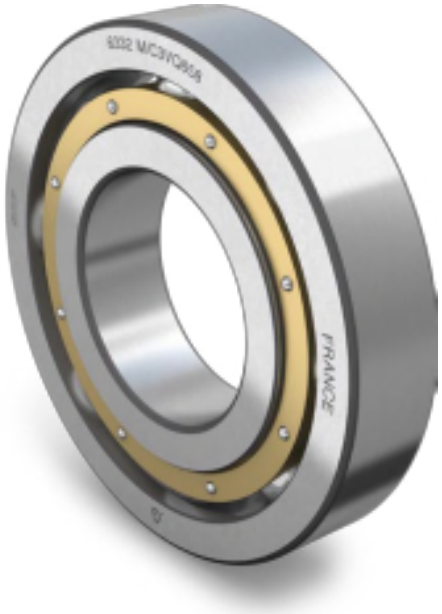
This event will take place in the:

SKF ball bearing factory of Saint Cyr sur Loire, France (near Paris) on June 21, 2012.

Topics covered during the day include:

- Wind turbine generator design and related bearing arrangement
- Bearing failure mode
- Wind turbine generator bearings development and manufacturing
- Special bearing products
- Condition monitoring solutions

On top of all these topics around wind turbine generators, **you will also be treated to a tour of the manufacturing facility and see how a ball bearing for a wind generator is made**. From turned rings to finished bearings, we will take you through the manufacturing process.



For information and contact details, see: *windfarmconference.com/str10/*

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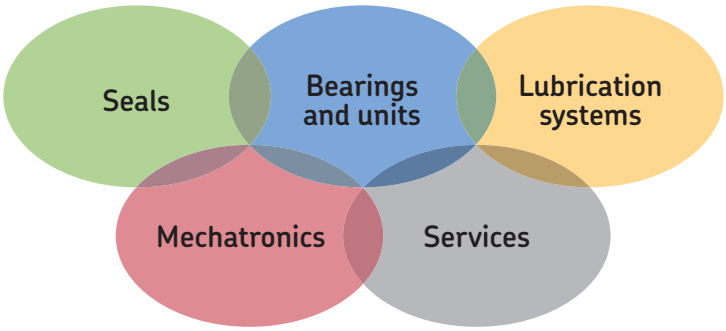

The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management services. A global presence provides SKF customers uniform quality standards and worldwide product availability.

PUB 74/R9 12885 EN · June 2012

Printed in Sweden on environmentally friendly paper.

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