



# Quo Vadis 2016 Wind Energy Conference

Pre-Event Dinner on  
Wednesday, 5<sup>th</sup> October 2016  
Conference on  
Thursday, 6<sup>th</sup> October 2016

Hotel Corinthia Towers  
Kongresova 1  
Prague, Czech Republic

10<sup>th</sup> Quo Vadis®  
Conference

The FREE wind conference  
only for Owners and Operators

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# The Speakers



## David Morgan, Business Manager; ZF Services UK Limited

David Morgan had worked in the automotive sector for nearly 20 years before joining ZF Services UK Limited in 2003 as a technical sales engineer. He supported the industrial, marine, rail and defence markets until 2008, when David became part of the team created to implement a multi-brand wind turbine gearbox overhaul facility at ZF's Nottingham site. In his current position of business manager David is responsible for the business strategy and development of the wind market, ensuring ZF meets and exceeds its customers' needs now and in the future.



## Michael Wilkinson, Service Line Leader, Asset Operations & Management; DNV GL

Michael is responsible for Renewables Asset Operations and Management services globally in DNV GL. He has worked in the wind industry for over 13 years: initially as a doctoral research engineer working on condition monitoring systems for offshore wind and then as an operational wind farm analyst. He now manages a team of engineers, analysts and inspectors providing advisory services to owners, operators, lenders and investors on all technical aspects of operational renewable assets. Michael has an Engineering Doctorate degree in wind turbine technology and is a chartered member of Institution of Engineering and Technology.



## Paul Sheldon, Technical Engineer; RWE

Paul joined RWE in 2000 and has been involved in renewable energy since 2004. Starting his career as a Mechanical Engineer in the steel industry, he went on to design, install, refurbish and commission gearboxes. He graduated from Sheffield Hallam University with a MBA after successfully completing an HND in Mechanical Engineering and a post-graduate Diploma in Sales & Marketing. Paul has responsibility for all technical issues of the major spare components during refurbishment and any up tower problems with the drive train for the UK onshore fleet. His most recent areas of work have involved identifying issues during walk-down inspections on new builds prior to acceptance from the OEMs.



## Benn Faulkner, Director; Renewable Advice

Benn Faulkner, a mechanical engineer, has worked in the wind industry since 2002. All this time has been spent dealing with blades, from wood/ wood-carbon blades of NEG Micon, and Polyester blades from LM, to epoxy blades from Vestas, Senvion and GE, to name but a few. Benn's career prior to founding Renewable Advice focused on blade O&M for NEG Micon and Vestas as well as blade production development for Repower (Senvion). The knowledge gained through this time has been utilised effectively to support manufacturers to identify production quality, process, and health and safety issues and also to develop a team of blade maintenance personnel to look after blades throughout Europe and the USA.



## Alexander Strobel, Application Engineer, Wind - Main Shaft & Generator Applications; SKF GmbH

Alexander worked for more than 8 years at SKF GmbH in the Application Engineering department where he was initially responsible for Industrial Electrical applications (all kinds of electric motors and generators). In 2010 SKF introduced the global AE department for Renewable Business where Alexander became the global contact person for wind turbine generator bearings. Among technical support of strategic Wind Turbine OEMs he is responsible to capture and document all relevant application knowledge, identify and share Product- & Technology Development needs.



## Markus Billmann, Application Group Manager; Fraunhofer IISB

Markus Billmann worked for more than 8 years at Semikron Elektronik GmbH in the power electronics development department. He was part of the SKIIP-I and SKIIP-II OCP generation IGBT power module design team. Today he provides application support and consultancy in the field of traction and wind power inverters. He joined the Fraunhofer Research Organization in 2000 as a founder member of the Power Electronics Department at the Fraunhofer IISB in Erlangen. Since 2006 he has been involved in M<sup>2</sup>C design & topology issues for gigawatt energy transportation as Multi-Level off shore HVDC application. Today he is focusing on troubleshooting and in power electronic design reviews.



## Gary McGougan, Turbine Engineering Maintenance Manager; RES

Gary has been involved directly with renewables since 2001, firstly as an Engineer Surveyor with a large Insurance company that worked closely with RES. He joined RES in January 2011 as an Asset Manager for the North Scotland Onshore Wind Farm sites and also as the lifting Appointed Person, initially reviewing lifting documentation and giving advice, then building up the current lifting team and overseeing the training program. In 2015 Gary assumed his current role which sees him provide support to the Wind Farm Asset Management and wider Operations Management teams and also heads the lifting team. Since February 2016 the lifting team not only reviews lifting documentation but also carries out full lifting operations on site.



## Karl Fatrdla, Head of Sales & Nigel Parlor, Business Manager UK, Ireland, Benelux; ROMO Wind

Following graduation as a mechanical engineer from the Technical University of Vienna, Karl secured senior project management and sales positions in international automotive, IT and mechanical escalator sectors. In 2009 he moved into wind as Director Sales for Vestas and since 2014 with ROMO Wind. Karl spends much of his time travelling across Europe and the US supporting customers and local Business Managers. Nigel has an electrical engineering degree, an MBA and more than 30 years' experience in the energy industry with blue-chip businesses like E.ON, Powergen, QinetiQ and South Wales Electricity. He joined ROMO Wind in 2015 from Romax Technology where he helped to develop their wind industry O&M service offerings. Nigel is based in ROMO Wind's office in Nottingham supporting wind farm owners and operators.

# Agenda

## 09.00h Welcome and Preliminaries

Kevin Donovan, GWA Supplies Limited  
(Host and Organiser)

Clifford McSpadden, GWA Supplies Limited  
(Moderator)

## 09.25h Gearbox technology

David Morgan, ZF Services UK Limited

As wind turbines continue to increase in MW capacity designing a drive chain to meet the ensuing demands becomes ever more complex. ZF will present and discuss the latest developments in gearbox technology advancements that enable the new generation of gearboxes to meet these challenges including bearing and gear configuration, dynamic testing, up tower serviceability and 'intelligent' gearbox technology.

## 09.50h A new lease of life

Michael Wilkinson, DNV GL

In the UK today, 3GW or 20% of installed wind power capacity is over 10 years old. With so much infrastructure so far through nominal design life, the industry requires robust procedures and analytical tools in order to navigate operation of turbines up to and beyond year 20. An integrated approach to asset life extension is presented, aimed at addressing two fundamental questions faced by project owners "how much fatigue capacity remains in my asset?" and "how can I best utilise it?". A practical data-driven framework to assess options such as turbine control modifications and risk-based inspections is described. Experience of commercial lifetime extension of over 10GW is discussed along with the concept of the wind farm 'digital twin'.

## 10.15h Break for Coffee, Exhibition, Networking

## 11.00h ABB 600/120 KW 2 Speed Generators – Modifications and workshop trials to the NDE bearing assembly

Paul Sheldon, RWE

The presentation will explain the modifications carried out on the non-drive end bearing assembly to try and eliminate the catastrophic failures that have taken place for many years causing rotor and stator damage. Two small follow-on presentations will provide information on

- Nord-lock super bolt trial to eliminate stud fatigue on generator bedplates,
- Eickhoff N60 low speed oil leak

## 11.25h The challenge of managing blades – An independent service provider's view

Benn Faulkner, Renewable Advice

We will hear how an independent service provider manages the challenges related to blades. From maintaining blades that are no longer supported by the OEMs through to dealing with structural defects to keep blades operational. The development of a solution is the biggest challenge the industry faces: "big data", its management and use to make informed maintenance strategy decisions.

## 11.50h Quo Vadis Hall Of Fame

Update on old and new members

## 12.00h Lunch Break

## 13.30h Rolling bearings in WTGs

Alexander Strobel, SKF

Working together with OEMs and wind farm operators, SKF engineers provide dedicated solutions that can optimize the reliability and performance of new and existing wind turbine designs.

This presentation gives first an introduction of the main generator types with associated common bearing arrangements and types used in wind turbines. The main focus will be on design improvements and corrective actions based on experience and typical bearing failures occurring in WTGs.

## 13.55h FRT Retrofit for older turbines – providing one key component

Markus Billmann, Fraunhofer IISB

Older turbines often do not meet FRT requirements. Instead of a "Fault Ride Through" they use their crowbar, shut down the turbine and get off the grid. Especially smaller turbines suffer from new grid code demands. Often many components are "ready for FRT", but the brake chopper as part of the IGBT inverter is missing and turbine control cannot handle FRT.

A small key component is presented – an autarky operating auxiliary power supply to feed a brake chopper with internal control. Providing auxiliary supply directly from the DC-link is mandatory to have a brake chopper working, even if grid and rest power supply is down. Basic principles are presented to retrofit a turbine which might help in many cases to fulfil FRT requirements.

## 14.20h Break for Coffee, Exhibition, Networking

## 15.00h Lifting Operation Overview for Onshore Wind Farms

Gary McGougan, RES

This presentation will give a simple overview of lifting operations on an onshore wind farm, discussing the level of planning and documentation expected to be carried out and received, the access and conditions required on site, and also the final checks to be made to ensure a safe and successful lifting operation.

## 15.25h Optimising turbine performance - How do you know?

Karl Fatrdla & Nigel Parlor, ROMO Wind

The presentation will describe the experience in both delivering optimisation solutions and measuring the level of improvement from others.

It will demonstrate the business case for an improved wind speed measurement to avoid owners simply guessing at their power curve.

Examples will illustrate how the iSpin Guardian concept can allow owners to precisely monitor if all turbines in their wind farm are working according to the OEMs' warranted specifications and to quickly identify performance changes.

## 15.50h Summary

Kevin Donovan, GWA Supplies Limited

## 16.00h Official closing of Quo Vadis



## A Hearty Welcome to Prague from Your Hosts



### Kevin & Sigrid Donovan

Kevin got involved in the wind industry some 10 years ago and co-founded GWA Supplies Limited to serve the growing wind energy market in the UK, Europe and overseas with offices in Germany and the UK. His wife Sigi has been involved in Marketing for 3 decades.

Kevin and Sigi held the first Quo Vadis Conference in 2007. The conference is now in its tenth year and is recognised by wind farm owners and operators as one of the most important and valuable events in the wind industry.

## The history of Quo Vadis Conference



This year's event is co-hosted by ZF Services UK Limited.



It would not be possible for us to offer our Quo Vadis Conference free of charge without the support of our Platinum Sponsors DNV GL, Renewable Advice, Romo Wind AG, and SKF who contribute towards the costs.



The following companies have booked exhibition space and will show their portfolio: GasTOPS, Hove, Hydratech Industries, Morgan Advanced Materials, Winergy.

