CWD 2023 DSEC 2023

SIEMENS Vestas winergy

Opening Plenary
Day I - March 21, 2023

		Opening Plenary		
08:30	Future Technologies	Medium Voltage DC Technology for Wind Farms	Prof. Rik W. De Doncker Director at E.ON Energy Research Center and PGS of RWTH Aachen	08:30
08:45	Future Technologies	PDP Innovation for a Sustainable Wind Industry	Jens Demtröder Chief Architect of Vestas Wind Systems	08:45
09:00	Future Technologies	Machine Learning-Enhanced Simulation for Design & Decision Support	Prof. Julia Kowalski Director at the Chair of Methods for Model-Based Development of RWTH Aachen	09:00
09:15	Wind Market Changes	Global Wind Turbine Technology Evolution Trends to 2032	Shashi Barla Director and Head of Research at Brinckmann Group	09:15
09:30	Wind Market Changes	Safeguard Energy Transition by a Strong European WTG Industry	Andreas Weber PowerTrain Technical Management at Vestas Nacelles	09:30
09:45		Break		09:45
10:00	Wind Competetive Situation	Status of and Challenges for the European Wind Industry	Tony Philipp Adam Global Public Affairs at Nordex Group	10:00
10:15	Wind Competetive Situation	North Rhine-Westphalia's Path to Expansion of Wind Energy Use	Jan Heinisch Member of State Parliament North-Rhine Westphalia	10:15
10:30	Wind Competetive Situation	Panel Discussion: Competitive Situation of Wind Turbine Manufacturers	Tony Philipp Adam, Nordex Group Shashi Barla, Brinckmann Group Jan Heinisch, State Parliament North-Rhine Westphalia Andreas Klein, Flender - Winergy Roland Klinger, Vestas Wind Systems	10:30
11:00		Coffee Break		11:00

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Conference Program
Day I – March 21, 2023

	CWD I Room: Europa Saal	CWD II Room: K 1	CWD III Room: K2	DSEC I Room: K 4 | 5	DSEC II Room: K 7 | 8 | 9	
08:30	Opening Plenary					08:30
11:00	Coffee Break					11:00
11:30	**Gearbox Bearings I** Ralf Ansorge A new Generation of Hydrodynamic Plain Bearings, enabling the next Step in Gearbox Torque Density Robin Reynders SKF Belgium NV/SA	**NVH / Tonality I** Frank-D. Krull Analysing the Influence of Non-Torque Loads on the Excitation Behaviour of Integrated WTG Gearboxes Daniel Piel Vestas Nacelles Deutschland GmbH	**Electrically Induced Loads from Generator** Joachim Nitzpon Reduction of Wind Turbine Gearbox Damage Risk due to Electrical Faults via Drivetrain Design Optimization Julian Röder CWD of RWTH Aachen University	**Machine Elements: Bearings, Sealings, Gears, Couplings, etc.** Alexander Hassis Sustainable Gearbox Dimensioning Based on Real Loads Marc Lehmkuhl Flender GmbH	**Systems Engineering: Processes, Methods and Tools I** Jens Demtröder Successful Planning, Deployment and Application of MBSE Sven Kleiner :em engineering methods AG	11:30
11:55	Validation of Planetary Stages for Single Blade Installation Hermann van Lier ZF Wind Power Antwerpen NV	Model Parameterization and Validation of Electromagnetically Excited Structure-Borne Sound in Direct Drive Wind Turbines Thomas Decker CWD of RWTH Aachen University	Effect of Generator Torque Ripple Optimization on a geared Wind Turbine Drivetrain Diederik van Binsbergen Norwegian University of Science and Technology	Development of a High-Precision Radial Plain Bearing to Improve the Efficiency of External Gear Pumps Lars Brinkmann Bosch Rexroth AG	Customer-Centric and Function-Oriented Development of Mechatronic Systems Laura Brand MSE of RWTH Aachen University	11:55
12:20	Evaluation of Wear Models for the Wear Calculation of Journal Bearings for Planetary Gears in Wind Turbines Benjamin Lehmann MSE of RWTH Aachen University	On Optimizing the NVH Behaviour of WTG Powertrains through Technology Transfer across Industries Martin Klönne, Vestas Nacelles Deutschland GmbH Timo Zundel, Flender GmbH Alexander Kari, Geislinger GmbH	Investigation on the Impact of Electrical Faults on the Loads and Exposures of Wind Turbine Gears Laurenz Roth WZL of RWTH Aachen University	Parametric System Simulation of Load Sharing in Planetary Gear Boxes Jean-André Meis Flender GmbH	Classification of function-oriented solution elements for MBSE Patrick Jagla MSE of RWTH Aachen University	12:20
12:45	Lunch Break					12:45
14:00	**Gearbox Bearings II** Arno Klein-Hitpass Journal bearings in wind turbine gear units – performance – extended robustness and load density – future aspects Thomas Meyer Flender GmbH – Winergy	**NVH / Tonality II** Ralf Schelenz Evaluation of a low speed stage coupling with regard to structure-borne sound propagation in a wind turbine Martin Cardaun CWD of RWTH Aachen University	**Electrical Components and Energy Systems** Christian Kress Assessing the Influence of Lightweight Generators on Substructure Cost and Levelized Cost of Energy Fabian Thalemann Fraunhofer IEE	**Machine Elements: Wear, Fatigue and Friction** Ralf Dinter Prediction of film thickness for starved elasto-hydrodynamically lubricated rolling contacts using CFD method Shuo Zhang MSE of RWTH Aachen University	**Systems Engineering: Function-Oriented Development** Mike Nicolai Modeling Language for the Function-oriented Development of Mechatronic Systems Thilo Zerwas MSE of RWTH Aachen University	14:00
14:25	Designing and Qualification of Journal Bearings for Planetary Gears in Wind Turbine Gearboxes Xueliang Lu Hunan SUND Technological Corporation	Comparison of Transfer Path Characteristics for different Wind Turbine Drivetrain variations Wilhelm Schünemann CWD of RWTH Aachen University	A discussion on the characterization of AC grid emulators by apparent power rating and short-circuit power Rayk Grune R&D Test Systems A/S	Bio-based polymeric thickener systems for bio-based lubricating greases Seyedmohammad Vafaei MSE of RWTH Aachen University	Implementing digital twins of electric drives in existing infrastructures Pascal Lünnemann Fraunhofer Institute for Production Technology, Berlin	14:25
14:50	Simulation methodology for the identification of wear-critical operating conditions of plain bearings in wind turbines Mattheus Lucassen CWD of RWTH Aachen University	Experimental identification of relevant drive train vibration modes for tonality mitigation of wind turbines Manuel Eckstein Wölfel Engineering GmbH + Co. KG	Impact of DC-Link Brake Chopper Design on the LVRT Behavior of Full Scale Converter Wind Turbines Fabian Herzog ISEA of RWTH Aachen University	Pitting Load Carrying Capacity of Additively Manufactured Spur Gears Made by PBF-LB/M of Case-Hardened Steel Markus Brummer Gear Research Center (FZG) of TU Munich	On Identifying Possible Artificial Intelligence Applications in Requirements Engineering Processes Simon Dehn MSE of RWTH Aachen University	14:50
15:15	Efficient Elastohydrodynamic Gearbox Simulations Jochen Lang Ingenieurgesellschaft für Strukturanalyse und Tribologie mbH	Noise and Vibration Analytics Framework and its Practical Application to Achieve a Tonality Free Wind Turbine and Power Train Design Simeon Braun, Michael Würr ZF Friedrichshafen AG	ISA-HyPLAN, a tool for system simulation of green hydrogen P2G plant concepts to facilitate implementation taking technical and economic aspects into account Martin Spiller, ISATEC GmbH	Environmentally acceptable ester-based lubricants – Evaluation of lubricants with respect to the operational requirements of marine propulsion systems Marius Bürger MSE of RWTH Aachen University		15:15
15:40	Coffee Break					15:40
16:10	**Gearbox Testing and Validation** Martin Knops A revised international standard for gearboxes in wind turbine systems Brian McNiff McNiff Light Industry	**Main Bearing and Shaft** Jonathan Keller Development and Layout of Two Innovative Hydrodynamic Rotor Main Bearing Designs Jochen Lang Ingenieurgesellschaft für Strukturanalyse und Tribologie mbH	**HiL, Testing and Validation** Roland Zeichfüßl HiL testing of wind turbines – from research to standards Uwe Jassmann R&D Test Sytems A/S	**Machine Elements: Digitalization and Sensor Integration** Ernst August Werner Extension of the system boundary of the Digital Twin onto the sensors of the Physical Twin through the introduction of redundant soft sensors Michel Fett PMD of TU Darmstadt	**Systems Engineering: Processes, Methods and Tools II** Georg Jacobs Smart Energy – A System of Systems Engineering Perspective Maria Knoll, Vattenfall Matlte Stimming, UNITY AG	16:10
16:35	Validation of a wind turbine gearbox strain simulation model in service to virtual sensing Jelle Bosmans KU Leuven	Advanced, numerical simulation of the bearing ring creeping failure mode and comparison with experimental test results for rotor main bearing applications Daniel Billenstein thyssenkrupp rothe erde GmbH	HiL-Grid-CoP: Electrical type testing of wind turbines on the minimum system using a test rig Florian Hans Fraunhofer IWES	Sensor integrating plain bearings: Design of an energy-autonomous, temperature-based wear monitoring system Thao Baszenski MSE of RWTH Aachen University	Towards a Modular Structure for Solution Concepts in MBSE System Models Gregor Höpfner MSE of RWTH Aachen University	16:35
17:00	WZL-Double Pulsator – Analogy Test Rig for the Generation of Tooth Flank Fractures at Large Gears Johannes Rolzhäuser WZL of RWTH Aachen University	Dynamic modelling of slip in the spherical roller main bearing of a 1.5 MW wind turbine Elisha de Mello University of Strathclyde	Experimental validation of Digital Twin for virtual load sensing in wind turbine drivetrains Felix Mehlan Norwegian University of Science and Technology	Systematic identification of disturbance factors on electric characteristics of gearboxes Maximilian Hausmann PMD of TU Darmstadt	How generative engineering enables the transition from a documented based to a model-based engineering Moritz Maier Synera (ELISE GmbH)	17:00
17:25	Full-scale fatigue testing of a cast-iron wind turbine rotor shaft Hans Kyling Fraunhofer IWES	Cost Efficient Design of Wind Turbine Main Bearing Systems Jan Torben Terwey thyssenkrupp rothe erde GmbH	Influence of the impact time of a WEC trigger on failure risk Joerg Loos Schaeffler Technologies AG & Co. KG	Intelligent, wireless and highly adapted. The potential of Integrated Sensing technology demonstrated on a tooling machine spindle Lois Jacobs, i4M technologies and Henning Buhl, IFW of Leibniz University Hannover	Additive Manufacturing Production and Controlling Model Jan Niklas Schmitz MSE of RWTH Aachen University	17:25
17:50						17:50
18:30	Conference Dinner Town Hall, Aachen					18:30

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Conference Program
Day II - March 22, 2023

	CWD I Room: Europa Saal	CWD II Room: K 1	CWD III Room: K2	DSEC I Room: K 4 | 5	DSEC II Room: K 7 | 8 | 9	
08:30	Shuttle Transfer					08:30
09:00	Guided Tour Center for Wind Power Drives, MSE Test Center					09:00
10:30	Shuttle Transfer & Coffee Break					10:30
11:30	**Validation and Calculation** Andreas Klein Structural digital-twins during the design process Arno Klein-Hitpass ZF Wind Power Antwerpen NV	**Reliability and Maintenance** Jens Brimmers Intelligent Power Train for reducing LCoE in Business Sebastian Ortmann Florin Tatar ZF Group	**Turbine and Park Control** Thorben Wintermeyer-Kallen Improving wind farm power tracking control by considering power train degradation and using database approach Farid Khazaeli Moghadam Norwegian University of Science and Technology	**Drivetrains: Noise Vibration Harshness** Marco Ramm Combining sensitivity and uncertainty analysis to efficiently quantify parametric uncertainties in NVH system simulation models Stefan Wischmann MSE of RWTH Aachen University	**Systems Engineering: Virtual Validation and Optimization** Joerg Berroth The easy way to an Impact Analysis - MBSE-based, across domains and systems Andreas Trautheim-Hofmann PROSTEP AG	11:30
11:55	Key Applications of FEA and MBS in Wind Turbine Gearboxes Konstantin Sonntag Lars Geukes Flender GmbH - Winergy	Method to Design a Generalizable Sensor System for Estimating Transmission Input Loads of a Wind Turbine Baher Azzam CWD of RWTH Aachen University	Challenges of Applying Model-Based Predictive Wind Turbine Control in the Field Thorben Wintermeyer-Kallen IRT of RWTH Aachen University	MBS model validation of an industrial gearbox for predicting vibro-acoustic behavior Prateek Chavan SEW-EURODRIVE GmbH & Co. KG	Framework for Seamless and Interoperable Linking of Components and Simulation Models for Fluid Power Systems Malte Becker IFAS of RWTH Aachen University	11:55
12:20	Comprehensive investigation of wind turbines using detailed MBS models Thomas Rosenlöcher Technische Universität Dresden	Fleet-wide analytics on field data targeting condition and lifetime aspects of wind turbine drivetrains Jan Helsen Vrije Universiteit Brussel	Practical Aspects of Testing Wind Turbine Control Algorithms on Nacelle Test Benches Andreas Klein IRT of RWTH Aachen University	Non-parametric shape optimization for electrical machines: Lowering noise and vibration effects by reducing selected radial force waves Christian Kremers Dassault Systèmes	Reusable workflows for virtual testing of multidisciplinary products in system models Julius Berges MSE of RWTH Aachen University	12:20
12:45	Interdisciplinary Optimization of Cast Iron Components in Wind Turbines Felix Weber, IWM of RWTH Aachen University Vitali Züch, CWD of RWTH Aachen University	Design for Reliability: Full Probabilistic approaches for the Wind Industry Arno Klein-Hitpass ZF Wind Power	Influence of Drivetrain Efficiency Determination on the Operation Point Control of Wind Turbines Maximilian Zweiffel CWD of RWTH Aachen University	Multi Body Simulation of Electric Drive Trains Tamir Dombrovskij IST - Ingenieurgesellschaft für Strukturanalyse und Tribologie mbH	Combining and evaluating function-oriented solutions in model-based systems engineering Lukas Irnich MSE of RWTH Aachen University	12:45
13:10	Selective assembly applied in planetary gear stages Thomas Thys ZF Wind Power Antwerpen NV	Development of process and toolkit for uptower replacement of main shaft spherical roller bearing Tobias Baumgratz eolotec GmbH	Load mitigation and power tracking control for multi-rotor turbines Horst Schulte University of Applied Sciences Berlin (HTW)	Model-Based NVH Optimization of a Tractor Drivetrain During All Phases of the Development Process Julius Müller MSE of RWTH Aachen University	Multi-Objective Yield Optimization for Electrical Machines using Machine Learning Morten Huber Dassault Systèmes	13:10
13:35	Lunch Break					13:35
14:35	**ML and AI in Wind Turbines** Sebastian Trimpe Load Monitoring of Main Bearings in Wind Turbines Amin Loriemi CWD of RWTH Aachen University	**Nacelle Testing** Andreas Weber An Innovative Methodology for Full Load Testing of Wind Turbine Drivetrains on a Test Bench Muhammad Omer Siddiqui Fraunhofer IWES	**Pitch and Yaw System** Bernd Lüneburg Effects of wind field characteristics on pitch bearing reliability: a case study of 5 MW reference wind turbine at onshore and offshore sites Ashkan Rezaei Norwegian University of Science and Technology	**Drivetrains: Performance and Efficiency** Martin Correns Multi-Motor Drive Technology in the Multi-Meganewtonmeter-Range Jonas Reicherter RENK Test System GmbH	**Systems Engineering: Surrogate Models** Julia Kowalski An investigation into the transferability of dynamic elastomer damper's properties between different damper sizes using FEM Tobias Rapp MSE of RWTH Aachen University	14:35
15:00	Artificial Intelligence for Sustainable Control of Wind Power Drives Lisa Binanzer Lukas Merkle University of Stuttgart	Direct measurement of input loads for the wind turbine drivetrain under test on a nacelle test bench Hongkun Zhang Fraunhofer IWES	The Wind Turbine Design Guideline DG03: Yaw and Pitch Rolling Bearing Life Revisited? An Outline of Suggested Changes Matthias Stammler Fraunhofer IWES	Validation Environment for S-pedelec Wheel Hub Motors Johannes Kern IPEK of Karlsruhe Institute of Technology	Surrogate model based prediction of transmission error characteristics based on generalized topography deviations Willecke Marius WZL of RWTH Aachen University	15:00
15:25	Data-driven Virtual Sensor for Online Loads Estimation of Drivetrain of Wind Turbines Omar Kamel Mesh Engineering GmbH	Traceable efficiency determination of a 2.75 MW nacelle on a test bench Zihang Song Physikalisch-Technische Bundesanstalt	Design and calculation process for large-sized multi-MW blade bearings and product development trends. Daniel Becker thyssenkrupp rothe erde Germany GmbH	Increasing drivetrain efficiency by innovative gear design, optimized gearbox design and integration of smart sensors Jan Reimann Flender GmbH	A meta-model for prediction of maximum temperature within a lubricated line contact Ankit Singh MSE of RWTH Aachen University	15:25
15:50	Break					15:50
16:00	Closing Plenary Session					16:00
16:30						16:30