Institution of MECHANICAL ENGINEERS

Vibrations in Rotating Machinery - VIRM 12
Live online conference programme

Time (BST)	Conference Day One Wednesday, 14 October 2020	
12:00	**Chair's Opening Remarks**	
12:05	**Keynote presentation: Reaction Engines' SABRE engine** *Russ Payne, Chief Engineer, Reaction Engines Limited*	
	Blades and bladed assemblies	**Fault detection and condition monitoring**
12:30	**Coupling between axial, lateral and torsional vibration modes of a flexible shaft with flexible staggered blades** *Giuliano Tuzzi, Christoph Schwingshackl, Imperial College London* *Jeffrey Green, Rolls Royce*	**An optimal frequency band selection for bearing fault diagnosis based on squared envelope analysis** *Lang XU, Steven Chatterton, Paolo Pennacchi, Politecnico di Milano*
12:45	**Uncertainties in the calibration process of blade tip timing data against finite element model predictions** *Mohamed Elsayed Mohamed, The University of Manchester and Cairo University* *Philip Bonello, The University of Manchester* *Pete Russhard, EMTD Ltd*	**Vibration monitoring of a large rotor utilizing internet of things based on-shaft MEMS accelerometer with inverse encoder** *Ivar Koene, Raine Viitala, Petri Kuosmanen, Aalto University*
13:00	**Break**	
	Rotordynamics	**Active and smart vibration control**
13:45	**Some further reflections on misalignment** *Arthur Lees, Swansea University*	**Active chatter suppression in robotic milling using H_∞ control** *Runan Zhang, Zheng Wang, Patrick Keogh, University of Bath*
14:00	**Simulation model to investigate effect of support stiffness on dynamic behaviour of a large rotor** *Emil Kurvinen, Tuhin Choudhury, Jussi Sopanen, Lappeenranta-Lahti University of Technology* *Risto Viitala, Aalto University*	**Hybrid crankshaft control: reduction of torsional vibrations and rotational irregularities under non-stationary operation** *Guillaume Paillot, Didier Rémond, Simon Chesné, Univ Lyon, INSA-Lyon*

14:15	**Parametric coupled instabilities of an on-board rotor subject to yaw and pitch with arbitrary frequencies** *Yvon Briend, Mzaki Dakel, Eric Chatelet, Marie Ange Andrianoely, Régis Dufour, Univ Lyon, INSA-Lyon* *Sophie Baudin, AVNIR Engineering*	**Vibration behaviour of an 11 kW two-pole induction motor mounted on elastic steel frame foundation with actuator system** *Raimund Wachter, Ulrich Werner, Nuremberg Tech* *Hans-Georg Herzog, Technical University of Munich* *Christian Bauer, Siemens AG*
14:30	**Integration of parameter sensitivity to structural optimization of helicopter rotors for minimum vibration** *Muhammed Emre Bilen, Turkish Aerospace* *Ender Cigeroglu, Middle East Technical University* *H. Nevzat Özgüven, Middle East Technical University*	**Rotating machines featuring new rotor topology and internal actuation for vibration mitigation** *Gauthier Fieux, Nicola Bailey, Patrick Keogh, University of Bath*
14:45	**Break**	
	Rub, whirl, and instability	**Bearings and seals**
15:45	**On the analysis of a rotor system subjected to rub using a continuous model** *Arthur Guilherme Mereles, Katia Cavalca, University of Campinas*	**A parametric study into the effect of variability in clearance shape and bump foil stiffness distribution in foil-air bearings** *Ibrahim Ghalayini, Philip Bonello, The University of Manchester*
16:00	**A review of important nonlinear phenomena in rotor vibration** *Maurice Adams, Jr., Case Western Reserve University*	**Improving the thrust bearing performance of turbocharger rotors using optimization methods and virtual prototypes** *Pavel Novotný, Jozef Hrabovsky, Brno University of Technology* *Vladimir Hort, Jiří Klíma, PBS Turbo, s.r.o.*
16:15		**Characteristics of a high speed thin film fluid lubricated bearing**

		Nicola Bailey, University of Bath
16:30	**Break**	
	Rotordynamics	**Bearings and seals**
17:00	**Improved reduction methodology for rotor-dynamic systems using modified SEREP** *Ankush Kapoor, Jayanta Dutt, Indian Institute of Technology Delhi* *Anindya Das, Jadavpur University*	**Influence of thrust bearings in lateral vibrations of turbochargers under axial harmonic excitation** *Thales Peixoto, Katia Cavalca, University of Campinas*
17:15	**Optimization of rotating machinery by BESO method** *Evandro Carobino, Renato Pavanello, University of Campinas* *Jarir Mahfoud, University of Leon*	**Cylindrical roller bearing under elastohydrodynamic lubrication with localized defects modelling** *Natalia Tsuha, Katia Cavalca, University of Campinas*
17:30	**Modal parameters evaluation of a rolling bearing rotor using operational modal analysis** *Gustavo Storti, Natalia Tsuha, Katia Cavalca, Tiago Machado, University of Campinas*	**Nonlinear analysis of hydrodynamic forces for multi-lobe bearings** *Carlos Alberto Alves Viana, Diogo Stuani Alves, Tiago Machado, University of Campinas*
17:45	**Validation of the stochastic response of a rotor with uncertainties in the AMBs** *Gabriel Garoli, Helio de Castro, University of Campinas* *Rafael Pilotto, Rainer Nordmann, Fraunhofer Institute for Structural Durability and System Reliability*	**Rotor-angular contact ball bearing system study using EHD lubrication and comparison with experimental tests** *Laís Carrer, Leticia Bizarre, Katia Cavalca, University of Campinas*
18:00	**End of Conference Day 1**	

Time (BST)	Conference Day Two Thursday, 15 October 2020	
08:00	**Chair's Opening Remarks**	
08:05	**Keynote presentation: Contributions to the simulation and analysis of the Morton effect** *Mihai Arghir, Professor, Université de Poitiers, France* • Experimental analysis of the thermal unbalance effect in a simple test rig • Results obtained with cylindrical and. tilting pad bearings • Theoretical predictions and their actual limits	
	Fault detection and condition monitoring	**Active and passive damping**
08:30	**Identification of misaligned additive forces and moments of coupling in turbo-generator system integrated with an active magnetic bearing** *Siva Srinivas Rangavaihula, Rajiv Tiwari, Indian Institute of Technology Guwahati* *Ch. Kanna Babu, Aero Engine Research and Design Centre, Hindustan Aeronautics*	**Suppression and control of torsional vibrations of the turbo-generator shaft-lines using rotary magneto-rheological dampers** *Tomasz Szolc, Robert Konowrocki, Dominik Pisarski, Institute of Fundamental Technological Research of the Polish Academy of Sciences* *Andrzej Pochanke, Faculty of Electrical Engineering of the Warsaw University of Technology*
08:45	**Data combination for a consolidated diagnosis of rotor and bearing faults** *Kenisuomo C. Luwei, Akilu Yunusa-Kaltungo, The University of Manchester*	**Experimental research on vibration reduction of turbine blades with underplatform dampers under rotating state** *Yanan Wu, Haijun Xuan, Zhejiang University*
09:00	**Break**	
	Applications for industry	**Active and smart vibration control**
09:30	**An experimental assessment of torsional and package vibration in an industrial engine-compressor system** *Benjamin Halkon, Paul Walker, Sebastian Oberst, University of Technology Sydney* *Ian Cheong, Gerrie Visser, ALS Industrial*	**Effects of unbalance and AMB misalignment in a rigid rotor with an offset disc levitated by active magnetic bearings: a numerical investigation** *Prabhat Kumar, National Institute of Technology Manipur and Indian Institute of Technology Guwahati*

		Rajiv Tiwari, Indian Institute of Technology Guwahati
09:45	**Stable turbocharger bearings** *M.S. Ibrahim, A.S. Dimitri, H.N. Bayoumi and A. El-Shafei, Cairo University*	**Attenuating influence of time-delay on stability of rotors supported on active magnetic bearings** *Tukesh Soni, Panjab University Jayanta Dutt, Indian Institute of Technology Delhi Anindya Das, Jadavpur University*
10:00	**Mechanical design of rotor-bearing system in a high-speed 20 kW range extender for battery electric vehicles** *Heesoo Kim, Janne Nerg, Ahti Jaatinen-Värri, Juha Pyrhönen, Jussi Sopanen, LUT University*	**On the foundation dynamics and the active control of flexible rotors via active magnetic bearings** *Thomas Paulsen, Ilmar Santos, Technical University of Denmark*
10:15	**Fast estimation of classical flutter stability of turbine blade by reduced CFD modelling** *Chandra Shekhar Prasad, Luděk Pešek, Institute of Thermomechnanics of the CAS Václav Sláma, Doosan Škoda Power s.r.o*	**Calculation procedure to derive the threshold of vibration stability of soft mounted induction motors with elastic rotors and sleeve bearings fixed on active motor foot mounts for arbitrary controller structures** *Ulrich Werner, Nuremberg Tech, Faculty EFI*
10:30	**Break**	
	Rotordynamics	**Bearings and seals**
11:30	**Asynchronous rotor excitation system (ARES) – a new rotor dynamic test facility at Imperial College London** *Christoph Schwingshackl, Luke Muscutt, Michal Szydlowski, Alex Haslam, Giuliano Tuzzi, Imperial College London Valentina Ruffini, Matthew Price, Andrew Rix, Jeffrey Green, Rolls Royce*	**Effect of journal bearing preload caused by bearing-housing interference fit on nonlinear vibration of a flexible rotor supported by a journal bearing** *Nuntaphong Koondilogpiboon, Tsuyoshi Inoue, Nagoya University*
11:45	**Experimental investigation of non-linear stiffness**	**Experimental investigation on the static and dynamic**

	behaviour of a rolling-element bearing *Alexander Haslam, Christoph Schwingshackl, Luke Muscutt, Imperial College London* *Andrew Rix, Matthew Price, Rolls Royce*	**characteristics of partially textured journal bearings** *Hiroo Taura, Nagaoka University of Technology*
12:00	**Rotor dynamics analysis of different bearing system configurations for a 30 kW high-speed turbocompressor** *Grzegorz Zywica, Pawel Zych, Malgorzata Bogulicz, Institute of Fluid Flow Machinery, Polish Academy of Sciences*	**Analysis of the cavitation characteristics of elastic ring squeeze film damper** *Zhifei Han, Tianjin University and Technical University of Munich* *Thomas Thümmel, Technical University of Munich* *Qian Ding, Tianjin University*
12:15	**AMrotor - a MATLAB® toolbox for the simulation of rotating machinery** *Johannes Maierhofer, Michael Kreutz, Thomas Thümmel, Daniel Rixen, Technical University of Munich*	**Analytical study of rotordynamic behaviour and rolling element bearing transient response in a high-speed race transmission** *Brett Friskney, Stephanos Theodossiades, Mahdi Mohammad-Pour, Loughborough University*
12:30	**Break**	
	Rotordynamics	**Bearings and seals**
13:15	**Comparison of different time integration schemes and application to a rotor system with magnetic bearings in MATLAB®** *Michael Kreutz, Johannes Maierhofer, Thomas Thümmel, Daniel Rixen, Technical University of Munich*	**Effect of L/D ratio and clearance of 3-lobe taper land bearing on stability of flexible rotor system** *Sanjin Braut, Ante Skoblar, Goranka Štimac Rončević, Roberto Žigulić, University of Rijeka*
13:30	**Computational rotordynamics considering shrink fits** *Nils Wagner, INTES GmbH* *Horst Ecker, Technical University of Vienna*	**A reduced semi-analytical gas foil bearing model for transient run-up simulations** *Pascal Zeise, Marcel Mahner, Marcel Bauer, Markus Rieken, Bernhard Schweizer, TU Darmstadt*

13:45	**Identification of frame dynamics of vertically oriented high-speed steam generator using model update procedure for reduced-order model** *Eerik Sikanen, Janne Heikkinen, Teemu Sillanpää, Jussi Sopanen, Lappeenranta-Lahti University of Technology* *Eero Scherman, LAB University of Applied Sciences*	**Digital twin of induction motors for torsional vibration analysis of electrical drive trains** *Timo Holopainen, Janne Roivainen, Tommi Ryyppö, ABB Motors and Generators*
14:00	**Closing Ceremony and Awards**	
14:30	**End of Conference**	