

## **CURRICULUM VITAE**

### **Personal data**

Name: Steven Chatterton

Place and date of birth:

Nationality: Italian

Residence:

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### **Presentation**

Born on 23 March 1977, he graduated in Mechanical Engineering (score 100/100 with honors) at the Politecnico di Milano on October 14, 2002, discussing a thesis in the field of robotics entitled "Design and experimental verification of the performance of a parallel kinematic robot".

From 2002 is a member of the professional engineers' section of the Engineering Council' s register of Milan ("Ordine degli Ingegneri di Milano"), sections a,b,c, (registration number 26098).

He was holder of the following research grants from 2002 to 2008:

- from 16/12/2002 to 15/02/2007 for the research study "Design methodologies for mechanical, hydraulic and pneumatic drives for the manufacturing industry" at the Department of Electrical Engineering of Politecnico di Milano;
- from 01/06/2007 to 31/05/2008 for the research study "Methodologies and devices for controlling the motion of mechatronic systems" at the Department of Electrical Engineering of Politecnico di Milano;
- from 01/06/2008 to 30/11/2008 for the research study "Analysis and synthesis of haptic interfaces", at the Department of Mechanical Engineering of Politecnico di Milano.

From 1st December 2008 to 1st March 2020 he was assistant professor in the scientific disciplinary sector ING-IND/13 "Applied Mechanics", at the Department of Mechanical Engineering of the Politecnico di Milano.

He obtained the national scientific qualification for the position of full professor for the scientific sector 09/A2 "Applied Mechanics" on 17 November 2020 with validity until 17 November 2029.

From 2<sup>nd</sup> March 2020 is associate professor at the Politecnico di Milano and is member of the Rotor Dynamics Research Group of the Department of Mechanical Engineering.

### **Scientific and professional activities**

#### *2002-2005*

In the post-graduate period, he conducted research on the kinematics and dynamics of parallel kinematic machines, developing methods for kinematic synthesis and optimization. In this field he worked on the design and construction of prototypes of parallel kinematic robots with 3 and 5 degrees of freedom in space with electric and pneumatic actuators.

He supervised the implementation and implementation of a real-time PC-based control architecture of robots with open source RT-Linux software.

In addition to the synthesis and design of these robots, he studied the problems relating to the correct sizing of the drive system for brushless motors and transmissions for robotic and industrial applications. In the field of mechatronics, he participated in the design and implementation of an end-effector instrumented for the

execution of drilling and contouring pieces with force detection, as well as a serial wrist with 4 degrees of freedom for surgical operations.

#### *2005-2008*

In 2005 he started researching mainly in the field of motorcycles and controlling the interaction force of the end effector of manipulators with real and virtual environments. The first activity concerned the study of the motion of a motorcycle, in particular as regards the rear suspension. The aim of the research was to design a test bench to test the entire rear suspension assembly of a motorcycle using the hardware-in-the-loop approach. The second line of research concerned the movement and vibration control of mechanical systems.

Subsequently, the research focused on designing a haptic interface with redundant actuators and parallel kinematics, a device used to interface a human operator with a real or virtual environment and able to provide sensations of strength and movement.

#### *2009-2013*

Since joining the Mechanical Engineering Department as a full-time assistant professor on 1 December 2008, he has been dealing with rotor dynamics. Early research has focused on implementing robust regression techniques to estimate the imbalance in turbine rotors for energy production. In the field of gas and steam turbines, he has dealt with the analysis of the typical dynamic phenomena of such machines, such as instability problems, non-linearity of fluid forces in oil film bearings and blade vibrations. For this research he worked on the design and development of a first test bench for the dynamic characterization of tilting-pad journal bearings. He also supervised the design of a second test bench for the characterization of tilting-pad thrust bearings.

Another field of research focused on the analysis of torsional vibrations of industrial compressors and on the simulation of vibratory phenomena in fault conditions.

In 2012 he participated in the research project funded by the Lombardy Region "Development and implementation of a Stirling cycle micro-cogeneration plant powered by natural gas (MICROGEN Project)", for which he worked on the modeling of an innovative multi-cylinder Stirling engine and the mechanical design of a demonstration bench.

In the field of mechanical transmissions, he has been involved in the design of the test bench for high-speed train traction systems for the diagnosis and prognosis of rolling bearing damage, while developing diagnostic techniques and algorithms. Several scientific publications concerning the techniques of identification of the defect in rolling bearings belong to this period.

In 2013 he was expert consultant (CTP) of the party Danieli Officine Meccaniche S.P.A. in the lawsuit "Tribunale Di Milano RG. N. 12211/09 sez. VII – Dott.ssa Beatrice Siccardi – Danieli Officine Meccaniche S.P.A. / Zanotti Santo S.R.L.", CTU: Dott. Ing. Giovanni Galbiati.

In 2013 he was also expert consultant (CTP) of the party Danieli Breda S.P.A. in the expert inspection n. 11118/12RG between Franchini Acciai SpA and Danieli Breda SpA at the hearing of P.D. Dr. Rosa, CTU Ing. Lucio Zavanella.

#### *2014-2022*

The research activity of this period focuses mainly on three themes: i) experimental characterization and modeling of bearings and thrust bearings, II) diagnosis of rolling bearings for railway applications and III) modeling of seals and rubbing phenomena in turbine rotors.

For the first theme, he worked on modeling the real load conditions of oil film bearings and studied the effect of geometric errors on bearing behavior.

He worked on the design and installation of a large test bench for rolling mill bearings operating under heavy load and low speed conditions. For the industrial sector, he has also worked on the design of the tribological characteristics of industrial oils to reduce the power lost by the viscous friction in sleeve bearings.

For the diagnosis of rolling bearings for railway applications, it has designed and developed a system to monitor and diagnose the bearings of an E464 locomotive for passenger transport, while developing algorithms and signal analysis strategies.

The third research activity concerns the development of models of gas and steam turbine seals. He dealt with the bulk flow models for labyrinth seals and the effect of seals and rubbing on the dynamic behavior of turbine rotors.

Currently the research activity is focused on the experimental characterization of tilting-pad journal bearings in the presence of scratches on the pads and on the development of a system for cooling the pad made with additive manufacturing process.

### **Conference organizations**

- 2014 - secretary of the "9th International IFToMM Conference on Rotor Dynamics" held in Milan from 22nd to 25th September 2014.

### **Expert consultant**

- 2013 - expert consultant (CTP) of the party Danieli Officine Meccaniche S.P.A. in the lawsuit "Tribunale Di Milano RG. N. 12211/09 sez. VII – Dott.ssa Beatrice Siccardi – Danieli Officine Meccaniche S.P.A. / Zanotti Santo S.R.L.", CTU: Dott. Ing. Giovanni Galbiati.
- 2013 - expert consultant (CTP) of the party Danieli Breda S.P.A. in the expert inspection n. 11118/12RG between Franchini Acciai SpA and Danieli Breda SpA at the hearing of P.D. Dr. Rosa, CTU Ing. Lucio Zavanella.

### **Awards**

- 2014 - Best Paper award for the paper "Performances Degradation of Tilting-Pad Thrust Bearings due to Electrical Pitting" at the "9th International IFToMM Conference on Rotor Dynamics, 22-25 September 2014, Milan Italy".
- 2019 - Best Application Paper Awards for the paper: "Condition Monitoring of Rolling Element Bearing Based on Moving Average Cross-Correlation of Power Spectral Density" at the "15th IFToMM World Congress, June 30 – July 4, Krakow, Poland".
- 2019 - Best Application Paper Awards at the "15th IFToMM World Congress, June 30 – July 4, Krakow, Poland" for the papers: "Static and Dynamic Behaviors Of A Cylindrical Hydrodynamic Journal Bearing Operating At Very Low Sommerfeld Numbers".

### **Editor and member activity**

- 2106: From November 2016 he is a member of the "Technical Committee for Tribology" of IFTOMM - International Federation for the Promotion of Mechanism and Machine Science
- 2016: Lead Guest Editor for the Special Issue "Special phenomena and unconventional design in fluid film bearings" of the "International Journal of Rotating Machinery" (from 21/09/2016 to 01/02/2017)
- 2109: Lead Guest Editor for the Special Issue "Sensors for Fault Diagnosis" of "Sensors" (from 01/05/2019 to 10/01/2020)
- 2020: Lead Guest Editor for the Special Issue "Deep Learning, Artificial Neural Networks and Sensors for Fault Diagnosis" of "Sensors" (from 17/04/2020 to 30/11/2020)
- 2020: From 2020 is a Section Board Member of Sensors for the Fault Diagnosis & Sensors Section.
- 2021: Lead Guest Editor for the Special Issue "Fault Diagnosis in Transportation and Industry: Sensors, Methods, and Experimental Applications" for Sensors and Machines journals (from 01/04/2021 to 31/01/2022)
- 2022: Lead Guest Editor for the Special Issue "Feature Papers in Fault Diagnosis & Sensors Section 2022" for Sensors (from 26/10/2021 to 31/12/2022)

### **Patents**

- Patent N°102017000046660 - Title: "Cuscinetto Lubrificato Per Macchine Rotanti – Lubricated bearing for rotating machines" - Authors: Chatterton S., Pennacchi P. (Politecnico di Milano) - Filing date: 28/04/2017. Publication date: 28/10/2018.
- Patent N°102018000009904/EP3646988A1 - Title: "Supporto, macchina e processo per finiture superficiali – Support, machine and process for surface finishes" - Authors: Chatterton S., Pennacchi P., Vedani M., Lecis N. (Politecnico di Milano), Giussani A., Falzetti A. (Rosler Italiana SpA) – Italian Filing date: 30/10/2018. Italian Publication date: 29.10.2019. International extension Filing date: 29.10.2019. Publication date: 06.05.2020

- Patent N°EP19219995.8 - Title: "Rotore per un aeromobile in grado di volare a punto fisso – Rotor for a hover-capable aircraft" - Authors: Bellussi E., Brunetti M., Facchini G., Ostuni N. (Leonardo SpA), Castelli Dezza F., Mauri M., Chatterton S., Toscani N. (Politecnico di Milano) - Filing date: : 30.12.2019. Publication date: 07.07.2021

### Projects and research contracts

Several projects were followed within the research contracts of the Department of Mechanical Engineering. For the sake of brevity, only the titles and the involved companies are listed and divided by year:

- 2008 - ENI: Feasibility study of crude oil extraction system from bituminous sands
- 2009 - BOMBARDIER-TRENITALIA-FS-ABB-ANSALDO: Design of a full-scale test bench for fault diagnosis of rolling bearings of the traction system of high-speed trains (CBM project)
  - EDF: Development of code for the robust estimation of the unbalance in rotors
  - FRANCO TOSI: Certification tests for a hydrodynamic plant
- 2010 - BOMBARDIER-TRENITALIA-FS-ABB-ANSALDO: Experimental tests for the diagnostics of rolling bearings of the traction system of high-speed trains (CBM project)
  - POLIMI: Development of code for the simulation of tilting-pad journal bearings
  - POLIMI: Design of a test bench for the diagnostics of small rolling element bearings
  - DANIELI: Breakdown analysis of Siad oxygen compressors
  - PF10: Torsional analysis of reciprocating compressors
- 2011 - EUROBEARINGS: Design of a test bench for the characterization of tilting-pad journal bearings
  - DANIELI: Campaign tests at Abu Dhabi steel plant for vibration analysis of auxiliary pumps
- 2012 - FIAMM: Experimental tests for the certification of a railway battery
  - POLIMI: Simulation and design of the mechanism of a Stirling engine
  - DANIELI: Consultancy cause for the manipulator at Franchini forge
  - FERRARI: Design of an oil-film thrust bearing
  - HYDAC: Experimental tests and vibration analysis of a cooler
  - BOMBARDIER-TRENITALIA-FS: Endurance tests for the diagnostics of rolling elements bearings of a traction system of high-speed trains (PROBEA Project)
- 2013 - EUROBEARINGS: Simulation of oil film thrust bearings with PEEK coating
  - BWROBOTICS: Analysis of the failure of telescopic cylinders of a crude oil extraction tower
  - DANIELI: consultant in the Zanotti-Danieli boring case
  - GHIAL: Certification tests for die-casting press
  - MAINA: Thermal endurance tests of a coupling for railway application
  - POLIMI: Feasibility study of a rotating pneumatic motor
- 2014 - TRENITALIA: Design and installation of the system for the diagnostics of rolling elements bearings of a E464 locomotive (LOCOMON Project)
  - DANIELI: Design of a test bench for the characterization of oil film bearings for rolling mills
- 2015 - POLIMI: Development of code for tilting-pad thrust bearings
  - EDF: Experimental tests for the characterization of the pivot stiffness in tilting-pad journal bearings
  - DANIELI-ELETTROADDA: Analysis of the vibrations of a rolling mills engine
  - DANIELI: Vibration analysis of motors at Saversky plant
  - EUROBEARINGS: Simulation of oil-film bearings
- 2016 - TERNA: Feasibility study of a de-icing system for high voltage cables
  - TURBODEN: Design of tilting-pad journal bearing for ORC turbines
  - EUROBEARINGS: Simulation of oil-film bearings
- 2017 - EXERGY: Design of tilting-pad journal bearings
  - ESP FIRE: Optimization and redesign of a portable fire extinguisher
  - POLIMI: Design and simulation of cooled pads for tilting-pad journal bearings
  - SIAE: Design and execution of fatigue tests of cooling fans
- 2018 - ENI-DANIELI: Simulations and experimental tests of a new lubricating oil for the reduction of the power lost in the bearings of a rolling mill plant
  - ROSLER: Design of a vibro-finishing system of internal channels
  - ASTALDI-CIMOLAI-EIE-SCL: Support for the revision of the ELT (Extremely Large Telescope) project for the handling and isolation system of the optical telescope

- FIAMM-SONICK: Experimental tests for the certification of a railway battery
- 2019 - EDF: Experimental tests of tilting-pad journal bearings in presence of scratches
- HITACHI: Definition of specifications and algorithms for the acquisition and analysis of accelerometric signals in the railway sector
- HUAWEI: Optimization of an antenna prototype
- SCHAEFFLER: Investigation of bearing failures in rolling element bearings by means of vibration data analysis
- 2020 - ANSALDO: Simulation of oil-film journal bearings
- ANSALDO: Analysis of GT26 and GT36 spin pit bearing
- TRILLIUM PUMPS: Simulation of oil-film journal bearings
- 2021 - BAKER HUGHES: Development and validation of a diagnostics tool for roller element bearings
- ENI: Experimental tests on ISO VG 68 oil
- BAKER HUGHES: Modeling and optimization of hydrodynamic bearings

### Contract responsibility

He was the responsible of the following contracts of the Department of Mechanical Engineering of the Politecnico di Milano:

1. Contract no. 036/14PC\_1: 15-05-2014 / 07-10-2014. "Test vibratorio di batteria per installazioni ferroviarie / *Vibration test of a battery for railway applications*" between the Department of Mechanical Engineering of Politecnico di Milano and FIAMM SA, Via Laveggio 15, STABIO, SVIZZERA.
2. Contract no. 057/15PC: 17-07-2015 / 31-07-2015. "Analisi vibrazioni unità Sizing Mill – Seversky Tube Works JSCo / *Vibration analysis of sizing mill unit at Seversky Tube Works JSCo site*" between the Department of Mechanical Engineering of Politecnico di Milano and Danieli & C. Officine Meccaniche SpA, Via Nazionale, 41 – 33042 Buttrio, Italia.
3. Contract no. 007/15CC: 31-03-2015 / 14-05-2015. "Calcolo delle caratteristiche statiche e dinamiche dei cuscinetti: Combined bearing secondo specifica 102598 Rev. 6; - Journal bearing secondo specifica 102598 Rev.6 / *Estimation of the static and dynamic characteristics of the bearings: combined bearing and a journal bearing compliant to the 102598 Rev 6 specification*" between the Department of Mechanical Engineering of Politecnico di Milano and Eurobearings S.r.l., via S. D'Acquisto 1, Cortemaggiore (PC).
4. Contract no. 072/16CC: 17-10-2016 / 23-12-2016. "Comportamento dinamico di cuscinetto lubrificato con fluido di lavoro / *Dynamic behaviour of a lubricated bearing with working fluid*" between the Department of Mechanical Engineering of Politecnico di Milano and Turboden S.r.l., Via Cernaia 10, 25124 Brescia.
5. Contract no. 074/17PC: 07-09-2017 / 22-01-2018. "Life test of cooling fans for electronic devices" between the Department of Mechanical Engineering of Politecnico di Milano and SIAE MICROELETTRONICA S.p.A., Via Michelangelo Buonarroti 21, Cologno Monzese, Milano.
6. Contract no. 122/17PC: 19-12-2017 / 19-03-2018. "Prova vibrazioni batteria FZSONICK 46-200 secondo normativa IEC 61373 Edition 2.0 / *Vibration test of the FZSONICK 46-200 battery compliant to IEC 61373 Edition 2.0 standard*", between the Department of Mechanical Engineering of Politecnico di Milano and FZSONICK SA, Via Laveggio 15, STABIO, SVIZZERA.
7. Contract no. 073/19CR: 11-06-2019 / 29-11-2019: "Design and modal analysis of vibration of an ANTENNA prototype structure", between the Department of Mechanical Engineering of Politecnico di Milano and HUAWEI TECHNOLOGIES ITALIA S.R.L., Palazzo Verrocchio 3rd Floor, Centro Direzionale Milano 2, 20090 - Segrate (MI).
8. Contract no. 021/22CC: 31-01-2022 / on work: "Temperature distribution analysis of tilting-pad journal bearings with PEEK lined pads", between the Department of Mechanical Engineering of Politecnico di Milano and Eurobearings S.r.l., via S. D'Acquisto 1, Cortemaggiore (PC).

### Bibliometric indexes (at 21/03/2021)

He is the author of more than 200 works including journal papers, national and international conference papers and chapter contributions.

Scopus:

- h-index: 19
- Documents: 147
- Citations: 1424

Web of Science:

- h-index: 15
- Documents: 109
- Citations: 873

Google Scholar

- h-index: 20
- i-10 index: 38
- Documents: 228
- Citations: 1737

**Thesis supervision**

Supervisor for the following thesis

- 2012 - Modellazione con software multifisico di un cuscinetto idrodinamico / *Multiphysics modeling of hydrodynamic lubrication bearing*, THESIS WITHOUT CO-EXAMINER
- 2013 - Sviluppo di un sistema di diagnostica dei cuscinetti del sistema di trazione per un locomotore E464 / *Development of a system for the diagnostics of the bearings of the traction system for a E464 locomotive*, THESIS WITH CO-EXAMINER
  - Modellazione e analisi di un motore pneumatico / *Modeling and analysis of a pneumatic motor*, THESIS WITHOUT CO-EXAMINER
  - Sviluppo del modello per simulazione di guida professionale della Formula Renault 2.0 / *Model development for professional driving simulation of Formula Renault 2.0*. BACHELOR DEGREE THESIS
  - Progettazione di un banco prova per sistemi di propulsione navale / *Design of a test bench for naval propulsion systems*, BACHELOR DEGREE THESIS
- 2014 - Sistema on-board per la diagnostica dei cuscinetti di un locomotore E464 / *On-board system for diagnostics of the bearings of a E464 locomotive*, THESIS WITH CO-EXAMINER
  - Modellazione Di Cuscinetti Ad Elementi Volventi / *Modeling of rolling elements bearings*, THESIS WITHOUT CO-EXAMINER
  - Analisi E Proposta Di Modifica Della Distribuzione Di Ingranaggi Del Motore Industriale R 753.Ie4 / *Analysis and modification of the distribution of industrial gears for the industrial motor R 753. Ie4*, BACHELOR DEGREE THESIS
  - Studio Del Flusso E Del Rumore Aerodinamico All'interno Di Valvole By-Pass Turbina / *Study of aerodynamic flow and noise within By-Pass turbine Valves*, BACHELOR DEGREE THESIS
  - Estensione del campo di funzionamento di una valvola paracadute oledinamica / *Extension of the operating range of a parachute valve hydraulic*, BACHELOR DEGREE THESIS
- 2015 - Sviluppo di tecniche non convenzionali per la diagnostica di cuscinetti ad elementi volventi / *Development of unconventional techniques for the diagnostics of rolling elements bearings*, THESIS WITH CO-EXAMINER
  - Diagnostica dei cuscinetti di un locomotore E464 / *Diagnostics of the bearings of a E464 locomotor*, THESIS WITH CO-EXAMINER
  - Iniezione d'olio in cuscinetti reggispinga: analisi numerica e prove sperimentali / *Oil injection in thrust bearings: numerical analysis and experimental tests*, THESIS WITH CO-EXAMINER
  - Dalla Simulazione Alla Progettazione Analisi tecnologia di lavorazione della lamiera a freddo e progettazione di uno stampo / *From simulation to design of cold sheet processing and design of a mould*. BACHELOR DEGREE THESIS
  - Analisi E Ottimizzazione Cinematica Di Un Contattore / *Analysis and kinematic optimization of a*

contactor, BACHELOR DEGREE THESIS

- 2016 - Advanced Tools, Algorithms and Strategies for The Diagnostics of Rolling Elements Bearings in The E464 Locomotive, THESIS WITH CO-EXAMINER  
- Cooled Pads for Tilting-pad Bearings: Analysis and Optimization, THESIS WITHOUT CO-EXAMINER  
- Development of an anti-icing device for power network conductors, THESIS WITHOUT CO-EXAMINER  
- Influenza dei parametri realizzativi di una pompa acqua elettrica sul comportamento vibro-acustico / *Parameter influence on vibro-acoustic behaviour of an electric water pump*, BACHELOR DEGREE THESIS
- 2017 - Reduction of the power loss in the oil-film journal bearings of a rolling mill, THESIS WITH CO-EXAMINER  
- Progettazione e ottimizzazione di un porta mozzo e della sua attrezzatura per processo fusorio in bassa pressione / *Design and optimization of a hub and its equipment for melting process in low pressure*, BACHELOR DEGREE THESIS  
- Acoustic Emission as a diagnostic method of mechanical systems, THESIS WITHOUT CO-EXAMINER  
- Distribuzione desmodromica per una motocicletta da competizione / *Desmodromic distribution for a racing motorcycle*, BACHELOR DEGREE THESIS
- 2018 - Design and analysis of a 3D printed cooled pad for tilting pad journal bearings, THESIS WITH CO-EXAMINER  
- Soluzioni per l'efficientamento di una rete di aria compressa / *Solutions for the increasing the efficiency of air compressed net*, BACHELOR DEGREE THESIS  
- Progettazione banco per test di fulminazione rotore AW609 / *Design of a test rig for AW609 for rotor lightning test*, BACHELOR DEGREE THESIS
- 2019 - Studio di alberi e cuscinetti in motori asincroni trifase destinati al sollevamento di carichi e alla rotazione di bracci oscillanti in gru a torre / *Study of shafts and bearings in three-phase asynchronous motors intended for lifting loads and rotating swinging arms in tower cranes*, BACHELOR DEGREE THESIS  
- Ottimizzazione di una biella e progettazione di un albero motore per uso motociclistico / *Optimization of a connecting rod and design of a crankshaft for motorcycle use*, BACHELOR DEGREE THESIS  
- Manutenzione predittiva ed efficienza energetica: gestione e ottimizzazione di impianti di aria compressa / *Predictive maintenance and energy efficiency: management and optimization of compressed air systems*, BACHELOR DEGREE THESIS
- 2020 - Studio e progettazione di un freno elettromagnetico ad attrito / *Study and design of an electromagnetic friction brake*, BACHELOR DEGREE THESIS  
- Analisi tecnica dei sistemi di taglio Mario Cotta / *Technical analysis of Mario Cotta cutting systems*, BACHELOR DEGREE THESIS  
- R&D: generatore autonomo di corrente / *R&D: autonomous current generator*, BACHELOR DEGREE THESIS  
- Studio del comfort vibro-acustico a bordo di imbarcazioni di lusso / *Study of vibro-acoustic comfort on board of luxury boats*, BACHELOR DEGREE THESIS
- 2021 - Progettazione di un impianto di movimentazione automatico per wafer di silicio / *Design of an automatic handling system for silicon wafers*, BACHELOR DEGREE THESIS

He was the opponent of the following Phd Thesis:

- "Nonlinear Model and Control of Electro Hydraulic Servo-Systems", Valilou Shirin, Università degli Studi di Bergamo, October 2017.
- "Numerical and experimental investigations on non-contacting seals for small-scale applications", Suresh KATUWAL CHHETRI, EPFL École Polytechnique Fédérale de Lausanne, May 2020.
- "Modeling and Comparison of Different Control Strategies for a Two Wheeled Self-Balancing Vehicle", Azadeh Ghaharemani, Università degli Studi di Bergamo, September 2021.

**Teaching activity:**

Teaching assistant for the following courses:

- |           |   |
|-----------|---|
| 2002/2003 | <ul style="list-style-type: none"><li>- "Sistemi Meccatronici - <i>Mechatronic Systems</i>" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Università degli Studi di Bergamo (Italian language).</li><li>- "Elementi di meccanica - <i>Elements of Mechanics</i>" held by ing. R. Strada for the B.Sc. programme in Textile Engineering at Università degli Studi di Bergamo (Italian language).</li></ul>  |
| 2004/2005 | <ul style="list-style-type: none"><li>- "Progettazione Meccanica Funzionale - <i>Functional Mechanical Design</i>" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Politecnico di Milano, Leonardo campus (Italian language).</li></ul>  |
| 2005/2006 | <ul style="list-style-type: none"><li>- "Progettazione Meccanica Funzionale - <i>Functional Mechanical Design</i>" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Politecnico di Milano, Leonardo campus (Italian language).</li></ul>  |
| 2006/2007 | <ul style="list-style-type: none"><li>- "Motion and Vibration Control of Mechanical Systems" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Politecnico di Milano, Lecco campus (English Language).</li><li>- "Progettazione Meccanica Funzionale - <i>Functional Mechanical Design</i>" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Politecnico di Milano, Leonardo campus (Italian language).</li><li>- "Meccanica Teorica Applicata - <i>Theoretical Applied Mechanics</i>" held by prof. V. Lorenzi for the B.Sc. programme in Management, Economics and Industrial Engineering at Università degli Studi di Bergamo.</li></ul>  |
| 2007/2008 | <ul style="list-style-type: none"><li>- "Sistemi Meccatronici - <i>Mechatronic Systems</i>" held by prof. P. Righettini for the M.Sc. programme in Mechanical Engineering at Università degli Studi di Bergamo.</li><li>- "Motion and Vibration Control of Mechanical Systems" (7.5 credits), held by Prof. G. Cusimano, in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Lecco campus (English language).</li></ul>   |
| 2008/2009 | <ul style="list-style-type: none"><li>- "Dinamica dei Sistemi Aerospaziali - <i>Dynamics of Aerospace Systems</i>" (10 credits), held by Prof. A. Curami, in the second semester of the second year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).</li></ul>   |
| 2009/2010 | <ul style="list-style-type: none"><li>- "Dinamica di Sistemi Aerospaziali - <i>Dynamics of Aerospace Systems</i>" (8 credits), held by Prof. A. Curami, in t); in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).</li><li>- "Controllo del Rumore - <i>Noise control</i>" (5 credits), held by Prof. N. Bachschmid, in the second semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (Italian language).</li></ul>   |
| 2010/2011 | <ul style="list-style-type: none"><li>- "Dinamica di Sistemi Aerospaziali - <i>Dynamics of Aerospace Systems</i>" (8 credits), held by Prof. B. Pizzigoni, in in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).</li><li>- "Controllo del Rumore - <i>Noise control</i>" (5 credits), held by Prof. N. Bachschmid, in the second semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus, (Italian language).</li></ul>   |
| 2011/2012 | <ul style="list-style-type: none"><li>- "Dinamica di Sistemi Aerospaziali - <i>Dynamics of Aerospace Systems</i>" (8 credits), held by Prof. B. Pizzigoni, in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus, (Italian language).</li><li>- "Controllo del Rumore" (6 credits) held by Prof. N. Bachschmid, in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus, (Italian language).</li><li>- "Operation and Control of Machines for Power Generation" (10 credits), held by Prof. P. Pennacchi, in the second semester of the second year for the M.Sc. programme in Energy Engineering EEESW "Energy Engineering for an Environmentally Sustainable World", Piacenza campus, (English language).</li></ul> |
| 2012/2013 | <ul style="list-style-type: none"><li>- "Dinamica di Sistemi Aerospaziali- <i>Dynamics of Aerospace Systems</i>" (8 credits), held by Prof. B. Pizzigoni in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus, (Italian language).</li></ul>   |
| 2013/2014 | <ul style="list-style-type: none"><li>- "Dinamica di Sistemi Aerospaziali - <i>Dynamics of Aerospace Systems</i>" (8 credits), held by Prof. B. Pizzigoni in the first semester of the third year for the B.Sc. programme in Aerospace</li></ul>  |



Engineering, Bovisa campus, (Italian language).

- 2014/2015 - "Dinamica di Sistemi Aerospaziali – *Dynamics of Aerospace Systems*" (8 credits), held by Prof. B. Pizzigoni in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).  
- "091223 - Fundamentals of Mechanics" (5 credits), held by Prof. P. Pennacchi in the second semester of the third year for the B.Sc. programme in Automation Engineering, Bovisa campus (English language).
- 2015/2016 - "Dinamica di Sistemi Aerospaziali – *Dynamics of Aerospace Systems*" (8 credits), held by Prof. B. Pizzigoni in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).
- 2016/2017 - "Dinamica di Sistemi Aerospaziali – *Dynamics of Aerospace Systems*" (8 credits), held by Prof. S. Melzi in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).  
- "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).
- 2017/2018 - "Dinamica di Sistemi Aerospaziali – *Dynamics of Aerospace Systems*" (8 credits), held by Prof. S. Melzi in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).  
- "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).
- 2018/2019 - "Dinamica di Sistemi Aerospaziali – *Dynamics of Aerospace Systems*" (8 credits), held by Prof. S. Melzi in the first semester of the third year for the B.Sc. programme in Aerospace Engineering, Bovisa campus (Italian language).  
- "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).
- 2019/2020 - "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).
- 2020/2021 - "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).
- 2021/2022 - "Rotor Dynamics and Diagnostic B" (6 credits), held by Prof. P. Pennacchi in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (English language).

### Course responsibility

Responsible for the following courses:

- 2012/2013 - "075877 - Controllo e Comportamento Dinamico delle Macchine – *Control and Dynamical Behaviour of Machines*" (10 credits), in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Piacenza campus, (Italian language).
- 2013/2014 - "075877 - Controllo e Comportamento Dinamico delle Macchine – *Control and Dynamical Behaviour of Machines*" (10 credits), in the first semester of the second year for the M.Sc. programme in Mechanical Engineering, Piacenza campus (Italian language).
- 2014/2015 - "091135 - Dynamical Behaviour of Machines" (10 credits), in the first semester of the second year for the M.Sc. programme in Mechanical Engineering and M.Sc. programme in Energy Engineering EEESW "Energy Engineering for an Environmentally Sustainable World", Piacenza campus, (English language).
- 2015/2016 - "091135 - Dynamical Behaviour of Machines" (10 credits); in the first semester of the second year for the M.Sc. programme in Mechanical Engineering and M.Sc. programme in Energy Engineering EEESW "Energy Engineering for an Environmentally Sustainable World", Piacenza

campus, (English language).

- "089088 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (8 credits); in the second semester of the second year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).
- 2016/2017 - "089088 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (8 credits); in the second semester of the second year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).
- 2017/2018 - "089088 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (8 credits); in the second semester of the second year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).
- 2019/2020 - "054152 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (10 credits); in the second semester of the third year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).  
- 086471 – Dinamica e controllo delle macchine – *Dynamic and control of machines*" (5 credits); in the second semester of the third year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (Italian language).
- 2020/2021 - "054152 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (10 credits); in the second semester of the third year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).  
- 086471 – Dinamica e controllo delle macchine – *Dynamic and control of machines*" (5 credits); in the second semester of the third year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (Italian language).
- 2021/2022 - "054152 – Meccanica Applicata e Disegno – *Applied Mechanics and Design*" (10 credits); in the second semester of the third year for the M.Sc. programme in Electrical Engineering, Leonardo campus (Italian language).  
- 086471 – Dinamica e controllo delle macchine – *Dynamic and control of machines*" (5 credits); in the second semester of the third year for the M.Sc. programme in Mechanical Engineering, Bovisa campus (Italian language).

### Speaker in conferences

He participated as a speaker to several conferences, listed as follows:

- 2003 - 47° Convegno nazionale Anipla, ANIPLA 2003, 21-22 November 2003, Brescia, Italia
- 2004 - 13th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2004, 2-5 June 2004, Brno, Czech Republic
- 2005 - XVII Congresso AIMETA di Meccanica Teorica e Applicata, AIMETA 2005, 11-15 September 2005, Firenze, Italia
- 2006 - 15th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2006, 15-17 June 2006, Balatonfüred, Lake Balaton, Hungary
- 2008 - 9th International Workshop on Research and Education in Mechatronics, REM 2008, 18-19 September 2008, Bergamo, Italia
- 2009 - International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2009, 30 August-2 September 2009, San Diego, California, USA
- 2010 - 9th EDF/Pprime (LMS) Poitiers Workshop: Improvement of Bearing Performance and Evaluation of Adverse Conditions. 7-8 October 2010, Poitiers, France  
- The 8th IFToMM International Conference on Rotor Dynamics. 12-15 September 2010, Seoul, Korea
- 2011 - ASME Turbo Expo 2011. 6-10 June 2011, Vancouver, British Columbia, Canada
- 2012 - 3° Workshop Tribologia e Industria. 22 – 23 February 2012, Milano, Italia  
- ASME Turbo Expo 2012. 11-15 June 2012, Copenhagen, Denmark  
- International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2012. 12 – 15 August 2012, Chicago, IL, USA

- 10th International Conference on Vibrations in Rotating Machinery, VIRM10. 10-13 September 2012, London, UK
- 2013 - World Tribology Congress WTC 2013. 08 – 13 August 2013, Torino, Italy
- Prognostics and System Health Management Conference PHM-2013. 8-11 September 2013, Milano, Italy
- International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2013. 4-7 August 2013, Portland, Oregon, USA
- 2014 - ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, 17-20 Agosto 2014, Buffalo, New York, USA
- VETOMAC X 2014, 9-11 September 2014, Manchester, UK
- 9th IFToMM International Conference on Rotor Dynamics, 22-25 September 2014, Milano, Italia
- 2015 - Condition Monitoring & Condition Based Maintenance Workshop, 8-9 June 2015, Grimstad, Norway
- 2018 - Aeta 2018 The 5th International Conference on Advanced Engineering, Theory And Applications, 11-13 September 2018, Ostrava, Czech Republic
- The 10th IFToMM International Conference on Rotordynamics, 23-27 September 2018, Rio de Janeiro, Brazil
- XXVI AIVELA National Meeting Department of Energy, Politecnico Di Milano, Milan, 29- 30 November 2018
- 2019 - The 15th IFToMM World Congress, June 30 – July 4, 2019, Krakow, Poland
- 2021 - ASME Turbo Expo 2021. June 7-11, 2021, Virtual, Online

#### List of Journal papers

- [1] Righettini P., Tasora A., Giberti H., Olgiati G., Chatterton S. (2003). **Progettare macchine ad alte prestazioni**. Progettare n.265, ISSN:1125-1549, ed. VNU, Marzo 2003, pp 115-119, Italia.
- [2] Righettini P., Giberti H., Chatterton S. (2004). **Architettura di un sistema di controllo real-time**. Automazione e strumentazione, Settembre 2004, pp 100-106, Italia. ISSN:0005-1284.
- [3] Giberti H., Chatterton S., Cinquemani S., Cocetta M. (2009). **Scegliere il motore adatto**. Progettare n.329, ISSN:1125-1549, ed. VNU, Gennaio 2009, pp 53-57, Italia.
- [4] Bachschmid N., Pennacchi P., Chatterton S., Ricci R. (2009). **On Model Updating of Turbo-Generator Sets**. JVE Journal of Vibroengineering, September 2009 - Volume 11, Issue 3. pp. 379-391. ISSN: 1392-8716,
- [5] S. Chatterton, R. Ricci, P. Pennacchi (2010). **Application and Comparison of High Breakdown-Point and Bounded-Influence Estimators to Rotor Balancing**. JOURNAL OF VIBRATION AND ACOUSTICS, December 2010 – Volume 132, Issue 6, pp. 1-6. ISSN:1048-9002, doi:10.1115/1.4001842.
- [6] P. Pennacchi, S. Chatterton, R. Ricci (2010). **Rotor balancing using high breakdown-point and bounded-influence estimators**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING, Volume 24, Issue 3, April 2010, pp. 860-872. ISSN:0888-3270, doi:10.1016/j.ymssp.2009.10.004.
- [7] P. Pennacchi; S. Chatterton; N. Bachschmid; E. Pesatori; G. Turozzi (2011). **A model to study the reduction of turbine blade vibration using the Snubbing Mechanism**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING. Volume 25, Issue 4, May 2011, pp. 1260-1275, ISSN:0888-3270, doi:10.1016/j.ymssp.2010.10.006
- [8] P. Pennacchi, S. Chatterton, A. Vania (2012). **Modeling of the dynamic response of a Francis turbine**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING. Volume 29, pp. 107-119, ISSN:0888-3270, doi:10.1016/j.ymssp.2011.05.012.
- [9] P. Pennacchi; A. Vania; S. Chatterton (2012). **Nonlinear Effects Caused by Coupling Misalignment in Rotors Equipped with Journal Bearings** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 306- 322), 30;
- [10] R. Ricci, S. Chatterton, P. Pennacchi (2013). **Robust estimation of excitation in mechanical systems under model uncertainties** JOURNAL OF SOUND AND VIBRATION (ISSN:0022-460X), (pp. 264- 281), 332

- [11] P. Borghesani, P. Pennacchi, R. Ricci, S. Chatterton (2013). **Testing second order cyclostationarity in the squared envelope spectrum of non-white vibration signals** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 38- 55), 40;
- [12] P. Borghesani, R. Ricci, S. Chatterton, P. Pennacchi (2013). **A new procedure for using envelope analysis for rolling element bearing diagnostics in variable operating conditions** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 23- 35), 38;
- [13] P. Borghesani, P. Pennacchi, S. Chatterton, R. Ricci (2014). **The velocity synchronous discrete Fourier transform for order tracking in the field of rotating machinery** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 118- 133), 44;
- [14] P. Borghesani, P. Pennacchi, S. Chatterton (2014). **The relationship between kurtosis- and envelope-based indexes for the diagnostic of rolling element bearings** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 25- 43), 43;
- [15] P. Pennacchi, P. Borghesani, S. Chatterton (2015). **A cyclostationary multi-domain analysis of fluid instability in Kaplan turbines** MECHANICAL SYSTEMS AND SIGNAL PROCESSING (ISSN:0888-3270), (pp. 375- 390), 60-61;
- [16] S. Chatterton, P. Pennacchi (2015). **Design of a Novel Multicylinder Stirling Engine** JOURNAL OF MECHANICAL DESIGN (ISSN:1050-0472), (pp. 042303-1- 042303-12), 137.
- [17] S. Chatterton, P. Pennacchi, A. Vania (2016), **Electrical pitting of tilting-pad thrust bearings: Modelling and experimental evidence**. In TRIBOLOGY INTERNATIONAL - ISSN:0301-679X vol. 103, DOI:10.1016/j.triboint.2016.08.003. pp.475-486.
- [18] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania (2016), **Effect of the load direction on non-nominal five-pad tilting-pad journal bearings**. In TRIBOLOGY INTERNATIONAL - ISSN:0301-679X vol. 98, DOI:10.1016/j.triboint.2016.02.028. pp.197-211.
- [19] M. Grasso, S. Chatterton, P. Pennacchi, B.M. Colosimo, (2016) **A data-driven method to enhance vibration signal decomposition for rolling bearing fault analysis**. In MECHANICAL SYSTEMS AND SIGNAL PROCESSING - ISSN:0888-3270 vol. 81 DOI:10.1016/j.ymssp.2016.02.067. pp.126-147.
- [20] S. Chatterton, P. Borghesani, P. Pennacchi, A. Vania (2016), **Experimental Evidences in the Monitoring of Rolling Element Bearings**. JOURNAL OF VIBRATIONAL ENGINEERING & TECHNOLOGIES, vol. 4 (5), pp. 395-402.
- [21] M. Portentoso, P. Pennacchi, S. Chatterton, (2017) **Comparison of the dynamic response of two columns of milling machines made of standard carpentry and metal foam sandwiches** JOURNAL OF VIBRATION AND CONTROL, 23 (17) 2017, pp. 2782-2794, doi: 10.1177/1077546315622355
- [22] S. Chatterton, P.V. Dang, P. Pennacchi, A. De Luca, F. Flumian, (2017) **Experimental evidence of a two-axial groove hydrodynamic journal bearing under severe operation** TRIBOLOGY INTERNATIONAL, 109, pp. 416-427, doi: 10.1016/j.triboint.2017.01.014
- [23] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, (2017) **Numerical investigation of the effect of manufacturing errors in pads on the behaviour of tilting-pad journal bearings**, PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS. PART J, JOURNAL OF ENGINEERING TRIBOLOGY 232 (4), pp. 480-500, doi: 10.1177/1350650117721118
- [24] F. Cangioli, S. Chatterton, P. Pennacchi, L. Netti, L. Ciuchicchi (2018) **Thermo-elasto bulk-flow model for labyrinth seals in steam turbines**, TRIBOLOGY INTERNATIONAL, vol. 119, pp. 359-371, doi: 10.1016/j.triboint.2017.11.016.
- [25] F. Cangioli, P. Pennacchi, G. Vannini, L. Ciuchicchi, A. Vania, S. Chatterton, P.V. Dang, (2018) **On the Thermodynamic Process in the Bulk-Flow Model for the Estimation of the Dynamic Coefficients of Labyrinth Seals**, JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER, vol. 140 (3), doi: 10.1115/1.4037919
- [26] Xu L., Chatterton S., Pennacchi P., (2018) **A novel method of frequency band selection for squared envelope analysis for fault diagnosing of rolling element bearings in a locomotive powertrain**, SENSORS, vol. 18 (12), doi: 10.3390/s18124344
- [27] Chatterton S., Pennacchi P., Vania A., De Luca A., Dang P.V., (2019) **Tribo-design of lubricants for power loss reduction in the oil-film bearings of a process industry machine: Modelling and experimental tests**, TRIBOLOGY INTERNATIONAL, vol. 130, pp. 133-145, doi: 10.1016/j.triboint.2018.09.014

- [28] Chatterton, S.; Pennacchi, P.; Vania, A.; Rubio, P., (2019) **Analysis of the periodic breathing of a transverse annular crack propagated in a real rotating machine**, ENGINEERING FAILURE ANALYSIS, vol. 99, pp. 126-140, doi: 10.1016/j.engfailanal.2019.02.029
- [29] Cangioli F., Vannini G., Pennacchi P., Ciuchicchi L., Nettis L., Chatterton S., (2019) **Rotordynamic Characterization of a Staggered Labyrinth Seal: Experimental Test Data and Comparison With Predictions**, JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER, vol. 141 (1), pp. 1-12, doi: 10.1115/1.4040688
- [30] Zhang J., Chen D., Zhang H., Xu B., Li H., Aggidis G.A., Chatterton S., (2019) **Fast-slow dynamic behaviors of a hydraulic generating system with multi-timescales**, JOURNAL OF VIBRATION AND CONTROL, In Press, online published on June 29, 2019, pp. 1-12, doi: 10.1177/1077546319860306
- [31] Dang, P.V.; Chatterton, S.; Pennacchi, P. (2019). **The Effect of the Pivot Stiffness on the Performances of Five-Pad Tilting Pad Bearings**. LUBRICANTS, vol. 7 (7), DOI:10.3390/lubricants7070061.
- [32] Chatterton, S.; Pennacchi, P., Vania A.; Dang, P.V. (2019). **Cooled Pads for Tilting-Pad Journal Bearings**. LUBRICANTS, vol. 7 (10), DOI: 10.3390/lubricants7100092.
- [33] Dang, P.V.; Chatterton, S.; Pennacchi, P. (2020). **Static Characteristics of a Tilting Five-Pad Journal Bearing with an Asymmetric Geometry**. ACTUATORS, vol. 9 (3), DOI:10.3390/act9030089.
- [34] Xu, L.; Chatterton, S.; Pennacchi, P.; Liu, C. (2020). **A tacholess order tracking method based on inverse short time fourier transform and singular value decomposition for bearing fault diagnosis**. SENSORS, vol. 20 (23), DOI:10.3390/s20236924.
- [35] Xu, L.; Pennacchi, P.; Chatterton, S (2020). **A new method for the estimation of bearing health state and remaining useful life based on the moving average cross-correlation of power spectral density**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol. 139, DOI:10.1016/j.ymssp.2020.106617.
- [36] Gao, S.; Chatterton, S.; Pennacchi, P.; Han, Q.; Chu, F. (2021) **Skidding and cage whirling of angular contact ball bearings: Kinematic-hertzian contact-thermal-elasto-hydrodynamic model with thermal expansion and experimental validation**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol 166, DOI:10.1016/j.ymssp.2021.108427.
- [37] Massocchi, D.; Riboni, G.; Lecis, N.; Chatterton, S.; Pennacchi, P. (2021). **Tribological Characterization of Polyether Ether Ketone (PEEK) Polymers Produced by Additive Manufacturing for Hydrodynamic Bearing Application**. LUBRICANTS, vol. 9(11), DOI:10.3390/lubricants9110112.
- [38] Gao, S.; Chatterton, S.; Naldi, L.; Pennacchi, P. (2021). **Ball bearing skidding and over-skidding in large-scale angular contact ball bearings: Nonlinear dynamic model with thermal effects and experimental results**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING , vol. 147, DOI:10.1016/j.ymssp.2020.107120.
- [39] Gao, S.; Chatterton, S.; Pennacchi, P.; Chu, F. (2021). **Behaviour of an angular contact ball bearing with three-dimensional cubic-like defect: A comprehensive non-linear dynamic model for predicting vibration response**. MECHANISM AND MACHINE THEORY, vol. 163, DOI:10.1016/j.mechmachtheory.2021.104376.
- [40] Gao, S.; Han, Q.; Zhou, N.; Pennacchi, P.; Chatterton, S.; Qing, T.; Zhang, J.; Chu, F. (2021). **Experimental and theoretical approaches for determining cage motion dynamic characteristics of angular contact ball bearings considering whirling and overall skidding behaviors**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING , vol. 168, DOI:10.1016/j.ymssp.2021.108704.
- [41] Pennacchi, P.; Chatterton, S.; Vania, A.; Massocchi, D. (2021). **Definition of Damage Indices for Railway Axle Bearings: Results of Long-Lasting Tests**. MACHINES, vol. 9, DOI:10.3390/machines9010012.
- [42] Xu, L.; Chatterton, S.; Pennacchi, P. (2021). **Rolling element bearing diagnosis based on singular value decomposition and composite squared envelope spectrum**. MECHANICAL SYSTEMS AND SIGNAL PROCESSING , vol. 148, DOI:10.1016/j.ymssp.2020.107174.
- [43] Tayyab, S.M.; Chatterton, S.; Pennacchi, P. (2021). **Fault Detection and Severity Level Identification of Spiral Bevel Gears under Different Operating Conditions Using Artificial Intelligence Techniques**. MACHINES , vol 9 (8), DOI:10.3390/machines9080173.
- [44] Chatterton, S.; Pennacchi, P.; Vania, A. (2022). **An Unconventional Method for the Diagnosis and Study of Generator Rotor Thermal Bows**. JOURNAL OF ENGINEERING FOR GAS TURBINES AND POWER , vol. 144 (1), DOI:10.1115/1.4052079.

- [45] Tayyab, S. M.; Chatterton, S.; Pennacchi, P. (2022). **Intelligent Defect Diagnosis of Rolling Element Bearings under Variable Operating Conditions Using Convolutional Neural Network and Order Maps**. SENSORS, vol. 22 (5), DOI:10.3390/s22052026.
- [46] Chatterton, S.; Gheller, E.; Vania, A.; Pennacchi, P.; Dang, P. V. (2022). **Investigation of PEEK Lined Pads for Tilting-Pad Journal Bearings**. MACHINES, vol 20 (125), DOI:10.3390/machines10020125.
- [47] Gao, S., Chatterton, S., Pennacchi, P., Han, Q., Chu, F. (2022). **Skidding and cage whirling of angular contact ball bearings: Kinematic-hertzian contact-thermal-elasto-hydrodynamic model with thermal expansion and experimental validation**, MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol. 166, no. 108427, doi:10.1016/j.ymssp.2021.108427.
- [48] Gao, S., Han, Q., Zhou, N., Pennacchi P., Chatterton S., Qing T., Zhang, J., Chu, F. (2022) **Experimental and theoretical approaches for determining cage motion dynamic characteristics of angular contact ball bearings considering whirling and overall skidding behaviors**. Mechanical Systems and Signal Processing, vol. 168, no. 108704, doi: 10.1016/j.ymssp.2021.108704.

**List of conference papers and book chapters:**

- [49] Righettini P., Giberti H., Olgiati G., Chatterton S. (2003). **Un'originale architettura per un robot calciatore**. International Workshop Multiagent robotic system, 7 luglio, 2003, Padova, Italy.
- [50] Chatterton S., Righettini P., Riva R., Strada R., Zappa B. (2003). **Teaching mechatronics from a mechanical point of view**. 4th International Workshop On Research and Education in Mechatronics, REM 2003, 9th -10th October 2003, Bochum, Germany.
- [51] Righettini P., Giberti H., Chatterton S. (2003). **Architettura di un sistema di controllo real-time a basso costo per macchine automatiche: applicazione ad un robot parallelo**. 47° Convegno nazionale Anipla, ANIPLA 2003, 21-22 novembre 2003, Brescia, Italia.
- [52] Righettini P., Giberti H., Olgiati G., Chatterton S. (2004). **Design of four-dof wrist for drilling and milling operations**. 13th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2004, June 2-5 2004, Brno, Czech Republic, pp. 128-133 ISBN: 80-7204-341-2.
- [53] Righettini P., Giberti H., Chatterton S. (2004). **Design of a 5-dof parallel robot based on a original kinematic scheme**. 13th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2004, June 2-5 2004 Brno, Czech Republic, pp. 244-249. ISBN: 80-7204-341-2.
- [54] Tasora A., Righettini P., Chatterton S. (2005). **Design of the 'Granit' parallel kinematic manipulator**. 14th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2005, May 26-28 2005, Bucharest, Romania. ISBN: 973-718-241-3.
- [55] Righettini P., Giberti H., Chatterton S. (2005). **Mechatronic Design and Numerical Simulations of a Fully Pneumatic Parallel Kinematics Robot**. 6th International Workshop On Research and Education in Mechatronics, REM 2005, 30th June - 1st July 2005, Annecy, France. ISBN: 2-9516453-6-8.
- [56] Righettini P., Giberti H., Chatterton S. (2005). **Mechatronic Requirements for Hardware in the Loop Development of Motorcycle Semi-Active Suspensions**. 6th International Workshop On Research and Education in Mechatronics, REM 2005, 30th June - 1st July 2005, Annecy, France. ISBN: 2-9516453-6-8.
- [57] Righettini P., Giberti H., Chatterton S. (2005). **Progetto di un'originale interfaccia aptica con attuatori ridondanti**. XVII Congresso AIMETA di Meccanica Teorica e Applicata, AIMETA 2005, 11-15 Settembre 2005, Firenze, Italia. ISBN: 88-8453-314-7.
- [58] Righettini P., Giberti H., Chatterton S. (2005). **Sulla verifica sperimentale di sospensioni semi-attive in ambito motociclistico**. XVII Congresso AIMETA di Meccanica Teorica e Applicata, AIMETA 2005, 11-15 Settembre 2005, Firenze, Italia. ISBN: 88-8453-314-7.
- [59] Giberti H., Righettini P., Chatterton S. (2005). **Progetto di un banco prova per lo studio della lubrificazione elastoidrodinamica di profili a contatto**. XVII Congresso AIMETA di Meccanica Teorica e Applicata, AIMETA 2005, 11-15 Settembre 2005, Firenze, Italia. ISBN: 88-8453-314-7.
- [60] Giberti H., Righettini P., Chatterton S. (2005). **Progetto di un Robot PKM a tre GdL traslazionali pneumatico**. XVII Congresso AIMETA di Meccanica Teorica e Applicata, AIMETA 2005, 11-15 Settembre 2005, Firenze, Italia. ISBN: 88-8453-314-7.

- [61] Giberti H., Righettini P., Chatterton S., Oldani A. (2005). **Test bench design for studying the lubrication of contact cam profiles**. International Workshop on Cam Transmissions: functional and dynamical aspects, CT2005, Edited CD-Volume, Napoli and Cassino, Italia, 20-21 Ottobre 2005
- [62] Giberti H., Righettini P., Chatterton S., Oldani A. (2005). **A preliminary study of the electrical capacity measurement of the lubricating film**. International Workshop on Cam Transmissions: functional and dynamical aspects, CT2005, Edited CD-Volume, Napoli and Cassino, Italia, 20-21 Ottobre 2005
- [63] Righettini P., Chatterton S., Giberti H. (2006). **Kinematic Optimization of a Haptic Interface with Redundant Actuation**. 15th International WorkShop on Robotics in Alpe-Adria-Danube region, RAAD 2006, June 15-17 2006, Balatonfüred, Lake Balaton, Hungary. ISBN: 963-7154-48-5.
- [64] Righettini P., Giberti H., Chatterton S., Strada R. (2006). **Experimental setup and simulations of a parallel pneumatic robot**. 7th International Workshop On Research and Education in Mechatronics, REM 2006, June 15-16 2006, KTH, Stockholm, Sweden. ISBN: 91-7178440-3.
- [65] Righettini P., Giberti H., Chatterton S., Strada R., Oldani A. (2006). **Test bench design for motorcycle suspensions HIL test**. 7th International Workshop On Research and Education in Mechatronics, REM 2006, June 15-16 2006, KTH, Stockholm, Sweden. ISBN: 91-7178440-3.
- [66] Righettini P., Chatterton S., Camposaragna M., Strada R., Zappa B., Riva R. (2006). **Design and development of a Cartesian plotter as a way to teach Mechatronics to Mechanical Engineering students**. The 32nd Annual Conference of the IEEE Industrial Electronics Society, IECON06, November 7 - 10, 2006, Paris - FRANCE, pp. 4474 - 4479. ISBN: 1-4244-0136-4.
- [67] Righettini P., Giberti H., Strada R., Chatterton S. (2007). **Practical approach for the sonic conductance evaluation of pneumatic proportional flow control valves**. 8th International Workshop On Research and Education in Mechatronics, REM 2007, June 14-15 2007, Tallinn University of Technology, Tallinn, Estonia. ISBN: 978-9985-59-707-1.
- [68] Giberti H., Righettini P., Chatterton S., Strada R. (2007). **Sulla determinazione della conduttanza sonica di valvole pneumatiche proporzionali in portata: confronto fra una nuova metodologia sperimentale e quella ISO**. XVIII Congresso Associazione Italiana di Meccanica Teorica e Applicata, AIMETA 2007, 11-14 Settembre 2007, Brescia, Italia. ISBN: 978-88-89720-69-1.
- [69] Giberti H., Righettini P., Chatterton S., Strada R. (2007). **Simulazione ed analisi sperimentale di un robot a cinematica parallela a tre gradi di libertà interamente pneumatico**. XVIII Congresso Associazione Italiana di Meccanica Teorica e Applicata, AIMETA 2007, 11-14 Settembre 2007, Brescia, Italia. ISBN: 978-88-89720-69-1.
- [70] Righettini P., Oldani A., Strada R., Chatterton S. (2008). **Implementation of a Multibody Code Oriented to HIL Simulation**. 8th World Congress on Computational Mechanics WCCM 2008 & 5th European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS 2008, 30 Giugno - 4 Luglio 2008, Venezia, Italia. ISBN: 978-84-96736-55-9.
- [71] Righettini P., Chatterton S. (2008). **Hybrid Force-Position Control of a Scara Manipulator**. 9th International Workshop on Research and Education in Mechatronics, REM 2008, 18-19 Settembre 2008, Bergamo, Italia. ISBN: 8888412336.
- [72] Righettini P., Chatterton S. (2008). **Influence of Design and Working Parameters on a 2 Dof Manipulator Force-Position Controller**. 9th International Workshop on Research and Education in Mechatronics, REM 2008, 18-19 Settembre 2008, Bergamo, Italia. ISBN: 8888412336
- [73] Oldani A., Righettini P., Strada R., Chatterton S. (2008). **Multi-Body Code Oriented to the Real-Time Simulations**. 9th International Workshop on Research and Education in Mechatronics, REM 2008, 18-19 Settembre 2008, Bergamo, Italia. ISBN: 8888412336.
- [74] Giberti H., Chatterton S., Cinquemani S., Cocetta M. (2008). **Optimal Selection of the Motor-Reducer Unit: Application to a Linear Positioning Unit**. 9th International Workshop on Research and Education in Mechatronics, REM 2008, 18-19 Settembre 2008, Bergamo, Italia. ISBN: 8888412336.
- [75] Righettini P., Chatterton S. (2008). **An Optimal Redundancy Coordination Method for an Haptic Interface**. IEEE/RSJ 2008 International Conference on Intelligent Robots and Systems, IROS 2008, 22-26 Settembre 2008, Nice, France. ISBN: 978-1-4244-2058-2.
- [76] Righettini P., Chatterton S. (2009). **Influence of the Manipulator Dynamic Properties on the Design of a Force-Position Controller**. 5th IEEE International Conference on Mechatronics, ICM 2009, 14-17 April 2009, Málaga, Spain, Page(s): 1-6. Doi:10.1109/ICMECH.2009.4957212.

- [77] Giberti H., Cinquemani S., Chatterton S. (2009). **How the Drive System Affects the Kinetostatic Properties of a Robot**. 2nd International Multi-Conference on Engineering and Technological Innovation - IMETI 2009, 10-13 July 2009 – Orlando, Florida, USA.
- [78] Pennacchi P., Vania A., Chatterton S. (2009). **Application of Robust Regression Methods to Rotor Balancing Using High Breakdown Point and Bounded-Influence Estimators**. Proceedings of the ASME 2009 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2009, August 30 - September 2, 2009, San Diego, California, USA, pp. 1033-1042. ISBN: 978-0-7918-4898-2, doi:10.1115/DETC2009-86475.
- [79] Giberti H., Chatterton S., Cinquemani S. (2009). **Kinematic optimization of a parallel manipulator 5R 2-dof driven by pneumatic cylinders**. XIX Congresso AIMETA di Meccanica Teorica e Applicata - Ancona 14-17 settembre 2009.
- [80] P. Pennacchi; S. Bruni; S. Chatterton; R. Ricci; P. Borghesani; F. Gherardi; D. Marinis; A. Didonato; F. Unger-Weber (2010). **Diagnostics of Roller Bearings for the Traction System of Very High-Speed Trains**. 2° Workshop Tribologia e Industria, 18-19/5/2010, Bari, Italy, pp. 1-12.
- [81] P. Pennacchi, S. Chatterton, R. Ricci, A. Vania (2010). **Design of a test rig for tilting-pad journal bearings**. 9th EDF/Pprime (LMS) Poitiers Workshop: "Improvement of Bearing Performance and Evaluation of Adverse Conditions". October 7-8, 2010, Poitiers, France, pp. 1-5.
- [82] P. Pennacchi, A. Vania, S. Chatterton, R. Ricci (2010). **Spiral vibrations in power units: modeling and experimental evidences**. ISMA2010, International Conference on Noise and Vibration Engineering including USD2010. September 20-22, 2010, Leuven, Belgium, pp. 2905- 2920.
- [83] P. Pennacchi, S. Chatterton, R. Ricci, A. Vania (2010). **Modeling of the Dynamic Response of a Francis Turbine**. The 8th IFToMM International Conference on Rotor Dynamics. September 12-15, 2010, Seoul, Korea, pp. 1062- 1068.
- [84] P. Pennacchi, S. Bruni, S. Chatterton, R. Ricci, P. Borghesani, F. Gherardi, D. Marinis, A. Didonato, F. Unger-Weber (2010). **Design of a Test-rig for Traction Equipment of Very High Speed Trains**. The 8th IFToMM International Conference on Rotor Dynamics. September 12-15, 2010, Seoul, Korea, pp. 882- 889.
- [85] P. Pennacchi, A. Vania, S. Chatterton (2010). **Fluttering Phenomena Caused by the Wrong Assembling of a Tilting-pad Journal Bearing**. The 8th IFToMM International Conference on Rotor Dynamics. September 12-15, 2010, Seoul, Korea, pp. 868- 874.
- [86] P. Pennacchi, S. Chatterton, R. Ricci, A. Vania (2010). **Application of Robust Regression Methods to Fault Identification in Rotating Machinery**. The 8th IFToMM International Conference on Rotor Dynamics. September 12-15, 2010, Seoul, Korea, pp. 376- 383.
- [87] N. Bachschmid, R. Ricci, S. Chatterton, P. Pennacchi (2010). **On Model Updating of Turbo-generator set**. The 8th IFToMM International Conference on Rotor Dynamics. September 12-15, 2010, Seoul, Korea, pp. 738- 745.
- [88] P. Pennacchi, A. Vania, S. Chatterton (2010). **Identification of Mechanical Faults in Rotating Machinery for Power Generation**. ISIE 2010, IEEE International Symposium on Industrial Electronics. 4-7 July 2010, Bari, Italy, pp. 2109- 2114. ISBN: 978-1-4244-6390-9, doi: 10.1109/ISIE.2010.5637771.
- [89] P. Pennacchi, A. Vania, S. Chatterton, E. Pesatori (2010). **Case History of Pad Fluttering in a Tilting-Pad Journal Bearing**. ASME Turbo Expo 2010, Power for Land, Sea and Air GT2010. 14-18/6/2010, Glasgow, UK. pp.227-233. ISBN: 978-0-7918-4401-4, doi:10.1115/GT2010-22946
- [90] Bachschmid N., Pennacchi P., Chatterton S. (2010). **Effects of mistuning and snubbing on bladed disks of turbo-machinery**. (pp. 2597- 2604). In: 17th International Congress on Sound and Vibration 2010, ICSV 2010. 18/07/2010 - 22/07/2010, Cairo, Egypt,
- [91] P. Pennacchi, R. Ricci, S. Chatterton, P. Borghesani, (2011). **Effectiveness of MED for Fault Diagnosis in Roller Bearings**. Vibration Problems ICOVP 2011: The 10th International Conference on Vibration Problems (Springer Proceedings in Physics) J. Náprstek; J. Horáček; M. Okrouhlík; B. Marvalová; F. Verhulst; J.T. Sawicki editors, pp. 637- 642, ISBN-13: 978-9400720688.
- [92] P. Pennacchi, P. Borghesani, R. Ricci, S. Chatterton, (2011). **Bearing Fault Diagnostics Using the Spectractal Pattern Recognition**. Vibration Problems ICOVP 2011: The 10th International Conference on Vibration Problems (Springer Proceedings in Physics) J. Náprstek; J. Horáček; M. Okrouhlík; B. Marvalová; F. Verhulst; J.T. Sawicki editors, pp. 643- 648, ISBN-13: 978-9400720688



- [93] N. Bachschmid, E. Pesatori, S. Bistolfi, M. Ferrante, S. Chatterton (2011). **On impulsive vibration tests of shrouded blade rows**. 6th International Conference Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques. 25-26 October 2011, Compiègne, France, pp. 1-10.
- [94] Pennacchi P., Ricci R., Chatterton S., Borghesani P. (2011). **Endurance test-rig for diagnostics and prognostics of rolling element bearings**. 6th International Conference Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques. 25-26 October 2011, Compiègne, France, pp. 1- 9.
- [95] Vania A., Pennacchi P., Chatterton S. (2011). **Supersynchronous Vibrations Caused by Transverse Annular Cracks in Rotating Machines**. 6th International Conference Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques. 25-26/10/2011, Compiègne, France, pp. 1-13.
- [96] Pennacchi P., Borghesani P., Ricci R., Chatterton S. (2011). **An experimental based assessment of the deviation of the bearing characteristic frequencies**. 6th International Conference Acoustical and Vibratory Surveillance Methods and Diagnostic Techniques. 25-26/10/2011, Compiègne, France, pp. 1-8.
- [97] R. Ricci, S. Chatterton, P. Pennacchi, A. Vania (2011). **Multiphysics modeling of a tilting pad thrust bearing with polymeric layered pads - Modélisation multi physique d'un butée à patins oscillants avec le revêtement en polymères**. 10th EDF/Pprime Workshop: "Condition Monitoring, Performance Improvement and Safe Operation of Bearings". October 6-7, 2011, Futuroscope, Poitiers, France, pp. G1-G10.
- [98] P. Pennacchi, P. Borghesani, S. Chatterton, R. Ricci (2011). **Tuning Second Order Cyclostationarity Parameters for the Diagnosis of Rolling Element Bearings**. The 10th International Conference on Vibration Problems ICOVP2011. September 5-8, 2011, Prague, Czech Republic, pp. 453- 458.
- [99] N. Bachschmid, S. Bistolfi, S. Chatterton, M. Ferrante, E. Pesatori (2011). **Some Remarks on the Dynamic Behaviour of Integrally Shrouded Blade Rows**. ASME 2011 International Design Engineering Technical Conferences - Computers and Information in Engineering Conference IDETC/CIE 2011, August 28-31, 2011, Washington, DC, USA. pp. 1-7, ISBN: 9780791844106.
- [100] S. Chatterton, P. Pennacchi, A. Vania, E. Tanzi, R. Ricci (2011). **Characterization of Five-Pad Tilting-Pad Journal Bearings Using an Original Test-Rig**. ASME 2011 International Design Engineering Technical Conferences - Computers and Information in Engineering Conference IDETC/CIE 2011, August 28-31, 2011, Washington, DC, USA. pp. 1-5, ISBN: 9780791844106.
- [101] R. Ricci, S. Chatterton, P. Pennacchi, A. Vania (2011). **Multiphysics Modeling of a Tilting Pad Thrust Bearing: Comparison Between White Metal and Polymeric Layered Pads**. ASME 2011 International Design Engineering Technical Conferences - Computers and Information in Engineering Conference IDETC/CIE 2011. August 28-31, 2011, Washington, DC, USA. pp. 1-8, ISBN: 9780791844106.
- [102] P. Pennacchi, S. Chatterton, N. Bachschmid, E. Pesatori (2011). **An Insight Into the Snubbing Mechanism for the Reduction of Turbine Blade Vibration by Analyzing Chaotic Behaviour**. ASME 2011 International Design Engineering Technical Conferences - Computers and Information in Engineering Conference IDETC/CIE 2011, August 28-31, 2011, Washington, DC, USA. pp. 1- 9, ISBN: 9780791844106.
- [103] P. Pennacchi, S. Bruni, S. Chatterton, P. Borghesani, R. Ricci, D. Marinis, A. Didonato, F. Unger-Weber (2011). **A Test Rig for the Condition-Based Maintenance Application on the Traction Chain of Very High Speed Trains**. 9th World Congress on Railway Research, 22-26/5/2011, Lille, France, pp. 1-11.
- [104] A. Vania, P. Pennacchi, S. Chatterton (2011). **Effects of the shaft normal modes on the model-based identification of unbalances in rotating machines**. ASME Turbo Expo 2011 - GT2011. June 6-10, 2011, Vancouver, British Columbia, Canada, pp. 1-8.
- [105] P. Pennacchi, S. Chatterton, A. Vania (2011). **Modeling of the dynamic response of a Pelton turbine hydroelectric plant**. ASME Turbo Expo 2011 - GT2011. June 6-10, 2011, Vancouver, British Columbia, Canada, pp. 1- 8.
- [106] P. Pennacchi, A. Vania, S. Chatterton (2011). **Analysis of the effects of parallel and angular misalignment in hyperstatic rotors equipped with oil-film bearings**. ASME Turbo Expo 2011 - GT2011, pp. 1- 8. June 6-10, 2011, Vancouver, British Columbia, Canada.
- [107] A. Vania, P. Pennacchi, S. Chatterton (2011). **Effects of thermal transients on cracked shaft vibrations**. ASME Turbo Expo 2011 - GT2011. June 6-10, 2011, Vancouver, British Columbia, Canada, pp. 1-8
- [108] S. Chatterton, P. Pennacchi, A. Vania, E. Tanzi, R. Ricci, G. Rizzi, P. Lombardi (2012). **A test-rig for the characterization of five-pad tilting-pad journal bearings**. (pp. 1- 6). In: 3° Workshop Tribologia e Industria. 22/2/2012 - 23/2/2012, Milano,

- [109] R. Ricci, S. Chatterton, P. Pennacchi, A. Vania, G. Rizzi, P. Lombardi (2012). **Analysis of the performances of a tilting pad thrust bearing with polymeric layered pads using multiphysics modeling.** (pp. 1- 14). In: 3° Workshop Tribologia e Industria. 22/2/2012 - 23/2/2012, Milano,
- [110] P. Pennacchi, S. Chatterton, P. Borghesani, R. Ricci, D. Marinis, A. Didonato, F. Unger-Weber (2012). **Condition-Based Maintenance of the Bearings of the Traction Chain of Very High Speed Trains.** (pp. 1- 15). In: 3° Workshop Tribologia e Industria. 22/2/2012 - 23/2/2012, Milano,
- [111] A. Vania, P. Pennacchi, S. Chatterton, G. Rizzi, P. Lombardi (2012). **On the non-linear effects in journal bearings.** (pp. 1- 13). In: 3° Workshop Tribologia e Industria. 22/2/2012 - 23/2/2012, Milano,
- [112] P. Pennacchi, A. Vania, S. Chatterton, E. Tanzi (2012). **Detection Of Unsteady Flow In A Kaplan Hydraulic Turbine Using Machine Mechanical Model And Rotor Measured Vibrations.** (pp. 739- 748). In: ASME Turbo Expo 2012. 11/6/2012 - 15/06/2012, Copenhagen, Denmark,
- [113] A. Vania, P. Pennacchi, S. Chatterton (2012). **Dynamic Effects Caused By The Non-Linear Behavior Of Oil-Film Journal Bearings In Rotating Machines.** (pp. 657- 664). In: ASME Turbo Expo 2012. 11/6/2012 - 15/6/2012, Copenhagen, Denmark,
- [114] S. Chatterton, P. Pennacchi, A. Vania, R. Ricci, A. Ghisoni (2012). **Design Of A Stirling Machine In A Multi-Cylinder Configuration For Microcogeneration.** (pp. 1035- 1042). In: ASME Turbo Expo 2012. 11/6/2012 - 15/6/2012, Copenhagen, Denmark,
- [115] P. Borghesani, R. Ricci, S. Chatterton, P. Pennacchi (2012). **Fault Symptoms Of Rolling Element Bearings Under Variable Operating Conditions – A Multi Domain Analysis.** (pp. 177- 183). In: ASME 2012 - International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE. 12/08/2012 - 15/08/2012, Chicago, IL, USA,
- [116] P. Pennacchi, P. Borghesani, S. Chatterton, A. Vania (2012). **Hydraulic Instability Onset Detection In Kaplan Turbines By Monitoring Shaft Vibrations.** (pp. 715- 722). In: ASME 2012 - International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE. 12/08/2012 - 15/08/2012, Chicago, IL, USA,
- [117] R. Ricci, P. Borghesani, S. Chatterton, P. Pennacchi (2012). **The Combination Of Empirical Mode Decomposition And Minimum Entropy Deconvolution For Roller Bearing Diagnostics In Non-Stationary Operation.** (pp. 723- 730). In: ASME 2012 - International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE. 12/08/2012 - 15/08/2012, Chicago, IL, USA,
- [118] P. Pennacchi, R. Ricci, S. Chatterton, P. Borghesani, A. Vania, G. D'Antona, C. Pensieri, C. Rolla (2012). **Dynamic Effects Of Electrical Pitting In Steam-Turbine Tilting-Pad Thrust-Bearings.** (pp. 731- 738). In: ASME 2012 - International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE. 12/08/2012 - 15/08/2012, Chicago, IL, USA,
- [119] A. Vania, P. Pennacchi, S. Chatterton (2012). **On the effects of transverse annular cracks in rotating machines.** (pp. 159- 170). In: 10th International Conference on Vibrations in Rotating Machinery (VIRM10). 10/09/2012 - 13/09/2012, London, UK,
- [120] A. Vania, P. Pennacchi, S. Chatterton (2012). **Analysis of the sensitivity to non-linear effects in the oil-film forces of journal bearings.** (pp. 545- 556). In: 10th International Conference on Vibrations in Rotating Machinery (VIRM10). 10/09/2012 - 13/09/2012, London, UK,
- [121] M. Sanvito, E. Pesatori, N. Bachschmid, S. Chatterton (2012). **Analysis of LP steam turbine blade vibrations: experimental results and numerical simulations.** (pp. 189- 197). In: 10th International Conference on Vibrations in Rotating Machinery (VIRM10). 10/09/2012 - 13/09/2012, London, UK
- [122] S. Chatterton, P. Pennacchi, R. Ricci, A. Vania (2012). **Kinematic Optimization of a Five-Cylinder Stirling Engine.** E.S.A. Edizioni Scientifiche e Artistiche, (pp. 121- 127). In: 21th International Workshop on Robotics in Alpe-Adria-Danube Region (RAAD 2012). 10/09/2012 - 13/09/2012, Napoli, Italia,
- [123] A. Vania, P. Pennacchi, S. Chatterton (2012). **A parametric analysis of the breathing phenomenon for different shapes of shaft cracks.** Department Werktuigkunde 2012, (pp. 893- 906). In: ISMA2012 - International Conference on Noise and Vibration Engineering. 17/09/2012 - 19/09/2012, Leuven, Belgium,
- [124] A. Vania, P. Pennacchi, S. Chatterton (2013). **Identification of a Shaft Thermal Bow by Means of Model-based Diagnostic Techniques.** (pp. 1- 11). In: International Conference Surveillance 7. 29/10/2013 - 30/10/2013, Chartres, France,

- [125] P. Pennacchi, P. Borghesani, S. Chatterton, A. Vania (2013). **Modeling electrical pitting on tilting-pad thrust bearings.** (pp. 1- 4). In: World Tribology Congress 2013. 08/09/2013 - 13/08/2013, Torino, Italy,
- [126] A. Vania, P. Pennacchi, S. Chatterton, E. Tanzi (2013). **Sensitivity Analysis of Non-Linear Forces in Oil-Film Journal Bearings.** (pp. 1- 4). In: World Tribology Congress 2013. 08/09/2013 - 13/09/2013, Torino, Italy,
- [127] P. Pennacchi, S. Chatterton, A. Vania, R. Ricci, P. Borghesani (2013). **Experimental Evidences in Bearing Diagnostics for Traction System of High Speed Trains.** AIDIC Servizi S.r.l., (pp. 739- 744). In: Prognostics and System Health Management Conference PHM-2013. 08/09/2013-11/09/2013, Milano,
- [128] S. Chatterton, P. Pennacchi, R. Ricci, P. Borghesani, A. Vania (2013). **Development of a New Signal Processing Diagnostic Tool for Vibration Signals Acquired in Transient Conditions.** AIDIC Servizi S.r.l., (pp. 61- 66). In: Prognostics and System Health Management Conference PHM-2013. 08/09/2013-11/09/2013, Milano,
- [129] A. Vania, P. Pennacchi, S. Chatterton (2013). **Fault Diagnosis And Prognosis In Rotating Machines Carried Out By Means Of Model-Based Methods: A Case Study.** (pp. 1- 8). In: ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (DETC2013). 04/08/2013 - 07/08/2013, Portland, Oregon, USA,
- [130] S. Chatterton, P. Pennacchi, R. Ricci, P. Borghesani (2013). **Diagnostics Of Rolling Element Bearings For The Traction System Of High Speed Trains: Experimental Evidences.** (pp. 1- 9). In: ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (DETC2013). 04/08/2013 - 07/08/2013, Portland, Oregon, USA
- [131] P. Pennacchi, A. Vania, S. Chatterton, I. Nistor, P. Voinis, R. Ricci, P. Borghesani (2013). **Unbalance Identification In Large Steam Turbo-Generator Unit Using A Model-Based Method.** (pp. 1- 12). In: ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (DETC2013). 04/08/2013 - 07/08/2013, Portland, Oregon, USA,
- [132] A. Vania, P. Pennacchi, S. Chatterton (2013). **Parametric Analysis Focused on Non-linear Forces in Oil-film Journal Bearings.** (pp. 1- 10). In: 3rd International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMN02013). 08/05/2013-10/05/2013, Ferrara (Italy),
- [133] P. Borghesani, R. Ricci, S. Chatterton, P. Pennacchi (2013). **Diagnostic of rolling element bearings with envelope analysis in non-stationary conditions.** (pp. 1- 9). In: 3rd International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMN02013). 08/05/2013-10/05/2013, Ferrara (Italy),
- [134] S. Chatterton, R. Ricci, P. Pennacchi, P. Borghesani (2013). **Signal Processing Diagnostic Tool for Rolling Element Bearings Using EMD & MED.** (pp. 1- 10). In: 3rd International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMN02013). 08/05/2013-10/05/2013, Ferrara (Italy),
- [135] N. Bachschmid, S. Chatterton (2013). **Dynamical Behavior of Rotating Machinery in non-stationary Conditions: Simulation and Experimental Results.** (pp. 1- 19). In: 3rd International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMN02013). 08/05/2013-10/05/2013, Ferrara (Italy),
- [136] A. Vania, P. Pennacchi, S. Chatterton (2014). **Parametric Analysis Focused on Non-linear Forces in Oil-film Journal Bearings.** SPRINGER-VERLAG BERLIN, HEIDELBERGER PLATZ 3, D-14197 BERLIN, GERMANY, (pp. 115- 125). In: International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO). 2013, Ferrara, ITALY,
- [137] P. Borghesani, R. Ricci, S. Chatterton, P. Pennacchi (2014). **Diagnostic of rolling element bearings with envelope analysis in non-stationary conditions.** SPRINGER-VERLAG BERLIN, HEIDELBERGER PLATZ 3, D-14197 BERLIN, GERMANY, (pp. 127- 135). In: International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO). 2013, Ferrara, ITALY ,
- [138] S. Chatterton, R. Ricci, P. Pennacchi, P. Borghesani (2014). **Signal Processing Diagnostic Tool for Rolling Element Bearings Using EMD and MED.** SPRINGER-VERLAG BERLIN, HEIDELBERGER PLATZ 3, D-14197 BERLIN, GERMANY, (pp. 379- 388). In: International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO). 2013, Ferrara, ITALY,
- [139] N. Bachschmid, S. Chatterton (2014). **Dynamical Behavior of Rotating Machinery in non-stationary Conditions: Simulation and Experimental Results.** SPRINGER-VERLAG BERLIN, HEIDELBERGER

PLATZ 3, D-14197 BERLIN, GERMANY, (pp. 3- 21). In: International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO). Ferrara, ITALY,

- [140] Chatterton S., Borghesani P., Pennacchi P. (2014). **Monitoraggio del Danneggiamento in Cuscinetti a Rotolamento**. Associazione Italiana di Tribologia, (pp. 1- 4). In: 4° Workshop AIT Tribologia e Industria. 15/04/2014 - 16/04/2014, Modena, Italia,
- [141] P. Pennacchi, S. Chatterton, P. Borghesani, C. Gultekin, (2014). **Condition Monitoring And Diagnostics Of Wind Turbines: A Survey**. in Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014 August 17-20, 2014, Buffalo, New York, USA, doi:10.1115/DETC2014-35352
- [142] S. Chatterton, P. Pennacchi, P. Borghesani, A. Vania, (2014). **On-Line Tracking And Monitoring Of Rolling Element Bearing Faults**. in Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014 August 17-20, 2014, Buffalo, New York, USA, doi: 10.1115/DETC2014-35094
- [143] P. Borghesani, P. Pennacchi, S. Chatterton, A. Vania, (2014). **A Novel Threshold For The Diagnostics Of Rolling Element**. . in Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014 August 17-20, 2014, Buffalo, New York, USA, doi: 10.1115/DETC2014-35362
- [144] J. Chen, P. Pennacchi, D. Jiang, S. Chatterton, (2014), **Study of snubbing mechanism using finite element method**, in in Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014 August 17-20, 2014, Buffalo, New York, USA, doi: 10.1115/DETC2014-35184
- [145] S. Chatterton, P. Borghesani, P. Pennacchi, , A. Vania, (2014). **Optimal frequency band selection for the square envelope spectrum in the diagnostics of rolling element bearings**. . in Proceedings of the ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014 August 17-20, 2014, Buffalo, New York, USA, doi: 10.1115/DETC2014-35088
- [146] Chatterton, S., Pennacchi, P., Vania, A. (2015). **Performances degradation of tilting-pad thrust bearings due to electrical pitting**, Mechanisms and Machine Science, 21, pp. 981-994. DOI: 10.1007/978-3-319-06590-8\_80
- [147] Chatterton, S., Borghesani, P., Pennacchi, P., Vania, A. (2015) **Monitoring of the damage in rolling element bearings**, Mechanisms and Machine Science, 23, pp. 977-986. DOI: 10.1007/978-3-319-09918-
- [148] Vania, A., Pennacchi, P., Chatterton, S. (2015) **Influence of the supporting structure dynamic behaviour on the shaft vibration of a real rotating machine** Mechanisms and Machine Science, 21, pp. 2123-2136. DOI: 10.1007/978-3-319-06590-8\_175
- [149] Chatterton, S., Pennacchi, P., Dang, P.V., Vania, A. (2015) **Identification dynamic force coefficients of a five-pad tilting-pad journal bearing**, Mechanisms and Machine Science, 21, pp. 931-941. DOI: 10.1007/978-3-319-06590-8\_76
- [150] Chatterton, S., Pennacchi, P., Dang, P.V., Vania, A. (2015) **A test rig for evaluating tilting-pad journal bearing characteristics**, Mechanisms and Machine Science, 21, pp. 921-930. DOI: 10.1007/978-3-319-06590-8\_75
- [151] Chatterton, S., Pennacchi, P., Vania, A. (2015) **Multiphysics TEHD model of a tilting-pad thrust bearing with polymeric layer**, Mechanisms and Machine Science, 21, pp. 955-968. DOI: 10.1007/978-3-319-06590-8\_78
- [152] Chatterton, S., Pennacchi, P., Vania, A., Borghesani, P. (2015) **Architecture of the monitoring system for the traction system bearings of a regional locomotive**. Mechanisms and Machine Science, 21, pp. 455-464. DOI: 10.1007/978-3-319-06590-8\_36
- [153] Chatterton, S., Pennacchi, P., Vania, A. (2015) **Explanation of the snubbing mechanism on vibration reduction by means of chaos metrics**. Mechanisms and Machine Science, 21, pp. 129-141. DOI: 10.1007/978-3-319-06590-8\_11
- [154] Bachschmid, N., Pesatori, E., Bistolfi, S., Chatterton, S. (2015) **Blade vibration measurements and excitation force evaluation**. Mechanisms and Machine Science, 21, pp. 65-78. DOI: 10.1007/978-3-319-06590-8\_6

- [155] Vania, A., Pennacchi, P., Chatterton, S. (2015) **Successful elimination of a pad-fluttering phenomenon**. Mechanisms and Machine Science, 21, pp. 1033-1043. DOI: 10.1007/978-3-319-06590-8\_84
- [156] Chatterton, S., Pennacchi, P., Vania, A., Borghesani, P. (2015) **A novel procedure for the selection of the frequency band in the envelope analysis for rolling element bearing diagnostics**. Mechanisms and Machine Science, 21, pp. 421-430. DOI: 10.1007/978-3-319-06590-8\_33
- [157] Chatterton, S., Pennacchi, P., Vania, A., Borghesani, P. (2015) **Tracking the damage level in rolling element bearings**. Mechanisms and Machine Science, 21, pp. 399-407. DOI: 10.1007/978-3-319-06590-8\_31
- [158] Chatterton, S., Pennacchi, P., Vania, A., Borghesani, P. (2015) **Use of chaos in the diagnostics of rolling element bearings**, Mechanisms and Machine Science, 21, pp. 485-495. DOI: 10.1007/978-3-319-06590-8\_39
- [159] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, F. Cangioli (2015). **An Experimental Study Of Nonlinear Oil-Film Forces In A Tilting-Pad Journal Bearing**. in Proceedings of the ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2015 August 2-5, 2015, Boston, Massachusetts, USA, doi:10.1115/DETC2015-46601
- [160] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, F. Cangioli (2015). **Behavior Of A Tilting-Pad Journal Bearing With Different Load Directions**. in Proceedings of the ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2015 August 2-5, 2015, Boston, Massachusetts, USA, doi:10.1115/DETC2015-46598
- [161] S. Chatterton, P. Pennacchi, A. Vania, P.V. Dang, F. Cangioli (2015). **Diagnostics Of Rolling Element Bearings By Means Of The Higuchy Fractal Dimension** in Proceedings of the ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2015 August 2-5, 2015, Boston, Massachusetts, USA, doi: 10.1115/DETC2015-46609
- [162] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, F. Cangioli (2015). **Eccentricity Measurements on a Five-pad Tilting Pad Journal Bearing** in Proceedings of The 14th IFToMM World Congress, Taipei, Taiwan, October 25-30, 2015, DOI Number: 10.6567/IFTToMM.14TH.WC.OS14.020
- [163] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, F. Cangioli (2015). **Investigation of Load Direction on a Five-Pad Tilting Pad Journal Bearing with Variable Clearance** in Proceedings of The 14th IFToMM World Congress, Taipei, Taiwan, October 25-30, 2015, DOI Number: 10.6567/IFTToMM.14TH.WC.OS14.021
- [164] M. Portentoso, P. Pennacchi, S. Chatterton, (2015) **Dynamic characterization of two structures realized with different technology: metalworking vs. metal foam sandwiches** in Proceedings of International Conference on Structural Engineering Dynamics ICEDyn 2015, Lagos, Portugal, 22-24 June 2015.
- [165] P.V. Dang, S. Chatterton, P. Pennacchi, A. Vania, F. Cangioli, (2015) **Analysis of Dynamic Behavior of a Non-Nominal Five-Pad Tilting Pad Journal Bearing**, Ecotrib 2015, Lugano, Switzerland, 3-5 June 2015, ISBN: 9788890767036
- [166] F. Cangioli, P. Pennacchi, A. Vania; S. Chatterton, P.V. Dang, (2016), **Development Of An Active Control System For Rotating Machinery By Means Of Tilting Pad Journal Bearings**, in Proceedings of ASME Turbo Expo 2016: Turbomachinery Technical Conference and Exposition GT2016, Seoul, South Korea, 13-17 June 2016.
- [167] F. Cangioli, P. Pennacchi, A. Vania; S. Chatterton, P.V. Dang, (2016), **Analysis Of The Dynamic Behavior Of Two High-Pressure Turbines For The Possible Detection Of Rub Symptoms**, in Proceedings of ASME Turbo Expo 2016: Turbomachinery Technical Conference and Exposition GT2016, Seoul, South Korea, 13-17 June 2016.
- [168] F. Cangioli, P. Pennacchi, A. Vania; S. Chatterton, P.V. Dang, (2016), **Behavior Of Tilting-Pad Journal Bearings With Large Machining Error On Pads**, in Proceedings of ASME Turbo Expo 2016: Turbomachinery Technical Conference and Exposition GT2016, Seoul, South Korea, 13-17 June 2016.
- [169] F. Cangioli, S. Chatterton, P. Pennacchi, E. Sabbioni (2016), **Dynamic Characterization of Milling Plant Columns**. DOI:10.1007/978-3-319-30084-9\_29. pp.311-321. In Rotating Machinery, Hybrid Test Methods, Vibro-Acoustics & Laser Vibrometry, Volume 8 - ISBN:9783319300832. In CONFERENCE PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL MECHANICS SERIES - ISSN:2191-5644
- [170] S. Chatterton, P.V. Dang, P. Pennacchi, A. De Luca Andrea, F. Flumian (2016), **Comportamento sperimentale di cuscinetti portanti lubrificati operanti a bassi numeri di Sommerfeld**, In Atti del 5° Workshop dell'Associazione Italiana di Tribologia AIT "Tribologia e Industria" - ISBN:9788890818523

- [171] S. Chatterton, P.V. Dang, P. Pennacchi, A. Vania, F. Cangioli, P. Lombardi, L. Gorasso (2016), **Analisi teorica e sperimentale dell'effetto della direzione del carico in cuscinetti a pattini oscillanti reali**. In Atti del 5° Workshop dell'Associazione Italiana di Tribologia AIT "Tribologia e Industria" - ISBN:9788890818523
- [172] G. Diana, F. Cangioli, M. Carnevale, S. Chatterton, L. Mazzola, P. Pennacchi, S. Bruni, D. Marinis, M. Antonelli, R. Desideri, C. Goracci, L. Labbadia, (2016) **Condition monitoring of the rolling stock and infrastructure: results of a pilot project**. In Proceedings of 11th World Congress on Railway Research WCRR2016, Milano, Italy, 29/5/2016 - 2/6/2016.
- [173] P. Pennacchi, S. Chatterton, D. Marinis, A. Didonato (2016) **Diagnostics Of Traction System Of Very High Speed trains: Experimental Results And Selection Of The Most Suitable Signal Processing Techniques**. In Proceedings of 11th World Congress on Railway Research WCRR2016, Milano, Italy, 29/5/2016 - 2/6/2016
- [174] S. Chatterton, P.V. Dang, P. Pennacchi, A. De Luca, F. Flumian (2016), **Experimental evidences of a cylindrical journal bearing operating at very low Sommerfeld numbers**. In Proceedings of the 11th, VIRM 11 - Vibrations in Rotating Machinery, Manchester UK, 13-15/09/2016, ISBN: 978-0-9572374-8-3, pp. 455-463.
- [175] A. Vania, P. Pennacchi, S. Chatterton, (2016), **Model-based simulation of an oil-whip phenomenon occurred in a journal bearing of a power unit generator**. In Proceedings of the 11th, VIRM 11 - Vibrations in Rotating Machinery, Manchester UK, 13-15/09/2016, ISBN: 978-0-9572374-8-3, pp. 445-454.
- [176] F. Cangioli, P. Pennacchi, G. Riboni, G. Vannini, L. Ciuchicchi, A. Vania, S. Chatterton, (2017) **Sensitivity analysis of the one-control volume bulk-flow model for a 14 teeth-on-stator straight-through labyrinth seal**, In Proceedings of the ASME Turbo Expo 2017: Turbomachinery Technical Conference and Exposition, GT 2017, Charlotte, NC USA, 27-29/6/2017, doi: 10.1115/GT201763014
- [177] F. Cangioli, P. Pennacchi, G. Vannini, L. Ciuchicchi, A. Vania, S. Chatterton, P.V. Dang (2017) **On the thermodynamic process in the bulk-flow model for the estimation of the dynamic coefficients of labyrinth seals**, In Proceedings of the ASME Turbo Expo 2017: Turbomachinery Technical Conference and Exposition, GT 2017, Charlotte, NC USA, 27-29/6/2017, doi: 10.1115/GT201763012
- [178] P. Pennacchi, F. Cangioli, S. Chatterton, A. Vania, (2017) **Accurate modelling of bearings and seals for rotating machines for power generation**, In Proceedings of 6th ISJPPE, The 6th International Symposium on Jet Propulsion and Power Engineering, Beijing, REPUBBLICA POPOLARE CINESE, 16-18/10/2017.
- [179] F. Cangioli, M. Carnevale, S. Chatterton, A. De Rosa, L. Mazzola, (2017) **Experimental results on condition monitoring of railway infrastructure and rolling stock**, Proceedings of the First World Congress on Condition Monitoring (WCCM 2017), 13-16 June 2017, ILEC Conference Centre, London, UK.
- [180] S. Chatterton, P.V. Dang, P. Pennacchi, A. Vania (2017) **Behaviour of tilting-pad journal bearings in case of large manufacturing errors**, Mechanisms and Machine Science pp 221-227, doi: 10.1007/978-3-319-48375-7\_24.
- [181] Pennacchi P., Chatterton S., Vania A., Xu L., (2018) **Diagnostics of Bearings in Rolling Stocks: Results of Long Lasting Tests for a Regional Train Locomotive**, Mechanisms and Machine Science, vol. 61 pp 321-335, doi: 10.1007/978-3-319-99268-6\_23.
- [182] Chatterton S., Pennacchi P., Vania A., (2018) **Optimized tribo-design of lubricants for power loss reduction in journal bearings used in process industry**, Mechanisms and Machine Science, vol. 60 pp 437-448 doi: 10.1007/978-3-319-99262-4\_32.
- [183] Vania A., Pennacchi P., Chatterton S., Cangioli F., (2018) **Intermittent Rub Caused by Carbonized Oil in a Steam Turbine**, Mechanisms and Machine Science, vol. 61 pp 290-304 doi: 10.1007/978-3-319-99268-6\_21.
- [184] Cangioli F., Vannini G., Pennacchi P., Ciuchicchi L., Nettis L., Chatterton S., Vania A. (2018) **Development and validation of a bulk-flow model for staggered labyrinth seals**, Mechanisms and Machine Science, vol. 60 pp 471-490 doi: 10.1007/978-3-319-99262-4\_34.
- [185] Vania A., Pennacchi P., Chatterton S., Cangioli F., (2018) **Special Signal Processing Tools for the Experimental Data of Spiral Vibrations**, Mechanisms and Machine Science, vol. 61 pp 305-320 doi: 10.1007/978-3-319-99268-6\_22.

- [186] Chatterton S., Pennacchi P., Vania A., (2018) **Investigation of cooled pads for tilting-pad bearings**, Mechanisms and Machine Science, vol. 60 pp 505-519 doi: 10.1007/978-3-319-99262-4\_36.
- [187] Pennacchi P., Cangioli F., Vania A., Chatterton S., (2018) **Numerical modeling of spiral vibrations caused by the presence of brush seals**, Mechanisms and Machine Science, vol. 60 pp 449-470 doi: 10.1007/978-3-319-99262-4\_33.
- [188] Pennacchi P., Chatterton S., Vania A., (2018) **Effects of severe operating conditions (high loads/low rotational speeds) on sleeve journal bearings**, Mechanisms and Machine Science, vol. 60 pp 491-504 doi: 10.1007/978-3-319-99262-4\_35.
- [189] Chatterton S., Pennacchi P., (2018) **Condition monitoring and diagnostics of wind turbine power train**, Structural Control and Fault Detection of Wind Turbine Systems, IET The Institution of Engineering and Technology, London, pp 237-251 doi: 10.1049/PBPO117E\_ch10.
- [190] Chatterton S., Pennacchi P., Vania A. (2018) **Ottimizzazione delle Caratteristiche Reologiche di Lubrificanti per l'Industria di Processo Finalizzati alla Riduzione delle Perdite di Potenza**, Atti del 6° Workshop dell'Associazione Italiana di Tribologia A.I.T., pp 1-6.
- [191] Vania A., Pennacchi P., Chatterton S., Cangioli F., (2018) **Rotor-to-seal rubs in a steam turbine caused by deposits of carbonized oil**, Proceedings of ISMA 2018 - International Conference on Noise and Vibration Engineering and USD 2018 - International Conference on Uncertainty in Structural Dynamics, pp. 1921-1934.
- [192] Pennacchi P., Chatterton S., Vania A., (2018) **Development and testing of health monitoring of the bearings of traction system of a regional train locomotive during commercial service**, Proceedings of ISMA 2018 - International Conference on Noise and Vibration Engineering and USD 2018 - International Conference on Uncertainty in Structural Dynamics, pp. 839-846.
- [193] Cangioli F., Pennacchi P., Vania A., Chatterton S., (2018) **Numerical Modeling of Thermally-Induced Vibration in Rotor Caused by Light-Rub Against Brush Seal**, Proceedings Of The Asme Turbo Expo: Turbomachinery Technical Conference And Exposition, 2018, VOL 7A: Structures and Dynamics, pp. 1-11, doi: 10.1115/GT201875042.
- [194] Cangioli F., Vannini G., Pennacchi P., Ciuchicchi L., Nettis L., Chatterton S., (2018) **Rotordynamic Characterization of a Staggered Labyrinth Seal: Experimental Test Data and Comparison With Predictions**, Proceedings Of The Asme Turbo Expo: Turbomachinery Technical Conference And Exposition, 2018, VOL 7B: Structures and Dynamics, pp. 1-13, doi: 10.1115/GT2018-75072.
- [195] Cangioli F., Chatterton S., Pennacchi P., Nettis L., Ciuchicchi L., Vannini G., Vania A., (2018) **Rotordynamic Characterization of Labyrinth Seals in Steam Turbines: Effects of Thermal and Mechanical Loads**, Proceedings Of The Asme Turbo Expo: Turbomachinery Technical Conference And Exposition, 2018, VOL 7B: Structures and Dynamics, pp. 1-10, doi: 10.1115/GT2018-75009.
- [196] Vania A., Pennacchi P., Chatterton S., Cangioli F., (2018) **Unconventional Techniques for the Analysis of Experimental Spiral Vibrations**, Proceedings of The Asme Turbo Expo: Turbomachinery Technical Conference And Exposition, 2018, VOL 7A: Structures and Dynamics, pp. 1-10, doi: 10.1115/GT2018-75005.
- [197] Dang P.V., Chatterton S., Pennacchi P., (2018) **Dynamic Characteristics of a Non-symmetric Tilting Pad Journal Bearing**, In: AETA 2018 - Recent Advances in Electrical Engineering and Related Sciences: Theory and Application. AETA 2018. Lecture Notes in Electrical Engineering, vol 554. Springer, Cham, doi: 10.1007/978-3-030-14907-9\_64
- [198] Dang P.V., Chatterton S., Pennacchi P., (2018) **Behavior of Five-Pad Tilting-Pad Journal Bearings with Different Pivot Stiffness**, In: AETA 2018 - Recent Advances in Electrical Engineering and Related Sciences: Theory and Application. AETA 2018. Lecture Notes in Electrical Engineering, vol 554. Springer, Cham, doi: 10.1007/978-3-030-14907-9\_63
- [199] Dang P.V., Chatterton S., Pennacchi P., (2019) **Static and dynamic behaviors of a cylindrical hydrodynamic journal bearing operating at very low Sommerfeld numbers**, Mechanisms and Machine Science, vol. 73, pp 3835-3844 doi: 10.1007/978-3-030-20131-9\_380.
- [200] Xu L., Chatterton S., Pennacchi P., (2019) **Condition Monitoring of Rolling Element Bearing Based on Moving Average Cross-Correlation of Power Spectral Density**, Mechanisms and Machine Science, vol. 73, pp 3411-3418 doi: 10.1007/978-3-030-20131-9\_336.

- [201] Chatterton S., Vania A., Pennacchi P., (2019) **Simulation of Tilting-pad Journal Bearing Equipped with Cooled Pads**, Mechanisms and Machine Science, vol. 73, pp 3805-3814 doi: 10.1007/978-3-030-20131-9\_377.
- [202] Pennacchi, P., Chatterton, S., Vania, A. (2019). **Design and testing of a tilting-pad journal bearing with additive manufacturing cooled pads**. 7th European Conference on Tribology - ECOTRIB 2019, Vienna, Austria, 12/06/2019-14/06/2019
- [203] Pennacchi, P., Chatterton, S., Vania, A. (2019). **Optimization of the rheological characteristics of lubricants for reducing power losses**. 7th European Conference on Tribology - ECOTRIB 2019, Vienna, Austria, 12/06/2019-14/06/2019
- [204] Xu, L.; Chatterton, S.; Pennacchi, P. (2020). **A tachless order tracking method based on inverse short-time Fourier transform and singular value decomposition**. Proceedings of ISMA 2020 International Conference on Noise and Vibration Engineering and USD2020 International Conference on Uncertainty in Structural Dynamics, pp.559-568. Virtuell, Belgium, 7/9/2020-9/9/2020.
- [205] Chatterton, S.; Pennacchi, P.; Vania, A.; Hassini, M. A.; Kuczkowiak, A. (2020). **Effect of scratches on a tilting-pad journal bearing**. ASME Turbo Expo 2020: Turbomachinery Technical Conference and Exposition, GT 2020, Londra. DOI:10.1115/GT2020-14700.
- [206] Tayyab, S. M.; Asghar, E.; Pennacchi, P.; Chatterton, S. (2020). **Intelligent fault diagnosis of rotating machine elements using machine learning through optimal features extraction and selection**. Procedia Manufacturing, 30th International Conference on Flexible Automation and Intelligent Manufacturing, FAIM 2021, Atene. DOI:10.1016/j.promfg.2020.10.038.
- [207] Massocchi, D.; Lattuada, M.; Assanelli, G.; Pennacchi, P.; Chatterton S. (2020). **Nuove metodologie di testing a supporto dello sviluppo di oli lubrificanti “energy-saving” per applicazioni industriali**. 7° Workshop AIT - Tribologia e Industria, Pisa 4/6/2020 - 4/6/2020.
- [208] Chatterton, S.; Pennacchi, P.; Vania, A. (2020). **On the effects of a shaft crack propagation on the dynamic behavior of a steam turbine**. ASME Turbo Expo 2020: Turbomachinery Technical Conference and Exposition, GT 2020, Londra., DOI:10.1115/GT2020-14207.
- [209] Xu, L.; Chatterton, S.; Pennacchi, P. (2020). **An optimal frequency band selection for bearing fault diagnosis based on squared envelope analysis**. 12th International Conference on Vibrations in Rotating Machinery Institution of Mechanical Engineers, London, 14/10/2020-15/10/2020 DOI:10.1201/9781003132639.
- [210] Mazzola, M.; Bulleri, A.; Pennacchi, P.; Chatterton, S., (2020). **LM9000 free power turbine: Advanced test bench**. ASME Turbo Expo 2020: Turbomachinery Technical Conference and Exposition, GT 2020, Londra., DOI: DOI:10.1115/GT2020-152.
- [211] Gao, S.; Chatterton, S.; Pennacchi, P. (2020). **Kinematics and Thermal Analysis in Large-scale Angular Contact Ball Bearings**. 7° Workshop AIT - Tribologia e Industria, Pisa 4/6/2020 - 4/6/2020.
- [212] Pennacchi, P.; Chatterton, S.; Vania, A. (2020) **Diagnostics of Roller Bearings Faults During Long-Lasting Tests**. Mechanisms and Machine Science, pp.687-698. DOI:10.1007/978-3-030-55807-9\_77.
- [213] Brunetti, M.; Chatterton, S.; Toscani, N.; Mauri, M.; Carmeli, M.; Castelli Dezza F. (2020). **Wireless Power Transfer with Temperature Monitoring Interface for Helicopter Rotor Blade Ice Protection**. American Institute of Aeronautics and Astronautics - Proceedings of Propulsion Energy Forum, 24/8/2020 - 26/8/2020, DOI:10.2514/6.2020-3569.
- [214] Pennacchi, P.; Ferraro, R.; Chatterton, S.; Checcacci, D., (2020). **A model-based prediction of balancing behavior of rotors above the speed range in available balancing systems**. ASME Turbo Expo 2020: Turbomachinery Technical Conference and Exposition, GT 2020, Londra., DOI: DOI:10.1115/GT2020-15136.
- [215] Gao, S.; Chatterton, S.; Pennacchi, P. (2021). **A nonlinear dynamic model for the skidding and the over-skidding in industry scale angular contact ball bearing**. 7th International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO), Guangzhou, China, 11-13 June 2021, DOI:10.1109/CMMNO53328.2021.9467655.
- [216] Tayyab, S. M.; Pennacchi, P.; Chatterton, S.; Asghar, E. (2021). **Intelligent defect diagnosis of spiral bevel gears under different operating conditions using ann and knn classifiers**. ASME International Mechanical Engineering Congress and Exposition IMECE, DOI:10.1115/IMECE2021-70016.



- [217] Chatterton, S.; Pennacchi, P.; Vania, A. (2021). **An unconventional method for the diagnosis and study of generator rotor thermal bows**. ASME Turbo Expo 2021: Turbomachinery Technical Conference and Exposition, GT 2021, DOI:10.1115/GT2021-60036.
- [218] Chatterton, S.; Pennacchi, P.; Vania, A.; Dang, P. V. (2021). **Optimization of an oil film journal bearing for temperature reduction**. ASME Turbo Expo 2021: Turbomachinery Technical Conference and Exposition, DOI:10.1115/GT2021-60159. pp.1-9.
- [219] Xu, L.; Chatterton, S.; Pennacchi, P. (2021). **A Rolling Element Bearing Diagnosis Method Based on Singular Value Decomposition and Squared Envelope Spectrum**. 7th International Conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO), Guangzhou, China, 11-13 June 2021, DOI:10.1109/CMMNO53328.2021.9467527