

# **8th IFToMM International Conference on Rotor Dynamics 2010**

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**Volume 1 of 2**

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September 13, 2010 (Monday)

**[MoA1] Condition Monitoring, Fault Diagnostics and Prognostics I**

<b>Room A</b>	<b>Session Chair Time</b>	A. Parey (Indian Institute of Technology Indore, India) 10:30-12:10
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September 13, 2010 (Monday)

<b>MoA1-1</b>	<b>10:30-10:55</b>	<b>Alternative Approaches to Design Balancing Filters for the Improvement of Model-Based Fault Diagnosis</b> P. Beckerle, H. Schaede, and S. Rinderknecht, (Technische Universität Darmstadt, Germany)
<b>MoA1-2</b>	<b>10:55-11:20</b>	<b>Error Analysis of a New Cylindrical Capacitive Sensor for Measuring Five-Dimensional-Motions of a Rotor</b> H.-J. Ahn (Soongsil University, Korea) and S. Jeon (University of Waterloo, Canada)
<b>MoA1-3</b>	<b>11:20-11:45</b>	<b>Continuous Wavelet Time-Division Scale Level Moment Quantitative Approach for Vibration Analysis of Rotating Machinery</b> T. Yang, F. Chen, Y. Zhang, G. Wei, S. Huang, and P. Zhang (Huazhong University of Science and Technology, China)
<b>MoA1-4</b>	<b>11:45-12:10</b>	<b>Condition Monitoring System</b> J. S. Rao, K. Swaroop, N. Rangarajan, and S. Mantrawadi (Altair Engineering India Pvt Ltd, India)



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**September 13, 2010 (Monday)**

**[MoB1] Dynamic Analysis and Stability I**

<b>Room B</b>	<b>Session Chair Time</b>	W. J. Chen (Eigen Technologies, Inc., United States) 10:30-12:35
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|---------------|--------------------|---|
| <b>MoB1-1</b> | <b>10:30-10:55</b> | <b>Comparative Study on Frequency-speed Diagrams in Rotating Machinery</b> ***** *<br>C.-W. Lee (KAIST, Korea)  |
| <b>MoB1-2</b> | <b>10:55-11:20</b> | <b>Influence of Tilting Pad Journal Bearing Models on Rotor Stability Estimation</b> ***** (*<br>C. H. Cloud (BRG Machinery Consulting, United States), E. H. Maslen (James Madison University, United States), and L. E. Barrett (University of Virginia, United States) |
| <b>MoB1-3</b> | <b>11:20-11:45</b> | <b>The Application of Fuzzy Random Finite Element Method on Rotor Dynamics</b> *****))<br>H. Yao, Q. Han, and B. Wen (Northeastern University, China)   |
| <b>MoB1-4</b> | <b>11:45-12:10</b> | <b>Rotordynamic Characteristics of Large Locomotive Turbochargers</b> ***** \$<br>W. J. Chen (Eigen Technologies, Inc., United States)  |
| <b>MoB1-5</b> | <b>12:10-12:35</b> | <b>Dynamic Analysis and Control of Rigid Rotor Supported by Noncollocated Active Magnetic Bearings</b> ******,<br>H.-W. Jeon, C.-W. Lee (KAIST, Korea), and S.-J. Kim (Korea Institute of Science and Technology, Korea)  |



September 13, 2010 (Monday)

[MoC1] Bearings and Seals I

<b>Room C</b>	<b>Session Chair</b>	C. H. Kim (Korea Institute of Science and Technology, Korea)
	<b>Time</b>	10:30-12:35

September 13, 2010 (Monday)

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| <b>MoC1-1</b> | <b>10:30-10:55</b> | <p><b>Stability Analysis of Foil Journal Bearings Considering Coulomb Friction<sup>****+</sup></b></p> <p>D. H. Lee (University of Texas at Arlington, United States), Y. C. Kim (Korea Institute of Machinery and Materials, Korea), and K. W. Kim (KAIST, Korea)</p>  |
| <b>MoC1-2</b> | <b>10:55-11:20</b> | <p><b>Nonlinear Characterization of an Elastohydrodynamic Point Contact under Harmonic Loading<sup>****, %</sup></b></p> <p>F. Nonato (Schaeffler Brasil Ltda, Brazil) and K. L. Cavalca (University of Campinas, Brazil)</p>   |
| <b>MoC1-3</b> | <b>11:20-11:45</b> | <p><b>Oil Induced Instability: Analytic Study and Experimental Verification on Flexible Rotor Supported by a Journal-Bearing at One End<sup>****, +</sup></b></p> <p>J.-C. Luneno, J.-O. Aidanpää (Luleå University of Technology, Sweden), and R. K. Gustavsson (Vattenfall Research and Development AB, Sweden)</p> |
| <b>MoC1-4</b> | <b>11:45-12:10</b> | <p><b>Non-Synchronous Tilting Pad Bearing Characteristics<sup>****-)</sup></b></p> <p>J. Schmied (DELTA JS AG, Switzerland), A. Fedorov, and B. S. Grigoriev (Saint-Petersburg State Polytechnical University, Russian Federation)</p>  |
| <b>MoC1-5</b> | <b>12:10-12:35</b> | <p><b>Asymmetrical Heating in a Tilting Pad Journal Bearing Causing Shaft Bending<sup>****%\$%</sup></b></p> <p>B. S. Grigoriev, A. Fedorov (Saint-Petersburg State Polytechnical University, Russian Federation), and J. Schmied (DELTA JS AG, Switzerland)</p>  |



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**September 13, 2010 (Monday)**

**[MoD1] Modal Testing and Identification**

<b>Room</b> <b>D</b>	<b>Session Chair</b>	I. Bucher (Technion, Israel)
	<b>Time</b>	10:30-13:00

<b>MoD1-1</b>	<b>10:30-10:55</b>	<b>Evaluation of Damping Ratio of Oil-Film Bearing System by Using Modal Open Loop Transfer Function</b>
		H. Fujiwara, O. Matsushita, and H. Oyama (National Defense Academy, Japan)
<b>MoD1-2</b>	<b>10:55-11:20</b>	<b>Experimental Evaluation of Error Propagation in Rotor-Model-Based Identification of Foundations in Rotating Machinery</b>
		L. U. Medina (Universidad Simón Bolívar, Venezuela), N. Feng, and E. J. Hahn (The University of New South Wales, Australia)
<b>MoD1-3</b>	<b>11:20-11:45</b>	<b>Real Time Decomposition of Disk Vibrations</b>
		I. Bucher (Technion, Israel)
<b>MoD1-4</b>	<b>11:45-12:10</b>	<b>Co-Variance Driven Stochastic Subspace Identification Approach for Rotordynamics</b>
		M. Karlsson, H. Samuelsson (Lloyd's Register ODS, Sweden), and M. Karlberg (Luleå University of Technology, Sweden)
<b>MoD1-5</b>	<b>12:10-12:35</b>	<b>Modeling and Analysis of Rotor with Laminated Core in Electric Machine</b>
		Y.-H. Seo, J.-M. Lee, W.-H. Kim and S.-M. Lee (Hyundai Heavy Industries, Korea)
<b>MoD1-6</b>	<b>12:35-13:00</b>	<b>Estimation of Stator Windings Modal Parameters in Power Generation Turboset</b>
		T. Barszcz, J. Urbanek, and T. Uhl (Akademia Górniczo-Hutnicza University of Science and Technology, Poland)



September 13, 2010 (Monday)

September 13, 2010 (Monday)

**[MoE1] Special and General Problems of Rotating Machines I**

<b>Room E</b>	<b>Session Chair Time</b>	K. L. Cavalca (University of Campinas, Brazil) 10:30-13:00
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| <b>MoE1-1</b> | <b>10:30-10:55</b> | <p><b>Validation of a 3D Contact Algorithm for the Study of Blade-Tip/Casing Contacts in Turbomachines</b></p> <p>A. Batailly (McGill University, Canada), B. Magnain (ENSIB-Institut PRISME, France), M. Legrand, and C. Pierre (McGill University, Canada)</p> |
| <b>MoE1-2</b> | <b>10:55-11:20</b> | <p><b>Dynamics of Flexible Rotors Supported on Elastomer Bearings</b></p> <p>A. Scholz, R. Liebich (Berlin Institute of Technology, Germany), G. Paysan, and R. Blutke (Rolls-Royce Deutschland Limited &amp; Co KG, Germany)</p>                                |
| <b>MoE1-3</b> | <b>11:20-11:45</b> | <p><b>Studies on Dynamical State Stability of the Aero-engine Rotor Joint Structures</b></p> <p>S. Liu, Y. Ma, and J. Hong (Beijing University of Aeronautics and Astronautics, China)</p>   |
| <b>MoE1-4</b> | <b>11:45-12:10</b> | <p><b>A Complete Rotordynamic Analysis of a Rotor-Disk System Using Finite Element Method</b></p> <p>J. Chaudhry, M. Wagner, F. He, A. Younan, T. Dimond, J. Cao, and P. Allaire (University of Virginia, United States)</p>                                     |
| <b>MoE1-5</b> | <b>12:10-12:35</b> | <p><b>Complex Response of a Rotor-Bearing-Foundation System</b></p> <p>P. M. Santana, K. L. Cavalca, E. P. Okabe, and T. H. Machado (University of Campinas, Brazil)</p>   |
| <b>MoE1-6</b> | <b>12:35-13:00</b> | <p><b>Rotor Dynamics in Dimensionless Quantities Part I - Static Unbalance</b></p> <p>A. Zhivotov and Y. Zhivotov (Yuzhnoye State Design Office, Ukraine)</p>  |



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September 13, 2010 (Monday)

**[MoA2] Condition Monitoring, Fault Diagnostics and Prognostics II**

<b>Room A</b>	<b>Session Chair</b>	A. S. Lee (Korea Institute of Machinery and Materials, Korea)
	<b>Time</b>	15:10-16:50

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- MoA2-1    15:10-15:35    Development of an Efficient Simulation Model for Rotors in Hydrodynamic Bearings Including Fluid-Induced Instability and Gyroscopic Effects** ,  
B. Riemann (Technische Universität Darmstadt, Germany), H. F. D. Castro, K. L. Cavalca (University of Campinas, Brazil), R. Nordmann, and S. Rinderknecht (Technische Universität Darmstadt, Germany)
- MoA2-2    15:35-16:00    Fatigue Analysis of a Gas Turbine Rotating Blade with Thermal Barrier Coating** &\$  
R. Garcia-Illescas and Z. Mazur C. (Mexican Electric Research Institute, Mexico)
- MoA2-3    16:00-16:25    Modified Empirical Mode Decomposition Process for Improved Fault Diagnosis** &%  
A. Parey and R. B. Pachori (Indian Institute of Technology Indore, India)
- MoA2-4    16:25-16:50    New Perspectives of Oil Whirl and Oil Whip Mechanisms in Rotating Machinery** &%  
R. Subbiah (Siemens Energy, United States)



September 13, 2010 (Monday)

**[MoB2] Nonlinear Phenomena I**

<b>Room B</b>	<b>Session Chair Time</b>	J. Jiang (Xi'an Jiaotong University, China) 15:10-16:25
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September 13, 2010 (Monday)

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| <b>MoB2-1</b> | <b>15:10-15:35</b> | <b>Transient Rubs in Turbomachinery and Their Impact on Revolution Speed</b><br>O. M. V. Bargaen, P. Kalinowski, and R. Liebich (Technische Universität Berlin, Germany)   |
| <b>MoB2-2</b> | <b>15:35-16:00</b> | <b>Unbalance Identification in Nonlinear Rotors</b><br>T. S. Morais, V. Steffen Jr (Federal University of Uberlandia, Brazil), J. Mahfoud, and J. D. Hagopian (Institut National de Sciences Appliquées de Lyon, France) |
| <b>MoB2-3</b> | <b>16:00-16:25</b> | <b>Stability Analysis of Rotors Supported by Floating Ring Bearings</b><br>A. Boyaci, W. Seemann, and C. Proppe (Karlsruhe Institute of Technology, Germany)   |



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**September 13, 2010 (Monday)**

**[MoC2] (Structured Session) Cracks in Rotating Machinery Components I**

<b>Room C</b>	<b>Session Organizer</b>	N. Bachschmid (Politecnico di Milano, Italy)
	<b>Session Chair</b>	T. Inoue (Nagoya University, Japan)
	<b>Time</b>	15:10-16:25

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<b>MoC2-1</b>	<b>15:10-15:35</b>	<b>Crack Detection in a Steam Turbine: A Case History</b> & , A.Vania and N.Bachschmid (Politecnico di Milano, Italy)
<b>MoC2-2</b>	<b>15:35-16:00</b>	<b>On the Evolution of Vibrations in Cracked Rotors</b> & * N. Bachschmid, P. Pennacchi, and E. Tanzi (Politecnico di Milano, Italy)
<b>MoC2-3</b>	<b>16:00-16:25</b>	<b>Crack Detection Using Reverse MISO Technique: Nonlinear Analysis</b> & * S.-W. Kang and C.-W. Lee (KAIST, Korea)



September 13, 2010 (Monday)

**[MoD2] Special and General Problems of Rotating Machines II**

<b>Room D</b>	<b>Session Chair Time</b>	J. T. Sawicki (Cleveland State University, United States) 15:10-16:50
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September 13, 2010 (Monday)

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| <b>MoD2-1</b> | <b>15:10-15:35</b> | <b>Torsional Stiffness Modeling and Vibration Simulation of 2-Pole Turbogenerator Rotor</b><br>B. Irwanto and T. Prothmann (Alstom, Switzerland)                                   |
| <b>MoD2-2</b> | <b>15:35-16:00</b> | <b>Study on Torsional Vibration of Turbine Generator Shafts Owing to Network Disturbance</b><br>D. Jiang, C. Liu, and J. Chen (Tsinghua University, China)                         |
| <b>MoD2-3</b> | <b>16:00-16:25</b> | <b>Dynamics of Model Bladed Disc with Friction Elements for Vibration Suppression</b><br>L. Pesek, L. Pust, F. Vaněk, J. Veselý, and J. Cibulka (IT AS CR, v.v.i., Czech Republic) |
| <b>MoD2-4</b> | <b>16:25-16:50</b> | <b>A New Way of Writing Motion Equations in Rotating Machines by Translation into the Angular Domain</b><br>A. Bourdon, H. André, and D. Rémond (Université de Lyon, France)       |



*September 12~15, 2010 / KIST, Seoul, Korea*

**September 13, 2010 (Monday)**

**[MoE2] (Structured Session) Design and Control of Magnetic Bearings**

<b>Room E</b>	<b>Session Organizer &amp; Chair Time</b>	P. Allaire (University of Virginia, United States) 15:10-16:50
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| <b>MoE2-1</b> | <b>15:10-15:35</b> | <b>Characterization and Commissioning of a Centrifugal Compressor Surge Control Test Rig</b> ***** \$\$<br>K. T. Lim, S. Y. Yoon, C. P. Goynes, Z. Lin, and P. Allaire (University of Virginia, United States)   |
| <b>MoE2-2</b> | <b>15:35-16:00</b> | <b>Automated Design Optimization of E-Core Active Magnetic Bearings</b> ***** \$+<br>T. Dimond (University of Virginia, United States), T. Meriwether (National Ground Intelligence Center, United States), J. Kaplan, R. Rockwell, and P. Allaire (University of Virginia, United States) |
| <b>MoE2-3</b> | <b>16:00-16:25</b> | <b>Smart Properties of AMB Supported Machines for Rotor Crack Detection: Experimental and Analytical Study</b> ***** %<br>Z. Kulesza (Bialystok University of Technology, Poland), J. T. Sawicki, and D. L. Storzhev (Cleveland State University, United States)                           |
| <b>MoE2-4</b> | <b>16:25-16:50</b> | <b>Analytical Methods of Sensors and Actuators Relocation in Vibration Control Systems</b> ***** &&<br>Z. Gosiewski, Z. Kulesza, and F. Siemieniako (Bialystok University of Technology, Poland)   |





*September 12~15, 2010 / KIST, Seoul, Korea*

**September 14, 2010 (Tuesday)**

**[TuB1] Dynamic Analysis and Stability II**

<b>Room B</b>	<b>Session Chair</b>	C. H. Cloud (BRG Machinery Consulting, United States)
	<b>Time</b>	10:10-12:15

<b>TuB1-1</b>	<b>10:10-10:35</b>	<b>Rotordynamic Linear and Nonlinear Stability Characteristics of a Medium-Size High-Speed Turbocharger<sup>*****</sup> * &amp;</b> A. S. Lee and B. O. Kim (Korea Institute of Machinery and Materials, Korea)
<b>TuB1-2</b>	<b>10:35-11:00</b>	<b>A Parametric Study on the Stability and Disturbance Rejection of Magnetically-Levitated Flywheel Energy Storage Systems According to Inertia Ratios<sup>*****</sup> * +</b> S.-Y. Yoo (Chungnam National University, Korea), W.-R. Lee, Y.-C. Bae (Korea Electric Power Research Institute, Korea), and M. Noh (Chungnam National University, Korea)
<b>TuB1-3</b>	<b>11:00-11:25</b>	<b>Rotordynamic Performance Measurement of an Oil-Free Turbocompressor Supported on Gas Foil Bearings<sup>*****</sup> +&amp;</b> Y.-B. Lee, S.-B. Cho, T.-Y. Kim, C. H. Kim, and T. H. Kim (Korea Institute of Science and Technology, Korea)
<b>TuB1-4</b>	<b>11:25-11:50</b>	<b>A Parametric Study of the Unbalance Response of an Aero-Engine<sup>*****</sup> +-</b> P. M. Hai and P. Bonello (The University of Manchester, United Kingdom)
<b>TuB1-5</b>	<b>11:50-12:15</b>	<b>A New Dimensionless Stability Map of Rotor Bearing System Allowing for Manufacturing Tolerances Based on a Modified Sommerfeld Number<sup>*****</sup> , +</b> W. Xu (Guangxi University of Technology, China), P. J. Ogorodnik , M. J. Goodwin, and G. A. Bancroft (Staffordshire University, United Kingdom)



September 14, 2010 (Tuesday)

[TuC1] Bearings and Seals II

<b>Room C</b>	<b>Session Chair</b>	K. Miatliuk (Bialystok Technical University, Poland)
	<b>Time</b>	10:10-12:15

September 14, 2010 (Tuesday)

<b>TuC1-1</b>	<b>10:10-10:35</b>	<p><b>Bifurcation of Periodic Motion of Rigid Rotor Ball Bearing System Considering Five Degrees of Freedom</b> ***** - '</p> <p>L. Cui, C. Liu, and J. Zheng (East China University of Science and Technology, China)</p>
<b>TuC1-2</b>	<b>10:35-11:00</b>	<p><b>Non-Synchronous Vibration of Jeffcott Rotor due to Internal Radial Clearance in Roller Bearings</b> ***** - ,</p> <p>J. Wu, M. Legrand, and C. Pierre (McGill University, Canada)</p>
<b>TuC1-3</b>	<b>11:00-11:25</b>	<p><b>Sensitivity Analysis of Squeeze Film Dampers Using Reynolds Equation</b> ***** ( \$*</p> <p>A. O. Pugachev (Technische Universität München, Germany), V. V. Tykhomirov, A. V. Sheremetyev, O. I. Shpilenko, and I. D. Timchenko (SE Ivchenko-Progress, Ukraine)</p>
<b>TuC1-4</b>	<b>11:25-11:50</b>	<p><b>A Lubrication Design Application of Spiral Groove Liquid Seal to the Carrier of Vane-Type LPG Fuel Pump</b> ***** ( %)</p> <p>A. S. Lee and C. U. Kim (Korea Institute of Machinery and Materials, Korea)</p>
<b>TuC1-5</b>	<b>11:50-12:15</b>	<p><b>Prediction of Leakage and Rotordynamic Coefficients for Annular-Type-Plain-Pump Seal Using CFD Analysis</b> ***** ( &amp;&amp;</p> <p>B. S. Choe and T. W. Ha (Kyungwon University, Korea)</p>



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September 14, 2010 (Tuesday)

[TuD1] Active Components and Vibration Control I

Room D	Session Chair Time	T. Watanabe (Nihon University, Japan) 10:10-12:40
TuD1-1	10:10-10:35	<b>Vibration Control of a Flexible Shaft Supported by a Hybrid Foil-Magnetic Bearing</b> S.-N. Jeong, H.-J. Ahn (Soongsil University, Korea), S.-J. Kim, and Y.-B. Lee (Korea Institute of Science and Technology, Korea)
TuD1-2	10:35-11:00	<b>Unbalance Compensation in Three-Pole Magnetic Bearing System by Extended Influence Coefficient Method</b> S.-H. Park and C.-W. Lee (KAIST, Korea)
TuD1-3	11:00-11:25	<b>An Application of the Magneto-Rheological Actuators to Torsional Vibration Control of the Rotating Electro-Mechanical Systems</b> T. Szolc, Ł. Jankowski (Polish Academy of Sciences, Poland), A. Pochanke (Warsaw University of Technology, Poland), and A. Magdziak (Polish Academy of Sciences, Poland)
TuD1-4	11:25-11:50	<b>Design and Control of Hybrid Magnetic Bearing in a Flywheel Energy Storage System</b> W.-Y. Kim, J. M. Lee, S.-J. Kim, Y.-B. Lee (Korea Institute of Science and Technology, Korea), and Y.-C. Bae (Korea Electric Power Research Institute, Korea)
TuD1-5	11:50-12:15	<b>New Approach to the Numerical Analysis of the Swirl Water Turbine and Experimental Verification</b> E. Malenovsky, F. Pochyly, P. Rudolf, L. Pohanka, and M. Chlud (Brno University of Technology, Czech Republic)
TuD1-6	12:15-12:40	<b>Transient Impact Dynamics of Rotor Drop on Rolling-Element Backup Bearing in a Flexible Rotor Supported on Active Magnetic Bearings</b> C. Zhu (Zhejiang University, China)



September 14, 2010 (Tuesday)

[TuE1] Blades and Bladed Systems and Impellers

<b>Room</b> E	<b>Session Chair</b>	R. B. Randall (The University of New South Wales, Australia)
	<b>Time</b>	10:10-12:15

September 14, 2010 (Tuesday)

<b>TuE1-1</b>	<b>10:10-10:35</b>	<b>Non-Contact Gas Turbine Blade Vibration Measurement from Casing Pressure and Vibration Signals-A Review</b> ****( * , G. L. Forbes and R. B. Randall (The University of New South Wales, Australia)
<b>TuE1-2</b>	<b>10:35-11:00</b>	<b>Transient and Modal Analysis of a Rotating Multi-packet Blade System having a Crack</b> ****( +* S. M. Kwon and H. H. Yoo (Hanyang University, Korea)
<b>TuE1-3</b>	<b>11:00-11:25</b>	<b>Multidisciplinary Technology for Blade Bending-Torsion Flutter Prediction</b> ****( , & J. M. Temis (Central Institute of Aviation Motors, Russian Federation)
<b>TuE1-4</b>	<b>11:25-11:50</b>	<b>Modelling and Design of Passive Damping of Turbine Blade Vibrations</b> ****( - \$ M. Hajžman, M. Byrtus, V. Zeman, J. Kellner, and J. Šašek (University of West Bohemia, Czech Republic)
<b>TuE1-5</b>	<b>11:50-12:15</b>	<b>Experimental and Numerical Analysis of the Forced Response of the Mistuned First Stage Compressor Bladed Disc of an Aircraft Engine</b> ****) \$\$ R. Rzadkowski (Institute of Fluid-Flow Machinery, Poland), R. Szczepanik (Air Force Institute of Technology, Poland), M. Drewczyński, M. Soliński, A. Maurin, and A. Maciejewska (Institute of Fluid-Flow Machinery, Poland)



*September 12~15, 2010 / KIST, Seoul, Korea*

**September 14, 2010 (Tuesday)**

**[TuA2] Condition Monitoring, Fault Diagnostics and Prognostics IV**

<b>Room A</b>	<b>Session Chair Time</b>	R. Subbiah (Siemens Energy, United States) 14:40-16:20
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| <b>TuA2-1</b> | <b>14:40-15:05</b> | <b>Identification of the Unbalance Using Correlation Analysis and Unbalance Responses</b><br>F. D. Sanches and R. Pederiva (University of Campinas, Brazil)  |
| <b>TuA2-2</b> | <b>15:05-15:30</b> | <b>Thermal Image Analysis for Machine Fault Diagnosis</b><br>A. M. Younus and B.-S. Yang (Pukyong National University, Korea)  |
| <b>TuA2-3</b> | <b>15:30-15:55</b> | <b>Identification of Misalignment and Unbalance in Rotating Machinery using Multi-Objective Genetic Algorithms</b><br>L. W. F. D. Camargo, H. F. D. Castro, and K. L. Cavalca (University of Campinas, Brazil)   |
| <b>TuA2-4</b> | <b>15:55-16:20</b> | <b>Analysis and Treatment of Oil Whirl on Ultra-Supercritical 1000MW Unit</b><br>S. Liu (Guangdong Power Test & Research Institute, China), J. Chen (Huaneng Haimen Electric Power Co., Ltd., China), F. Wang, Y. Feng, and H. Gu (Guangdong Power Test & Research Institute, China) |



September 14, 2010 (Tuesday)

[TuB2] Dynamic Analysis and Stability III

<b>Room B</b>	<b>Session Chair</b>	E. Malenovsky (Brno University of Technology, Czech Republic)
	<b>Time</b>	14:40-16:45

September 14, 2010 (Tuesday)

<b>TuB2-1</b>	<b>14:40-15:05</b>	<b>Vibrations of Rotating Machinery due to Sudden Mass Loss</b> * * P. Kalinowski, O. V. Bargaen, and R. Liebich (Berlin Institute of Technology, Germany)
<b>TuB2-2</b>	<b>15:05-15:30</b>	<b>Dynamics Design of Rotor-Bearing System of High Speed Motorized Spindle</b> ( * S. Jiang and S. Zheng (Southeast University, China)
<b>TuB2-3</b>	<b>15:30-15:55</b>	<b>A Study on Dynamic Characteristics of Miniaturized Grinding Machine Tool Using Order Tracking Analysis</b> * ) \$ P.-H. Lee, C. Li, Y.-S. Choi, and S. W. Lee (Sungkyunkwan University, Korea)
<b>TuB2-4</b>	<b>15:55-16:20</b>	<b>Effect Analysis of Journal Out-of-roundness on Dynamic Performances of Rotor Bearing System</b> * ) ( * P. J. Ogrodnik (Staffordshire University, United Kingdom), W. Xu (Guangxi University of Technology, China), M. J. Goodwin, and G. A. Bancroft (Staffordshire University, United Kingdom)
<b>TuB2-5</b>	<b>16:20-16:45</b>	<b>A Numerical Procedure for Investigation of Efficiency of Short Magnetorheological Dampers Used for Attenuation of Lateral Vibration of Rotors Passing the Critical Speeds</b> * ) * \$ J. Zapoměl and P. Ferfecki (VSB-Technical University of Ostrava, Czech Republic)



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**September 14, 2010 (Tuesday)**

**[TuC2] (Structured Session) Cracks in Rotating Machinery Components II**

<b>Room C</b>	<b>Session Organizer &amp; Chair Time</b>	N. Bachschmid (Politecnico di Milano, Italy) 14:40-16:20
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| <b>TuC2-1</b> | <b>14:40-15:05</b> | <b>Concise and Accurate Modelling of the Open Crack in Rotor Systems</b> * ,<br>T. Inoue, N. Nagata, and Y. Ishida (Nagoya University, Japan)   |
| <b>TuC2-2</b> | <b>15:05-15:30</b> | <b>Stability and Dynamics of a Rotor System with a Slant Crack on the Shaft</b> * ) +<br>F. Chu and Y. Lin (Tsinghua University, China)   |
| <b>TuC2-3</b> | <b>15:30-15:55</b> | <b>Application of the Cohesive Zone Model for the Investigation of the Dynamic Behavior of a Rotating Shaft with a Transverse Crack</b> * ) , \$<br>R. T. Liong and C. Proppe (Karlsruhe Institute of Technology, Germany)  |
| <b>TuC2-4</b> | <b>15:55-16:20</b> | <b>A Novel Normalization Procedure of Quadratic Coefficients in a Multi-Crack Identification Algorithm for a Shaft System</b> * ) , -<br>S. K. Singh, R. Tiwari, and S. K. Talukdar (Indian Institute of Technology, India) |



September 14, 2010 (Tuesday)

[TuD2] Active Components and Vibration Control II

<b>Room D</b>	<b>Session Chair Time</b>	T. Szolc (Polish Academy of Sciences, Poland) 14:40-16:45
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September 14, 2010 (Tuesday)

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| <b>TuD2-1</b> | <b>14:40-15:05</b> | <p><b>Optimal Control of Chatter Vibrations of a Motor Spindle with Integrated Electromagnetic Actuator</b>***** - +</p> <p>B. Späh (Technische Universität Darmstadt, Germany), S. Kern (Gleason-Pfauter Maschinenfabrik, Germany), R. Nordmann, and S. Rinderknecht (Technische Universität Darmstadt, Germany)</p> |
| <b>TuD2-2</b> | <b>15:05-15:30</b> | <p><b>Investigations of Impact of Various Types of Mistuning on Bladed Disks Vibration and Fatigue Life</b>***** \$'</p> <p>O. Repetskiy, I. Ryzhikov (Irkutsk State Technical University, Russian Federation), and R. Schmidt (Technical University of Dresden, Germany)</p>   |
| <b>TuD2-3</b> | <b>15:30-15:55</b> | <p><b>Instability Control and Unbalance Compensation of Flexible Rotors Supported on Journal Bearings Using Magnetic Bearings</b>***** \$(</p> <p>A. S. Dimitri and A. El-Shafei (Cairo University, Egypt)</p>  |
| <b>TuD2-4</b> | <b>15:55-16:20</b> | <p><b>Levitation and Multi-Mode Vibration Control of a Flexible Rotor by Using Active Magnetic Bearings</b>***** %&amp;</p> <p>N. Uchiyama, T. Watanabe, T. Nomoto (Nihon University, Japan), and K. Seto (Seto Vibration Control Laboratory, Japan)</p>  |
| <b>TuD2-5</b> | <b>16:20-16:45</b> | <p><b>Optimization of Controller Parameters of Active Magnetic Bearings Using Genetic Algorithms</b>***** %) )</p> <p>D. J. Bordoloi and R. Tiwari (Indian Institute of Technology Guwahati, India)</p>   |



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**September 14, 2010 (Tuesday)**

**[TuE2] Rotor Dynamics of Micro Machines**

<b>Room</b> <b>E</b>	<b>Session Chair</b> <b>Time</b>	Z. Kozanecki (Technical University of Lodz, Poland) 14:40-16:20
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<b>TuE2-1</b>	<b>14:40-15:05</b>	<b>A Miniature High-Speed Spindle with Permanent Magnet-Biased Active Magnetic Bearings ***** &amp;</b> S.-K. Ro, W.-C. Shin, J.-H. Kyung, and J.-K. Park (Korea Institute of Machinery and Materials, Korea)
<b>TuE2-2</b>	<b>15:05-15:30</b>	<b>The Dynamic Properties of the Micro-Rotor Supported on Fluid-Film Bearings ***** &amp;</b> J. Kicinski, G. Zywica, (Polish Academy of Sciences, Poland), and W. Miaskowski (University of Warmia and Mazury, Poland)
<b>TuE2-3</b>	<b>15:30-15:55</b>	<b>Theoretical and Experimental Investigations of Oil-Free Support Systems to Improve the Reliability of Industrial Turbomachinery ***** ' '</b> Z. Kozanecki and D. Kozanecka (Technical University of Lodz, Poland)
<b>TuE2-4</b>	<b>15:55-16:20</b>	<b>Nonlinear Rotordynamic Analysis and Test Response of 100KW Micro Gas Turbogenerator Supported on Floating Ring Bearings ***** ( \$</b> N. Shen, Y. Jiao, Z. Chen, and W. Ma (Harbin Institute of Technology, China)



September 15, 2010 (Wednesday)

**[WeA1] Case Studies of Rotating Machinery**

<b>Room A</b>	<b>Session Chair Time</b>	S. Braut (University of Rijeka, Croatia) 10:10-12:15
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| <b>WeA1-1</b> | <b>10:10-10:35</b> | <p><b>Rotor Dynamic Modelling as a Powerful Support Tool for Vibration Analysis on Large Turbomachinery***** (+</b></p> <p>K. Matthys (Loborelec, Belgium), M. Perucchi (DELTA JS AG, Switzerland), and K. D. Bauw (Loborelec, Belgium)</p>  |
| <b>WeA1-2</b> | <b>10:35-11:00</b> | <p><b>The Unsteady Rotor Blade Forces for a Changing the Number of Stator Blades***** (</b></p> <p>R. Rzadkowski (Polish Academy of Sciences, Poland), V. Gnesin (National Ukraine Academy of Sciences, Ukraine), M. Soliński (Polish Academy of Sciences, Poland), and L. Kolodyazhnaya (National Ukraine Academy of Sciences, Ukraine)</p> |
| <b>WeA1-3</b> | <b>11:00-11:25</b> | <p><b>Critical Speed Analysis of Gas Lubricated Bearing Rotor System***** &amp;</b></p> <p>Z. Fu, X. Liu (North China Electric Power University, China), and J. Yang (Chinese Academy of Sciences, China)</p>  |
| <b>WeA1-4</b> | <b>11:25-11:50</b> | <p><b>Axial Pedestal Vibration on Large Turbogenerators***** +</b></p> <p>S. Yan (Siemens Energy, Germany)</p>   |
| <b>WeA1-5</b> | <b>11:50-12:15</b> | <p><b>Blade Loss Simulations of Bending Vibrations Applied to a 1750 MW Turbo Generator Set***** +&amp;</b></p> <p>P. Verrier, H. Martina, and S. Kohli-Lynch (Electricite de France, France)</p>  |

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September 15, 2010 (Wednesday)

[WeB1] Dynamic Analysis and Stability IV

<b>Room B</b>	<b>Session Chair</b>	J. Zapomel (VSB-Technical University of Ostrava, Czech Republic)
	<b>Time</b>	10:10-12:40

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| <b>WeB1-1</b> | <b>10:10-10:35</b> | <b>Dynamics of Compact Gas Turbine Rotor Supported by Gas Bearings</b> *****+,<br>J. M. Temis, M. J. Temis, A. M. Egorov, and A. B. Meshcheryakov (Central Institute of Aviation Motors, Russian Federation)   |
| <b>WeB1-2</b> | <b>10:35-11:00</b> | <b>On Model Updating of Turbo-Generator Set</b> ***** , )<br>N. Bachschmid, R. Ricci, S. Chatterton, and P. Pennacchi (Politecnico di Milano, Italy)   |
| <b>WeB1-3</b> | <b>11:00-11:25</b> | <b>Analytical Analysis of MIMO Magnetic Bearing-Rotor System</b> *****- '<br>Z. Gosiewski (Bialystok University of Technology, Poland)   |
| <b>WeB1-4</b> | <b>11:25-11:50</b> | <b>Engineering Stability Criterion and Its Experimental Validation of Frequency Coupled Modulation for Sliding Rotor-Bearing System</b> *****+\$%<br>J. Yang (Chinese Academy of Sciences, China), C. Chen (Army Aviation Institute, China), Y. Liu (Liaoning Shihua University, China), and D. Han (Chinese Academy of Sciences, China) |
| <b>WeB1-5</b> | <b>11:50-12:15</b> | <b>Study on Leakage in Labyrinth Seals System of a Turbine</b> *****+\$-<br>W. Ma, Z. Chen, Y. Jiao, and N. Shen (Harbin Institute of Technology, China)   |
| <b>WeB1-6</b> | <b>12:15-12:40</b> | <b>Dynamics Analysis of Rotor with Floating Rings Package Bearing</b> *****+%<br>Y. Rozhdestvenskiy, A. Boyarshinov, E. Zadorozhnaiy, A. Fisher, P. Taranenko, and S. Cherneyko (South Ural State University, Russian Federation)  |



September 15, 2010 (Wednesday)

**[WeC1] (Structured Session) Cracks in Rotating Machinery Components III**

<b>Room C</b>	<b>Session Organizer &amp; Chair Time</b>	N. Bachschmid (Politecnico di Milano, Italy) 10:10-11:25
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<b>WeC1-1</b>	<b>10:10-10:35</b>	<b>Early Detection of Rotor Cracks by Measuring the Coupled Response under External Excitation</b> *****+& A. C. Chasalevris and C. A. Papadopoulos (University of Patras, Greece)
<b>WeC1-2</b>	<b>10:35-11:00</b>	<b>Nonlinear Simulation of Continuous Rotor Bearing Systems with Multi-Step Geometry</b> *****+' & A. C. Chasalevris and C. A. Papadopoulos (University of Patras, Greece)
<b>WeC1-3</b>	<b>11:00-11:25</b>	<b>Study on the Bifurcation and Stability of the Periodic Motion of a Cracked Rotor Bearings System</b> *****+' - C. Liu, S. Zhou, X. Zhou, C. Xia, and J. Zheng (East China University of Science and Technology, China)



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September 15, 2010 (Wednesday)

[WeD1] (Structured Session) Rotordynamics of Oil-Free Shaft Support Systems

<b>Room D</b>	<b>Session Organizer &amp; Chair</b>	C. DellaCorte (The National Aeronautics and Space Administration, United States)
	<b>Time</b>	10:10-12:15

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| <b>WeD1-1</b> | <b>10:10-10:35</b> | <b>Rotordynamic Characteristics of 65kW Micro Turbine with Compliant Air Foil Bearings<sup>*****</sup>+( *</b><br>K.-S. Kim, B.-C. Cho, and M.-H. Kim (Neuros Co. Ltd., Korea)  |
| <b>WeD1-2</b> | <b>10:35-11:00</b> | <b>Comparison of Thermo-Hydrodynamic Characteristics of Airfoil Bearings with Different Top Foil Geometries<sup>*****</sup>) %</b><br>D. Kim, D. H. Lee (University of Texas at Arlington, United States), Y. C. Kim, and K. Ahn (Korea Institute of Machinery and Materials, Korea)  |
| <b>WeD1-3</b> | <b>11:00-11:25</b> | <b>Integration Methodology for Oil-Free Shaft Support Systems: Four Steps to Success<sup>*****</sup>+) -</b><br>S. A. Howard, C. DellaCorte, and R. J. Bruckner (The National Aeronautics and Space Administration, United States)  |
| <b>WeD1-4</b> | <b>11:25-11:50</b> | <b>Five Degrees of Freedom Nonlinear Rotor Dynamics Model of Rigid Rotor Supported by Multiple Airfoil Bearings<sup>*****</sup>+* *</b><br>D. H. Lee and D. Kim (University of Texas at Arlington, United States)   |
| <b>WeD1-5</b> | <b>11:50-12:15</b> | <b>Measurements of Drag Torque, Lift Off Speed, and Structural Parameters in a 1st Generation Floating Gas Foil Bearing<sup>*****</sup>++(</b><br>L. S. Andrés (Texas A&M University, United States), J. Camero (University of Texas at San Antonio United States), S. Muller (Calvin College, United States), T. Chirathadam, and K. Ryu (Texas A&M University, United States) |



September 15, 2010 (Wednesday)

**[WeE1] (Structured Session) Electromechanical Interactions of Rotor Systems with Electric Generator or Motor Drive**

<b>Room E</b>	<b>Session Organizer &amp; Chair Time</b>	M. Karlsson (Lloyd's Register ODS, Sweden) 10:10-11:50
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September 15, 2010 (Wednesday)

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| <b>WeE1-1</b> | <b>10:10-10:35</b> | <p><b>Electromechanical Interactions of a Variable Speed Drive Driven Compressor Train</b> <sup>+++++</sup>, ' ,</p> <p>M. Karlsson (Lloyd's Register ODS, Sweden), C. M. Myllerup (Lloyd's Register ODS, Denmark), and D. Chan (Lloyd's Register ODS, China)</p>  |
| <b>WeE1-2</b> | <b>10:35-11:00</b> | <p><b>Measurement and Simulation of Forced Torsional Vibration with Inter-Harmonic Frequencies in Variable Speed Drive Motor Driven Compressor</b> <sup>+++++</sup>+- %</p> <p>K. Tanaka (Hitachi Plant Technologies, Ltd., Japan), H. Nemoto (Hitachi, Ltd., Japan), N. Takahashi, Y. Fukushima (Hitachi Plant Technologies, Ltd., Japan), Y. Akita, and M. Tobise (Hitachi, Ltd., Japan)</p> |
| <b>WeE1-3</b> | <b>11:00-11:25</b> | <p><b>Rotordynamical Analysis of a Fourteen Pole Synchronous Generator due to Whirling Dependent Electromagnetical Forces</b> <sup>+++++</sup>+- -</p> <p>M. Karlsson (Lloyd's Register ODS, Sweden), U. Lundin (Uppsala University, Sweden), and J.-O. Aidanpää (Luleå University of Technology, Sweden)</p>  |
| <b>WeE1-4</b> | <b>11:25-11:50</b> | <p><b>Design of an Active Hydromagnetic Journal Bearing</b> <sup>+++++</sup>, \$+</p> <p>M. G. Farmakopoulos, P. G. Nikolakopoulos, and C. A. Papadopoulos (University of Patras, Greece)</p>  |



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**September 15, 2010 (Wednesday)**

**[WeA2] (Structured Session) Diagnostics of Rotating Machinery**

<b>Room A</b>	<b>Session Organizer &amp; Chair Time</b>	P. Pennacchi (Politecnico di Milano, Italy) 13:30-15:10
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| <b>WeA2-1</b> | <b>13:30-13:55</b> | <b>Fluttering Phenomena Caused by the Wrong Assembling of a Tilting-Pad Journal Bearing</b> <sup>****, %</sup><br>P. Pennacchi, A. Vania, and S. Chatterton (Politecnico di Milano, Italy)  |
| <b>WeA2-2</b> | <b>13:55-14:20</b> | <b>Coupling Between Torsional and Transverse Vibrations in Geared Shaft-Trains</b> <sup>****, &amp;&amp;</sup><br>P. Pennacchi and A. Vania (Politecnico di Milano, Italy)  |
| <b>WeA2-3</b> | <b>14:20-14:45</b> | <b>Design of a Test-Rig for Traction Equipment of Very High Speed Trains</b> <sup>****, &amp;</sup><br>P. Pennacchi, S. Bruni, S. Chatterton, R. Ricci, P. Borghesani (Politecnico di Milano, Italy), F. Gherardi (AnsaldoBreda S.p.A., Italy), D. Marinis, A. Didonato (Bombardier Transportation Italy S.p.A., Italy), and F. Unger-Weber (Bombardier Transportation GmbH, Germany) |
| <b>WeA2-4</b> | <b>14:45-15:10</b> | <b>Contribution to Compensation for Encoder Geometry in Time Interval Torsional Vibration Measurement, Simulation and Experiment</b> <sup>****, ' +</sup><br>S. Braut, R. Zigulic, G. Stimac, and A. Skoblar (University of Rijeka, Croatia)  |



September 15, 2010 (Wednesday)

[WeB2] Nonlinear Phenomena II

<b>Room B</b>	<b>Session Chair Time</b>	Q. Han (Northeastern University, China) 13:30-15:10
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<b>WeB2-1</b>	<b>13:30-13:55</b>	<b>The Interplay of Linear and Nonlinear Modes on the Dynamics of a Rotor/stator Contact System<sup>*****</sup>, ( )</b> J. Jiang (Xi'an Jiaotong University, China)
<b>WeB2-2</b>	<b>13:55-14:20</b>	<b>Resonance Capture of Rotor System Mounted on an Elastically Supported Base<sup>*****</sup>, ) %</b> Q. Han, X. Dong, and B. Wen (Northeastern University, China)
<b>WeB2-3</b>	<b>14:20-14:45</b>	<b>Chaotic Vibration Responses of Continuous Rotating Flexible Shaft-Disk System with Rub-Impact between Disk and Stator<sup>*****</sup>, ) ,</b> H. M. Khanlo, M. Ghayour, and S. Ziaei-Rad (Isfahan University of Technology, Iran)
<b>WeB2-4</b>	<b>14:45-15:10</b>	<b>Bifurcation Characteristics of Rub-impact Fault in Rotor Systems<sup>*****</sup>, **</b> H. Ma, Y. Teng, B. Wang, and B. Wen (Northeastern University, China)

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**September 15, 2010 (Wednesday)**

**[WeC2] Balancing**

<b>Room</b> <b>C</b>	<b>Session Chair</b> <b>Time</b>	M. M. L'vov (Siemens Energy Inc., United States) 13:30-14:45
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- WeC2-1**    **13:30-13:55**    **Modal Reduction of the Influence Coefficient Matrix for High Speed Balancing Elastic Rotors**\*\*\*\*, +&  
K. Trukenmüller (Schenck RoTec GmbH, Germany)
- WeC2-2**    **13:55-14:20**    **Residual Modal Unbalance Calculation Errors due to Influence Coefficient Deviations and Improper Balance Plane Selection**\*\*\*\*, ++  
M. M. L'vov (Siemens Energy Inc., United States) and E. V. Uryev (Ural State Technical University, United States)
- WeC2-3**    **14:20-14:45**    **Vibration Analysis on Rotating Imperfect Structures**\*\*\*\*, , '  
S.-Y. Choi and J.-H. Kim (Seoul National University, Korea)



September 15, 2010 (Wednesday)

**[WeD2] (Structured Session) Application of the Rayleigh-Ritz Method in Rotordynamics I**

<b>Room D</b>	<b>Session Organizer &amp; Chair Time</b>	H. J. Holl (University of Linz, Austria) 13:30-15:10
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| <b>WeD2-1</b> | <b>13:30-13:55</b> | <p><b>A Study of a Rotating System with Two Different Beam Elements and Bearings<sup>****, , +</sup></b></p> <p>D. Huber (Linz Center of Mechatronics GmbH, Austria), H. J. Holl (Johannes Kepler University of Linz, Austria), M. Nader (Linz Center of Mechatronics GmbH, Austria), and H.-G. V. Garßen (Siemens AG, Germany)</p> |
| <b>WeD2-2</b> | <b>13:55-14:20</b> | <p><b>Nonlinear Vibration Analysis of Discontinuous Coupled, Spinning Timoshenko Beams<sup>****, -</sup></b></p> <p>S. Hubinger, H. Gattringer, H. Bremer (Johannes Kepler University Linz, Austria), and K. Mayrhofer (Siemens VAI Metals Technologies GmbH &amp; Co, Austria)</p>   |
| <b>WeD2-3</b> | <b>14:20-14:45</b> | <p><b>Closed-Form Expressions for Forces Acting on a Rapidly Rotating Floating Bearing<sup>****- \$'</sup></b></p> <p>A. K. Belyaev (Institute of Problem in Mechanical Engineering, Russian Federation), M. Krommer, and H. J. Holl (Johannes Kepler University Linz, Austria)</p>   |
| <b>WeD2-4</b> | <b>14:45-15:10</b> | <p><b>Analysis of the Coupled Oscillations of Strip and Coiling Drum in a Winding Process<sup>****- \$-</sup></b></p> <p>H. J. Holl (Johannes Kepler University Linz, Austria) and F. Hammelmuller (Linz Center of Mechatronics GmbH, Austria)</p>  |



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September 15, 2010 (Wednesday)

**[WeE2] (Structured Session) Electrical Machines**

<b>Room</b> E	<b>Session Organizer &amp; Chair</b> Time	T. Holopainen (ABB Machines, Finland) 13:30-15:10
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| <b>WeE2-1</b> | <b>13:30-13:55</b> | <b>Finite-Element-Analysis of the Relative Shaft Displacements in the Sleeve Bearings of a 2-pole Converter-Fed Induction Motor Concerning Excitation by Pulsating Torques</b><br>U. Werner (Siemens AG, Germany)  |
| <b>WeE2-2</b> | <b>13:55-14:20</b> | <b>Models for Constitutive Properties of Lamination Stack. Application to Different Sizes Laminated Rotors</b><br>G. Mogenier, T. N. Baranger, R. Dufour (University de Lyon, France), L. Durantay, and N. Barras (Converteam SAS, France)   |
| <b>WeE2-3</b> | <b>14:20-14:45</b> | <b>Electromechanical Interaction in Torsional Vibrations of Drive Train Systems Including an Electrical Machine</b><br>T. P. Holopainen (ABB Machines, Finland), A.-K. Repo (Konecranes, Finland), and J. Järvinen (ABB Machines, Finland)   |
| <b>WeE2-4</b> | <b>14:45-15:10</b> | <b>Torsional Interaction Optimization in a LNG Train with a Load Commutated Inverter</b><br>S. D. Puglia, S. D. Franciscis (GE Oil & Gas, Italy), S. V. D. Moortel, P. Jörg (ABB, Switzerland), T. Hattenbach (Bechtel Co., United States), D. Sgrò, L. Antonelli (GE Oil & Gas, Italy), and S. Falomi (University of Florence, Italy) |



September 15, 2010 (Wednesday)

**[WeA3] Parametric and Selfexcitation in Rotating Machinery**

<b>Room A</b>	<b>Session Chair Time</b>	H.-J. Kim (Doowon Technical University, Korea) 15:30-16:45
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<b>WeA3-1</b>	<b>15:30-15:55</b>	<b>Analysis on the Whirl Development of Heavy Duty Gas Turbine Rotor-Bearing System</b> ****- (- Z. Wan, G. Meng, J. P. Jing, and H. Y. Bai (Shanghai Jiao Tong University, China)
<b>WeA3-2</b>	<b>15:55-16:20</b>	<b>Equations of Motion and Stability Analysis of a LAVAL-Rotor with Non-circular Shaft Mounted in Anisotropic Bearings</b> *****- ) * F. E. Boru and H. Irretier (Institute of Mechanics, Germany)
<b>WeA3-3</b>	<b>16:20-16:45</b>	<b>Shaft Oscillations Under High-Frequency Vibration of Foundation. Self-Induce Oscillations of Gyroscopic Rotors</b> *****- *' L. Y. Banakh and M. F. Zeytman (Mechanical Engineering Research Institute, Russian Federation)

September 15, 2010 (Wednesday)



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**September 15, 2010 (Wednesday)**

**[WeB3] Dynamic Analysis and Stability V**

<b>Room B</b>	<b>Session Chair Time</b>	R. Dufour (University de Lyon, France), 15:30-16:20
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- WeB3-1    15:30-15:55    Robust Design Optimization of the Vibrating Rotor Shaft System Subjected to Rubbing Constrains<sup>\*\*\*\*\*</sup> - \* -**  
R. Stocki, T. Szolc, P. Tuzowski, and J. Knabel (Polish Academy of Sciences, Poland)
- WeB3-2    15:55-16:20    Rotordynamics Characteristics and Vibration Reduction of an Industrial Decanter Centrifuge<sup>\*\*\*\*\*</sup> - ++**  
B. O. Kim and A. S. Lee (Korea Institute of Machinery and Materials, Korea)



September 15, 2010 (Wednesday)

**[WeC3] Bearings and Seals III**

<b>Room</b> C	<b>Session Chair</b> <b>Time</b>	J. Schmied (DELTA JS AG, Switzerland) 15:30-16:45
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| <b>WeC3-1</b> | <b>15:30-15:55</b> | <b>Theoretical Means of Hierarchical Systems for Design of Magnetic Bearings<sup>*****</sup>, &amp;</b><br>K. Miatliuk, Z. Gosiewski, and F. Siemieniako (Bialystok Technical University, Poland)  |
| <b>WeC3-2</b> | <b>15:55-16:20</b> | <b>A Design Fitting of Journal Bearings to the LPLI Fuel Pump Application<sup>*****</sup>, +</b><br>A. S. Lee and C. U. Kim (Korea Institute of Machinery and Materials, Korea)  |
| <b>WeC3-3</b> | <b>16:20-16:45</b> | <b>Mechanical Damping Measurement of Small Size Hydrodynamic Bearing Rotors without Physical Contact<sup>*****</sup> - - &amp;</b><br>Y. S. Ihn, J. C. Koo (Sungkyunkwan University, Korea), D. H. Oh (Chungnam National University, Korea), C. S. Kim, and H. Y. Kim (Samsung Electronics, Korea) |



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**[WeD3] (Structured Session) Application of the Rayleigh-Ritz Method in Rotordynamics II**

<b>Room</b> <b>D</b>	<b>Session Organizer &amp; Chair</b> <b>Time</b>	H. J. Holl (University of Linz, Austria) 15:30-16:45
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- WeD3-1 15:30-15:55 Simulation of Modally Reduced Rotating Systems with Equivalent Bearing Forces \*\*\*\*\***
- W. Witteveen (Linz Center of Mechatronic GmbH, Austria) and H. J. Holl (Johannes Kepler University Linz, Austria)
- WeD3-2 15:55-16:20 Nonlinear Vibrations of Flexible High-Speed Rotors Supported by Visco-Elastic Bearings \*\*\*\*\***
- M. Nader (Linz Center of Mechatronics GmbH, Austria), H. Irschik (Johannes Kepler University Linz, Austria), M. Stangl (Linz Center of Mechatronics GmbH, Austria), and H.-G. V. Garssen (Siemens AG, Germany)
- WeD3-3 16:20-16:45 Modeling of the Dynamic Response of a Francis Turbine \*\*\*\*\***
- P. Pennacchi, S. Chatterton, R. Ricci, and A. Vania (Politecnico di Milano, Italy)



September 15, 2010 (Wednesday)

**[WeE3] Special and General Problems of Rotating Machines III**

<b>Room E</b>	<b>Session Chair Time</b>	L. S. Andrés (Texas A&M University, United States) 15:30-16:45
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| <b>WeE3-1</b> | <b>15:30-15:55</b> | <p><b>Stability Analysis of Rotating Composite Shafts Considering Internal Damping and Coupling Effects</b></p> <p>T. N. Baranger, E. Chatelet, M.-A. Andrianoely, and G. Jacquet-Richardet (Université de Lyon, France)</p>  |
| <b>WeE3-2</b> | <b>15:55-16:20</b> | <p><b>Nonlinear Rotordynamics of Vehicle Turbochargers: Parameters Affecting Sub Harmonic Whirl Frequencies and Their Jump</b></p> <p>L. S. Andrés and A. Vistamehr (Texas A&amp;M University, United States)</p>   |
| <b>WeE3-3</b> | <b>16:20-16:45</b> | <p><b>Fluid Force Moments Acting on the Backshroud of a Francis Turbine Runner in Whirling and Precession Motions</b></p> <p>B. Song (Dalian University of Technology, China), H. Horiguchi (Osaka University, Japan), Z. Ma (Dalian University of Technology, China), and Y. Tsujimoto (Osaka University, Japan)</p> |