

**“INFLUENCE OF DESIGN AND MATERIALS
ON JOURNAL AND THRUST BEARING PERFORMANCE”**

Thursday October 8, 2015

8h00-8h45	<i>Registration</i>
8h45-9h00	<i>General introduction by EDF/Pprime – Presentation of the program</i>
9h00-9h40	<p style="text-align: center;">Keynote session</p> <p>A) “Hydrodynamic Bearings – Robust Design Ensures Success” <i>Steve Dixon, Fellow of the Institution of Mechanical Engineers Michell Bearings, Rolls-Royce Power Engineering, Newcastle upon Tyne, UK,</i></p>
9h40-9h50	<i>Questions</i>
9h50-10h00	<i>Presentation of the posters (diaporama en boucle)</i>
10h00-10h30	<i>Coffee Break - POSTER Session</i>
10h30-11h00	<p style="text-align: center;">Technical session 1: Bearings under severe operating conditions</p> <p>B) “A study the tribological characteristics on mixed and boundary lubricant condition for tilting pad journal bearing materials” <i>Hiromitsu Katsuki (Daido Metal, Japan).</i></p>
11h00-11h30	<p>C) “Hydrodynamic plain bearings for mixed friction conditions – a material and design solution of Schaeffler” <i>Michael Plogmann (Schaeffler, Germany).</i></p>
11h30-12h00	<p>D) “Application of an enhanced 900mm Tilting Pad Bearing in Large Steam Turbines” <i>Uemit Mermertas (Siemens AG Steam Turbines, Germany).</i></p>
12h10-13h45	<i>Lunch</i>
14h00-14h30	<p style="text-align: center;">Technical session 2: Bearing seizure, wear and case study</p> <p>E) “Thermal Effects on a Hydrodynamic Bearing's Clearance with Consequence to Seizure” <i>Jack Braun, (Univ. Akron, USA).</i></p>
14h30-15h00	<p>F) “On the influence of the presence of geometrical discontinuities on journal bearing performance under thermohydrodynamic regime” <i>Célia Giraudeau, (EDF et Pprime, France).</i></p>
15h00-15h30	<p>G) “Field measurement techniques and instrumentation for torsional vibrations determination” <i>Charles Grislin, Nicolas Peton (GE Energy Measurement & Control, France).</i></p>
15h30-16h15	<i>Coffee Break - Discussions - POSTER Session</i>
16h15-16h45	<p style="text-align: center;">Technical session 3: Thrust bearings with composite coatings</p> <p>H) “Experimental comparison of the hydrodynamic thrust bearings with different coatings” <i>Michal Wodkte, (Gdansk, Poland).</i></p>
16h45-17h15	<p>I) “Performance of a PEEK Lined, Tilt Pad Thrust Bearing at High Speeds with Oil Lubrication” <i>Jie Zhou, Barry Blair, (Waukesha Bearings, USA).</i></p>
17h15-17h45	<p>J) “Comparison of PEEK and PTFE materials for polymer coated thrust bearings of vertically aligned hydro power units” <i>Andreas Schubert, Piotr Pajaczkowski (Alstom, Switzerland).</i></p>
17h45-18h15	<p>K) “Innovative geometrical enhancement and use of composite coating structures to improve lifetime and performance of thrust bearings.” <i>Chris H. Walker, (Diamond Hard Surfaces Ltd, UK)</i></p>
18h15-18h30	<i>Information</i>

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Friday October 9, 2015

7h30-8h00	<i>Registration - Coffee</i>
8h00-8h30	<p style="text-align: center;">Technical session 4: Journal and thrust bearing improvement</p> <p>L) “CFD analysis for the sprayer design of a direct lube tilting pad journal bearing” <i>Mirko Libraschi, (GE Oil & Gas, Italy).</i></p>
8h30-9h00	<p>M) “A high speed Laval rotor on journal bearings: required multiphysical modeling features” <i>Rob Eling (Mitsubishi and Delft Univ. of Technology, The Netherlands).</i></p>
9h00-9h30	<p>N) “Numerical optimization and response surface mapping by experimental design of tilting pad bearings” <i>Alexandrina Untaroiu (ROMAC, USA).</i></p>
9h30-10h00	<p>O) “3-D Thermohydrodynamic Analysis of Textured, Grooved, Pocketed and Hydrophobic Pivoted-Pad Thrust Bearings” <i>Christos Papadopoulos (University of Athens, Greece)</i></p>
10h00-10h30	<i>Coffee Break - POSTER Session</i>
10h30-11h00	<p style="text-align: center;">Technical session 5: Journal and thrust bearing applications</p> <p>P) “Application of hydrodynamic radial bearings on large fossil steam turbine generators: selection of bearing types and use of dimensionless bearing dynamic coefficients in rotor dynamics analyses” <i>Josef HUSTER (Alstom power, Switzerland).</i></p>
11h00-11h30	<p>Q) “Realistic Non-Destructive Evaluation of Journal and Thrust Bearings, especially for Post-Service Evaluation and after Refurbishment” <i>Lyle Branagan (Pionner Bearings, USA).</i></p>
11h30-12h00	<p>R) “New ecologically friendly tin base alloy from ZOLLERN BHW for highly loaded” <i>Edgar Gust (R&D ZOLLERN BHW, Germany).</i></p>
12h00-12h30	<p>S) “Performance comparison of Tokat® and babbitt for a Francis turbine’s upper thrust bearing” <i>Luciano Andriani Natanael Dewobroto (Kugler Bimetal, Stwizerland).</i></p>
12h45-14h15	<i>Lunch</i>
14h45-16h15	<p style="text-align: center;">Panel discussion: Which bearing materials for which applications?</p> <ul style="list-style-type: none"> - <i>Daido Metal</i> - <i>ALSTOM Renewable Power - Hydro</i> - <i>Kingsbury</i> - <i>Waukesha Bearings</i> - <i>Kugler Bimetal</i> - <i>ZOLLERN BHW</i>
16h15-16h30	
16h30	Cocktail

POSTER SESSION - October 8 & 9 2015

10h00-10h30
&
15h30-16h15

- P.01)** “Elevated vibration of an 100 Mw generator bearing”
Nicolas Peton (GE Energy Measurement & Control, France).
- P.02)** “The effect of dimples geometry in sliding surface on the tribological properties in starved lubrication conditions”
Lidia Galda (Rzeszow University of Technology, Poland).
- P.03)** “Analysis of the Effect of Groove Deactivation in Twin Axial Groove Journal Bearings under Varying Load Direction”
Francisco P. Brito, Antonio S. Miranda, (CT2M, Universidade do Minho, Portugal) and Michel Fillon (Institut Pprime, France).
- P.04)** “Thrust hydrostatodynamic bearing with a controllable supply of the lubricant”
Alexander Babin and Leonid Savin (State University – ESPC, Oryol, Russia).
- P.05)** “Simulation and Experimental Measurement of Journal Bearing Temperatures for Bearing Design Optimization”
Luca Gorasso (Eurobearing s.r.l., Italy) and W Liqin (Harbin Institute of Technology, China).
- P.06)** “Inflectional and vibrational behavior of a highly loaded, high aspect ratio hollow shaft equipped with plain journal bearing at the maximal deformation point”
Bálint Pap, Lionel Bauduin, Guillaume Beck, Patrice Gédin, F Drevon (Hispano-Suiza, Groupe SAFRAN, France) and Michel Fillon (Institut Pprime, France).
- P.07)** “Synergistic effects of lubricants on tribological behavior of hermoplastic composite materials for dry bearing applications”
Yan-Ming Chen, K Leclerc, (CETIM Senlis, France), H Cartier and A Chopin (Eurostar EP, France).
- P.08)** “High Speed Hydrodynamic Journal Bearings – State of the Art of Calculations”
Andreas Fuchs, Joachim Schmied, Alexander Kosenkov (Delta JS AG, Switzerland).
- P.09)** “The significance of the friction coefficient impending scuffing of boundary lubricated metallic frictional pairs”
Lukasz Wojciechowski (Poznan University of Technology, Poland) and Thomas Mathia (Ecole Centrale de Lyon, France).
- P.10)** “Influence de la prise en compte des déformations élastiques pour les simulations de paliers à patins oscillants. Modèle TEHD chaînant les codes EDYOS et Code_ASTER”
Mathieu Hélène and Jérôme Beaurain (EDF R&D, France).
- P.11)** “Integral centering spring squeeze film damper on the vibration stability of journal rotor-bearing system: modelling and experimental validation”
Rui Zhan, Xin Xiong and Xiaojing Wang (Shanghai University, PR China).
- P.12)** “Influence of magnetic field intensity on the performance of a Nanomagnetorheological fluid journal bearing”
Dimitrios Bompos and Pantelis Nikolakopoulos (University of Patras, Greece).
- P.13)** “Tribological Investigation of Grooved Journal Bearings with Cavitation Considerations
Enquête tribologique de palier avec rainure en considérant cavitation”
A Zogopoulos, Dimitrios Bompos and Pantelis Nikolakopoulos (University of Patras, Greece).
- P.14)** “Compliance tests of the polymer layers used as hydrodynamic bearing coatings”
Michal Wodtke and Michal Wasilczuk (Gdansk University of Technology, Poland).

10h00-10h30
&
15h30-16h15

P.15) “Design and Development of Passive Magnetic-Hydrodynamic Hybrid Journal Bearing”

KP Lijesh and Harish Hirani (Indian Institute of Technology, India).

P.16) “Application of hydrodynamic radial bearings on large fossil steam turbine generators: selection of bearing types and use of dimensionless bearing dynamic coefficients in rotor dynamics analyses”

Leonid Savin, Elena Kornaeva, A. Kornaev, A. Galichev and Alexander Babin (State University – ESPC, Oryol, Russia).

P.17) “CFD analysis of oil film cooling influence on thermal state of thrust sliding bearing”

D Boyarskiy, Andriy Zahorulko (Sumy State University, Ukraine), V Martsinkovsky (TRIZ Ltd., Ukraine) and Michel Fillon (Institut Pprime, France).

P.18) “Partitioned Fluid-Structure Interaction Techniques Applied to the Conformal EHL Solution of Dynamically Loaded Connecting-rod Bearings”

Francisco J Profito, Daniele Dini (Imperial College London, UK) and Demetrio C Zachariadis (University of São Paulo, Brazil).

P.19) “Control on Wear of Journal Bearing Operating in Mixed Lubrication Regime Using Grooving Arrangements”

S. M. Muzakkir (Jamia Millia Islamia, India), K.P. Lijeshb, Harish Hirani (Indian Institute of Technology, India) and G. D. Thakre (Indian Institute of Petroleum, India).

P.20) “Analysis of rotordynamics coefficients of seal-bearing unit of multistage centrifugal pump”

Peczki G (Silesian University of Technology, Poland) and Andriy Zahorulko (Sumy State University, Ukraine).