

International Conference on Energy Efficiency in Motor Systems

Tokyo 17 – 19 September 2019

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| Tuesday, 17 September | | | |
| 09:00-11:00 | <p>Opening plenary session</p> <p>Welcome speech by the Japan Electrical Manufacturers' Association</p> <p>Hiroyuki Uchiyama, Deputy Director, Energy Efficiency Division, Agency for Natural Resources and Energy, Japan</p> <p>Ronald Piers de Raveschoot, DG ENER, European Commission</p> <p>Benno Weis, European Motor Manufacturers Association (CEMEP)</p> <p>Ajit Advani, International Copper Association</p> <p>Paolo Bertoldi, European Commission, Joint Research Centre</p> | | |
| 11:00-11:30 | Coffee break | | |
| 11:30-13:00 | <table border="0"> <tr> <td style="vertical-align: top;"> <p>Session 0.a Motor 1</p> <p><i>Chair: Hiroyuki Ohsaki</i></p> <p>21. Novel Design of Delta Connected PM Synchronous Machines Considering Rotor Skewing <i>Juergen Redlich, Leibniz University Hannover, Germany</i></p> <p>37. EC-motors in Fan Applications: a Case Study <i>Kurt Stockman, Ghent University, Belgium</i></p> <p>32. Small Variable Speed Motors for Industrial Use - The Needs for High Efficiency <i>Tadashi Homma, Oriental Motor CO. LTD, Japan</i></p> </td> <td style="vertical-align: top;"> <p>Session 0.b Policies & Programme 1</p> <p><i>Chair: Takeshi Obata</i></p> <p>25. Results from the United States Motor System Market Assessment <i>Prakash Rao, Lawrence Berkeley National Laboratory, USA</i></p> <p>39. A Global Update on the Markets for Motors, Drives, and Motor-driven Equipment <i>Preston Reine, IHS Markit, USA</i></p> <p>8. Increasing the Energy Savings of Motor Applications: The Extended Product Approach <i>Benno Weis, Siemens, Germany</i></p> </td> </tr> </table> | <p>Session 0.a Motor 1</p> <p><i>Chair: Hiroyuki Ohsaki</i></p> <p>21. Novel Design of Delta Connected PM Synchronous Machines Considering Rotor Skewing <i>Juergen Redlich, Leibniz University Hannover, Germany</i></p> <p>37. EC-motors in Fan Applications: a Case Study <i>Kurt Stockman, Ghent University, Belgium</i></p> <p>32. Small Variable Speed Motors for Industrial Use - The Needs for High Efficiency <i>Tadashi Homma, Oriental Motor CO. LTD, Japan</i></p> | <p>Session 0.b Policies & Programme 1</p> <p><i>Chair: Takeshi Obata</i></p> <p>25. Results from the United States Motor System Market Assessment <i>Prakash Rao, Lawrence Berkeley National Laboratory, USA</i></p> <p>39. A Global Update on the Markets for Motors, Drives, and Motor-driven Equipment <i>Preston Reine, IHS Markit, USA</i></p> <p>8. Increasing the Energy Savings of Motor Applications: The Extended Product Approach <i>Benno Weis, Siemens, Germany</i></p> |
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| 13:00-14:00 | Lunch break | | |

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| 14:00-15:30 | Session 1.a Motor 2 <i>Chair: Martin Doppelbauer</i> 1. High Efficiency IE4 Line-start Synchronous Reluctance Motors <i>Francesco Parasiliti, University of L'Aquila, Dept. of Industrial and Information Engineering and Economics, Italy</i> 27. Coordination of IEC & ISO Standards for Energy Efficient Electric Motor Driven Systems <i>Conrad U. Brunner, Impact Energy Inc., Switzerland</i> 6. Surface Eddy Current Suppression on Additively Manufactured Solid Rotor Active Parts <i>Max Hullmann, Institute for Drive Systems and Power Electronics, Germany</i> | Session 1.b Policies & Programme 2 <i>Chair: Peter Radgen</i> 5. Global Motor Driven System Metrics <i>Dan Delaney, Regal Beloit, USA</i> 24. Energy Score Card: One of Key Execution to Transform the Market for Energy Efficient Motors <i>Hakan Gedik, EMOSAD, Turkey</i> 50. Topmotors Training Program "IEO" - Sino-Swiss (China): Knowledge Transfer and Cooperation <i>Rolf Tieben, Impact Energy Inc., Switzerland</i> |
| 15:30-16:00 | Coffee break | |

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| 16:00-17:30 | Session 2.a Motor 3 <i>Chair: Francesco Parasiliti</i> 4. A Novel Approach to Predict Reed Critical Frequency of Vertical Motors <i>Harendra Singh, GE Industrial Motors, India</i> 22. Evaluation of High-Tech Electrical Steel in a High-Speed Permanent Magnet Synchronous Machine for an Aircraft Application <i>Mina Mirzadeh, Institute for Drive Systems and Power Electronics, Leibniz University Hannover, Germany</i> 47. The SKF Generalised Bearing Life Model for Hybrid Bearings <i>Magnus Arvidsson, SKF, Sweden</i> | Session 2.b Policies & Programme 3 <i>Chair: Dan Delaney</i> 13. Programme for In-depth Analyses of Electric Motor Systems in Industry (ProAnalySys) <i>Richard Phillips, Swiss Federal Office of Energy</i> 31. Review of Updates to the US Rule Making Process – Ways Regulators Can Improve Their National Policy Making Processes <i>Kirk Anderson, The National Electrical Manufacturers Association (NEMA,) USA</i> 51. Remote Condition Monitoring Platform Solution <i>Robert Boteler, Nidec Motor Corp, USA</i> |
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| Wednesday, 18 September | |
| 09:00-10:30 | Session 3.a Motor 4 <i>Chair: John Petro</i> 52. eTrailer <i>Robert Boteler, Nidec Motor Corp, USA</i> 67. Electromagnetic Design of Propulsion Motors with Superconducting Field Coils for Electrified Aircraft <i>Yusuke Ishida, The University of Tokyo, Japan</i> 3. Design methodology for a PM electrical variable transmission used in HEV <i>Florian Verbelen, Ghent University, Belgium</i> |
| | Session 3.b Policies & Programme 4 <i>Chair: Maarten van Werkhoven</i> 20. IE3 Efficiency Class as MEPS for Industrial Motor: how Brazil got there <i>George Soares, Centro de Pesquisas de Energia Elétrica, Brazil</i> 43. A Decision-making Tool Incorporating Multiple Benefits of Motor Systems Retrofits <i>Rita Werle, Impact Energy Inc., Switzerland</i> 61. European Ecodesign Material Efficiency Standardization Overview for Circular Economy Aspects in Motor & Power Drive Systems <i>Martial Patra, Schneider Electric, France</i> |
| 10:30-11:00 | Coffee break |

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| 11:00-13:00 | Session 4.a Motor 5 <i>Chair: Edson Bortoni</i> 9. Comparison between the Use of the Middle Ring and/or Skewed Bars in Induction Motor Rotor <i>Sebastião Lauro Nau, WEG Equipamentos Elétricos, Brazil</i> 64. Development of Ultimate High-Efficiency Motor by using High-Bs Nanocrystalline Alloy <i>Hirooki Tokoi, Hitachi, Ltd. Research & Development Group, Japan</i> 2. Efficiency Measurement Strategy for a Planetary Gearbox with 2 Degrees of Freedom <i>Florian Verbelen, Ghent University, Belgium</i> 17. Development of High-Precision Efficiency Measuring Device for High Power Motor Drive Systems <i>Shozo Yoda, HIOKI EUROPE GmbH, Germany</i> | Session 4.b HVAC <i>Chair: Paolo Bertoldi</i> 56. Evaluation and Application of Existing Air Curtain Effectiveness Methodology <i>David Johnson, Berner International LLC, USA</i> 44. Promoting Electric Water to Water Heat Pumps at Industrial Sector in India <i>Abdessalem Rabhi, IGES, Japan</i> 29. Refrigeration Systems - Optimal Temperature Setpoint Regarding the Air-mixing in a HVAC System <i>Jérôme Jeanclos, Sherpa engineering for Schneider Electric, France</i> 49. NH3-CO2 Brine System for Cold Storages and Seafood Processing Plants in India <i>Abdessalem Rabhi, IGES, Japan</i> |
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| <p>14:00-15:30</p> | <p>Session 5.a Motor 6</p> <p><i>Chair: Martin Doppelbauer</i></p> <p>11. Modeling of Vertical and Horizontal Roebel Bar Force Distributions in Large Electrical Machines Considering longitudinal Transposition <i>Amir Ebrahimi, Leibniz University Hannover, Germany</i></p> <p>65. Radial Gap Type Motor using Amorphous Metal for Iron Core <i>Yuji Enomoto, Hitachi, Ltd. Research & Development Group, Japan</i></p> <p>33. Semi-Analytical Calculation of Field and Loss Distribution in the Tooth Tips of Electrical Machines <i>Alexander Rehfeldt, Leibniz University, Germany</i></p> | <p>Session 5.b Policies & Programme 5</p> <p><i>Chair: Paolo Bertoldi</i></p> <p>69. The effect of Top Runner motor (IE3) regulation in Japan <i>Takeshi Obata, The Japan Electrical manufacturer's Association (JEMA) Hitachi industrial equipment systems co. Ltd., Japan</i></p> <p>36. The market of electric motors, pumps & fans in the European Union and Switzerland <i>Rita Werle, Impact Energy Inc., Switzerland</i></p> <p>53. Pilot Audit Program for Electric Motor Driven Systems <i>Maarten van Werkhoven, TPA advisors, Netherlands</i></p> |
| <p>15:30-16:00</p> | <p>Coffee break</p> | |
| <p>16:00-17:30</p> | <p>Session 6.a Motor 7</p> <p><i>Chair: Sebastião Nau</i></p> <p>15. Operation Analysis of an Integrated Linear Hybrid Flux Modulating Motor for a Direct-drive Belt Conveyor <i>Alexander Hoffmann, Institute for Drive Systems and Power Electronics, Germany</i></p> <p>35. The performance analysis of copper rotor motors for high speed applications <i>Daniel Liang, International Copper Association, China</i></p> <p>70. Development and Loss Evaluation of High-Speed PM Synchronous Machine <i>Mototsugu Omura, Meidensha Corporation, Japan</i></p> | <p>Session 6.b Policies & Programme 6</p> <p><i>Chair: Rita Werle</i></p> <p>23. Motor regulation enforcement/surveillance methods and consequences <i>Robert Boteler, Nidec Motor Corp, USA</i></p> <p>59. TopVFD: VFD retrofit program for electric fixed speed motors <i>Rolf Tieben, Impact Energy Inc., Switzerland</i></p> <p>16. Strategies to Promote Energy Efficient Compressed Air Systems Among Indian Companies <i>Aditi Khodke, Institute for Global Environmental Strategies (IGES), Japan</i></p> |

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| Thursday, 19 September | | |
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| 09:00-10:30 | <p>Session 7.a Policies & Programme 7</p> <p><i>Chair: Ronald Piers de Raveschoot</i></p> <p>18. Transformation Programme for Low-Efficient Electric Motors and Market Surveillance Activities in Turkey <i>Mevlüt Hürol Mete, Ministry of Industry and Technology, Turkey</i></p> <p>38. The Public Energy Efficiency Policies Mapped and Implemented for the Industrial Motor Reconditioning Sector in Brazil <i>George Alves Soares Centro de Pesquisas de Energia Elétrica – CEPEL</i></p> <p>14. Self-assessment Tool for the Estimation of the Savings Potential of Electric Motor Systems <i>Richard Phillips, Swiss Federal Office of Energy, Switzerland</i></p> | <p>Session 7.b Pumps, Compressors & Fans 1</p> <p><i>Chair: Paolo Bertoldi</i></p> <p>58. Labelling of Air Compressors – Much More than Nameplate Data <i>Peter Radgen, University of Stuttgart, IER, Germany</i></p> <p>34. Theoretical and Experimental Evaluation of Compressed Air Leakages <i>Manuel Unger, University of Stuttgart, IER, Germany</i></p> <p>45. Digitalization in Electric Motor Driven Systems <i>Maarten van Werkhoven, TPA advisors, Netherlands</i></p> |
| 10:30-11:00 | Coffee break | |

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| 11:00-13:00 | Session 8.a Drives <i>Chair: Martial Patra</i> 12. Calorimetric Efficiency Determination of Power Electronic Variable Speed Drives <i>Stan Caron, Ghent University, Belgium</i> 28. Round Robin for Converter Losses: Results from Phase 1, Uniform Testing Protocol <i>Conrad U. Brunner, Impact Energy Inc., Switzerland</i> 42. Preliminary Results from (RR'C) Round Robin for Converter Losses, Phase 2 <i>Andrea Vezzini, Bern University of Applied Sciences</i> 46. Embedded Estimation of Variable Speed Drive Input Current Distorsion <i>Jérôme Jeanclos, Sherpa engineering for Schneider-Electric, France</i> | Session 8.b Pumps, Compressors & Fans 2 <i>Chair: Tim Mathson</i> 19. Comparison of Fixed and Variable Speed Pumps under Consideration of Manufacturer and Operator Aspects <i>Vincent Becker, Hochschule Kaiserslautern, Germany</i> 60. New Composite Containment Shell for Magnetically Driven Pumps <i>Nicolas Weibel, Greene, Tweed & Co. (Suisse) SA, Switzerland</i> 66. Fan Energy Index (FEI) in Regulations and Applications <i>Michael Ivanovich, AMCA International, Inc., USA</i> 30. Hydraulic Systems Driven by Electric Motors. Hydraulic and Electric System Optimization <i>Sandie B. Nielsen, Danish Technological Institute, Denmark</i> |
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| 14:00-15:00 | Session 9.a Motor 8 <i>Chair: Sebastião Nau</i> 73. Comparison of Different Methods to Determine the Per-Phase Equivalent Circuit Parameters of Three-Phase Induction Motors using IEC Nameplate and Catalogue Data <i>Edson Bortoni, Universidade Federal de Itajubá, Brazil</i> 72. Experimental Study on Three-Phase Induction Motor Performance Under Supply Voltage Unbalance for Star and Delta Connections <i>Edson Bortoni Universidade Federal de Itajubá, Brazil</i> | Session 9.b Pumps, Compressors & Fans 3 <i>Chair: Conrad U. Brunner</i> 7. Conserving Energy in Compressed Air System <i>Padmanabh Nagarkar, XL Consultants, India</i> 55. Optimizing Pump and Compressor Selection for Energy Efficiency using True Weighted Efficiency (TWE) <i>Trygve Dahl, Intelliquip, Inc., USA</i> |
| 15:00-15:30 | Coffee break | |
| 15:30-16:30 | Closing plenary session Maarten van Werkhoven, TPA advisors, Netherlands John Petro, Petro and Associates Peter Radgen, University of Stuttgart, IER, Germany | |