

ICEM 2004

Conference Programme

(5-8 September 2004)

Monday, 6 September 2004, 10.00 – 12.00 Plenary Session (Kiev (Kijów) Theatre)
Chairmen: B. Chalmers / S. Wiak

- 1. Time-varying sliding surface for position control of an induction machine drive**
A. Sivert, F. Betin, A. Faqir, G.A. Capolino – *France*, (695)
- 2. Hidden Values of Technology**
A.M. Pawlak – *USA*, (832)
- 3. Achievements of Cantoni Group in Manufacturing of Electric Motors**
A. Korycki – *Poland*, (831)

Monday, 6 September 2004, 14.30 – 16.30 Oral Session 1 (ICC) Industrial Applications
Chairmen: B. Ertan / J.Tegopoulos

- 1. Elektrownia Opole Power Plant - an Environment Friendly Company**
Adam Micker – *Poland*, (830)
- 2. Core Losses in Turbine Generators: Segment Core Evaluated by Torque Method**
H. Mogi, C. Kaido, E. Minematsu, K. Hanzawa, A. Nakahara, K. Takahashi, K. Ide, J. Kaneda, K. Hattori, T. Watanabe – *Japan*, (158)
- 3. Core Loss in Turbine Generators: Analysis of No-load Core Loss by 3D Magnetic Field Calculation**
A. Nakahara, K. Takahashi, K. Ide, J. Kaneda, K. Hattori, T. Watanabe, H. Mogi, C. Kaido, E. Minematsu, K. Hanzawa – *Japan*, (159)
- 4. A statistical Procedure to Obtain Catalog Data for Three-Phase Induction Motors**
P.S. dos Santos, A. Habitzreuter, E.F.M. Sato – *Brazil*, (164)
- 5. Dynamic Short Circuits of Traction Drives - Comparison of Induction Motors with PM Synchronous Motor**
M. Brauer, J. Germishuizen, A. Jöckel, O. Körner – *Germany*, (145)
- 6. Electromagnetic Design Study of Medium Size HTS Transformer**
F. Zizek, Z. Jelinek – *Czech Republic*, (284)
- 7. Optimised Calculation of Losses in Large Hydrogenerators using Statistical Methods**
G. Traxler-Samek, A. Schwery, R. Zickermann, C. Ramirez – *Switzerland*, (700)

**Monday, 6 September 2004,
14.30 – 16.30 Oral Session 2 (Palace “Pod Baranami”)
Permanent Magnet Machines**

Chairmen: A. G. Jack / M. Poloujadoff

- 1. Equivalent Circuit Model of Solid-Rotor Induction / Hysteresis Motors**
J.R. Bumby, E. Spooner – *UK*, M. Jagiela – *Poland*, (225)
- 2. A General Description of High-Frequency Position Estimators for Interior Permanent-Magnet Synchronous Motors**
Frederik M.L.L. De Belie, Jan A.A. Melkebeek, K.R. Geldhof, L. Vandeveldel, R.K. Boel – *Belgium*, (390)
- 3. Coupled Model for the Interior Type Permanent Magnet Synchronous Motors at Different Speeds**
M. Pérez-Donsión – *Spain*, (490)
- 4. Dynamic Modelling of a Linear Vernier Hybrid Permanent Magnet Machine Coupled to a Wave Energy Emulator Test Rig**
M.A. Mueller, J. Xiang, N.J. Baker, P.R.M. Brooking – *UK*, (495)
- 5. A Simplified Approach to Permanent Magnet and Reluctance Motor Characteristics Determination by Finite-Element Methods**
K. Reichert – *Switzerland*, (540)
- 6. Design and Manufacturing of Steel-Cored Permanent Magnet Linear Synchronous Motor for Large Thrust Force and High Speed**
Ho-Yong Choi, Sang-Yong Jung, Hyun-Kyo Jung – *Korea*, (655)

**Monday, 6 September 2004,
14.30 – 16.30 Oral Session 3 (Palace “Pod Baranami”)
Permanent Magnet Machines**

Chairmen: A.M. El Serafi / K. Miya

- 1. High Pole Number, PM Synchronous Motor with Concentrated Coil Armature Windings**
A. Di Gerlando, R. Perini, M. Ubaldini – *Italy*, (58)
- 2. Accurate FEM Iron Loss Estimations Applied to PMSM for Electric and Hybrid Vehicles**
G. Pugsley, A. Kedous-Lebouc, A. Fonseca – *France*, (131)
- 3. Magnetic Field Distribution in Radial-Field Brushless Permanent Magnet Motors**
E. Bolte, J. Peschke – *Germany*, (426)
- 4. Sizing Equations and Power Density Evaluation of Dual-Rotor, Radial-Flux, Toroidally - Wound, Permanent-Magnet Machines**
R. Qu, T.A. Lipo – *USA*, (510)
- 5. Optimisation of a Discrete Halbach - like Permanent Magnet Array for a Brushless Motor**
R. Wrobel, P.H. Mellor – *UK*, (769)
- 6. Finite Element analysis of two PM-Motors with Buried Magnets**
J. Kolehmainen – *Finland*, (519)

Monday, 6 September 2004,
14.30 – 16.30 Poster Session 1 (Palace “Pod Baranami”)
Permanent Magnet Machines

Chairmen: L. Antunes / A. Di Napoli

- 1. A Dynamic Model for Interior Permanent Magnet Synchronous Machine. Application to a Starter-Generator**
L. Chédot, G. Friedrich – *France*, (92)
- 2. Coupled Analytical and Numerical Predictions of Permanent Magnet Motors Parameters with Electronic Commutation**
D. Rahem, K. Srairi, S.M. Mimoune, M. Chabane, S. Srairi, A. Miraoui – *France*, (95)
- 3. Permanent Magnet Generator for 200 KW Station of a New Tipe**
J. Danilevich, V. Antipov, I. Kruchinina – *Russia*, (121)
- 4. Dynamic Performance Analysis of Multi-phase Permanent Magnet Synchronous Motor in Electric Propulsion System**
Xie Wei, Jing Hongmin, Hao Ying – *P. R. China*, (136)
- 5. A New Combination Method to Realize High Efficiency Outer Rotor Type Permanent Magnet Motors**
Y. Enomoto, M. Kitamura, Y. Motegi, T. Andoh – *Japan*, (160)
- 6. Cost Reduction of Permanent Magnet Synchronous Motor with Axial Flux**
S. Tounsi, R. Neji, M. Gzara, F. Sellami – *Tunisie*, (173)
- 7. Parameter Decoupling in Permanent Magnet Motor Models Including Space Harmonics and Saturation**
E. Nipp – *Germany*, (201)
- 8. Iron Loss Modelling and Effects in Salient Pole Permanent Magnet Synchronous Motors – A review**
M. Popescu, C. Cossar, TJE Miller, M. McGilp – *UK*, (221)
- 9. Effect of Air Gap Thickness on Transverse-Flux Permanent Magnet (TFPM) Machines with Flux-Concentration**
M.R. Dubois – *Canada*, H. Polinder – *The Netherlands*, (229)
- 10. Analytical formula for rotating motor permanent magnet MMF in a general case**
M. Marković, M. Jufer, Y. Perriard – *Switzerland*, (261)
- 11. Design of a Large Diameter 2-Axis Consequent-Pole Bearingless PM Motor/Generator for Flywheel Application**
D.G Dorrell, G.R Hill – *UK*, A. Chiba – *Japan*, (308)
- 12. A New Analytical Method on the Field Calculation of Interior Permanent-Magnet Synchronous Motors**
A. Kiyoumars, M. Moallem – *Iran*, (323)
- 13. A Comparison between Axial and Radial Flux PM Motor by Optimum design method from the required output NT characteristics**
K. Akatsu, S. Wakui – *Japan*, (361)
- 14. Maximization of No-Load Flux Density in Surface Mounted Permanent Magnet Motors**
F. Dubas, C. Espanet, A. Miraoui – *France*, (430)
- 15. Analytical Model for Multi-Stack Axial Flux Permanent Magnet Generator**
P. Anpalahan, A. Walker, S. Tsakok, S. Etemad, M. Lamperth – *UK*, (436)
- 16. Design and Comparison of Concentrated Windings and Distributed Windings Interior PM Machines for a Hybrid Vehicle Application**
L. Vido – *France*, Y. Amara – *UK*, E. Hoang, M. Gabsi, F. Chabot, M. Lécivain – *France*, (437)

17. **A Novel Approach to Reduce Short-Circuit Current of PM Machines**
C. Noël, N. Takorabet, F. Meibody-Tabar – *France*, (440)
18. **Axial Flux Surface Mounted PM Machine with Field Weakening Capability**
J.A. Tapia, D. Gonzalez, R.R. Wallace, M.A. Valenzuela – *Chile*, (459)
19. **Losses in high speed permanent magnet motor with magnetic levitation for 40000/min, 40 kW**
A. Binder, M. Klohr, T. Schneider – *Germany*, (464)
20. **Two Phase Transverse Flux Permanent – Magnet Machine**
A.D. Popan, I.A. Viorel, R.C. Ciorba – *Romania*, (501)
21. **Performance Analysis of Fractional Slot Wound PM-Motors**
P. Salminen, J. Mantere, J. Pyrhönen, M. Niemelä – *Finland*, (509)
22. **On the Reduction of Ripple Torque in PM Synchronous Motors without Skewing. Accuracy Problems.**
J. Skoczylas – *Switzerland*, (759)
23. **A Novel Approach on the Design and Analysis of a Permanent Magnet Assisted Synchronous Reluctance Motor**
E. Beser, H.T. Duru, S. Camur, B. Arifoglu, E. Kandemir – *Turkey*, (516)
24. **Magnet Design Procedure of Single-Phase LSPM Synchronous Motor**
Sook Hyun Hong, Kwon Min Ko, Chan Bae Park – *Korea*, (520)
25. **Characterization and modeling of iron loss in a synchronous permanent magnet machine under no-load conditions**
T. Gautreau, A. Kedous-Lebouc, T. Chevalier – *France*, (120)
26. **Investigation on Pole-slot Combinations for Permanent-Magnet Machines with Concentrated Windings**
F. Libert, J. Soulard – *Sweden*, (530)
27. **PM-Motors with Concentrated, Non Overlapping Windings, Some Characteristics**
K. Reichert – *Switzerland*, (541)
28. **Electromagnetic Modelling of Permanent Magnet Axial Flux Motors and Generators**
F. Marignetti – *Italy*, J.R. Bumby – *UK*, (588)
29. **Design of an integrated 100kW Permanent Magnet Synchronous Machine in a Prototype Thruster for Ships Propulsion**
Ø. Krøvel, R. Nilssen, S.E. Skaar, E. Løvli, N. Sandøy – *Norway*, (697)
30. **A New Concept of Synchronous Reluctance Motor Co-Excited by Permanent Magnets - Comparison between Laboratory Tests and Performance Calculations**
J. Bernatt, R. Rossa – *Poland*, (722)
31. **The Characteristics of the Magnetic Saturation in the Interior Permanent Magnet Synchronous Motor**
Sang Yeop Kwak, Jae Kwang Kim, Hyun Kyo Jung – *Korea*, (723)
32. **Studies on Permanent Magnet Electric Propulsion System for Submarine**
Yin Binchuan, Zou Yunping – *China*, (733)
33. **Analytical and numerical modelling of demagnetization phenomenon in a permanent magnet motor**
A. Boucherit, S. Srairi, A. Djerdir, A. Miraoui – *France*, (766)
34. **Analytical Calculation of Magnetizing Inductionces in Interior Permanent-Magnet Motors**
M.R. Hassanzadeh, A. Kiyoumars, M. Moallem – *Iran*, (768)

**Monday, 6 September 2004,
14.30 – 16.30 Poster Session 2 (Palace “Pod Baranami”)
Special Machines**

Chairmen: R. Hanitsch / M. Dems

- 1. 3D FEA Based Investigation of the PM Height Effect on the Torque Production Capability of a Claw Pole TFPM**
A. Masmoudi – *Tunisia*, A. Elantably – *USA*, (91)
- 2. Low-speed Synchronous Generator with Freewheeling Magnets**
K. Schoepp, P. Zieliński - *Poland* (138)
- 3. A New Configuration of a Transverse-Flux Permanent-Magnet Machine (TFPM) for a Wheel-Motor**
V. Isastia, S. Meo – *Italy*, (167)
- 4. Induction Motor with Salient Poles and Radial Assembled Stator Laminations**
L. Livadaru, A. Simion – *Romania*, (178)
- 5. Three-phase interior magnet modular brushless machines for automotive applications**
Z.P. Xia, J. Wang, D. Howe – *UK*, (193)
- 6. Sine wave current feeding of doubly salient switched reluctance machines. Application to the car starter generator**
M. Gabsi, A. De Vries, M. Le Pincart, Y. Bonnassieux, M. Lecrivain, C. Plasse – *France*, (199)
- 7. Solid-Rotor Axial-flux Motors for Very High-Speed Turbo-Assist Drives**
E. Spooner, J.R. Bumby – *UK*, (226)
- 8. Measurement and calculation of EMF in small commutator machines including brush shift, skew and short coil pitch**
M. Klauz – *UK*, (310)
- 9. Spherical Induction Motor with Ferrofluids in Gap**
D. Spalek, K. Waleczek – *Poland*, (242)
- 10. Design technique for reducing the cogging torque in large surface mounted magnet motors**
R. Lateb, N. Takorabet, F. Meibody-Tabar, J. Enon, A. Sarribouette – *France*, (374)
- 11. The Characteristics Analysis, Design of Induction Motor for the Main Coolant Pump of the Reactor Considering the Influence of the Can**
Dae-Hyun Koo, Koon-Seok Chung, Yun-Hyun Cho – *Korea*, (378)
- 12. Capacitor brushless DC motor**
T. Glinka, A. Fręchowicz – *Poland*, (383)
- 13. Flux Weakening Performances for a Double-Excited Machine**
D. Fodorean – *Romania*, A. Djerdir, A. Miraoui – *France*, I.A. Viorel – *Romania*, (434)
- 14. Performance Analysis of an Outside Spin Brushless D.C. Motor**
P. Andrada, B. Blanqué, J.I. Perat, M. Torrent – *Spain*, (453)
- 15. Effects of Thickness of Ring Magnet on Characteristics of Direct-Drive Motor Built into a Camcorder Zoom Lens Barrel**
H. Takano, H. Oshima, H. Nanko – *Japan*, (483)
- 16. Scaling Procedure Applied to the Transverse Flux Motors**
I.A. Viorel, M. Crivii, M. Jufer – *Switzerland*, A. Viorel – *Romania*, (500)
- 17. Fractional-slot IPM servomotors: analysis and performance comparisons**
N. Bianchi, S. Bolognani, G. Grezzani – *Italy*, (507)
- 18. Electromagnetic Actuators Featuring Multiple Degrees-of-Freedom: a Survey**
P. Bolognesi, O. Bruno, A. Landi, L. Sani, L. Taponecco – *Italy*, (518)

19. **Performance Analysis of a Solid Rotor Disk Induction Motor**
S.E. Abdollahi, M. Mirsalim, M. Mirzayee, A. Vahedi – *Iran*, (546)
20. **Low-Stiffness Motor: Review of Different Ironless Motor Topologies for Use in Precision Engineering Applications**
M.H. El-Husseini, A. Bennani, J.W. Spronck, H. Polinder, H.H. Langen, J.C. Compter, J. van Eijk – *The Netherlands*, (601)
21. **Design to Improve Starting Capability of Single-phase Line-start Synchronous Reluctance Motor**
Hyuk Nam, Su-Beom Park, Jung-Pyo Hong, Tae-Uk Jung, Jae-Boo Eom – *Korea*, (624)
22. **New development of multifunction device for 4 different functions in mobile phones**
Sang-Moon Hwang, Hong-Joo Lee, Keum-Shik Hong, Ji-Hoom Kim, Gun-Yong Hwang – *South Korea*, (663)
23. **Magnetic Barrier Effect on Operating Performances of Switched Reluctance Motor**
Ji-Young Lee, Ki-Yong Nam, Jung-Pyo Hong, Jin Hur – *Korea*, (668)
24. **Simulation and experimentation of a Two-Phase Claw-Pole Motor**
A. Reinap, M. Alaküla – *Sweden*, (701)
25. **New Design of Switched Reluctance Motor for Improving Its Efficiency**
P. Rafajdus, V. Hrabovcova; M. Liptak, I. Zrak, – *Slovak Republic*, (720)
26. **Induction motors with spherical rotor**
G. Kamiński, A. Smak – *Poland*, (740)
27. **Design and Optimisation of Brushless Integrated Starter-Generator**
L. Gašparin, R. Fišer – *Slovenia*, (745)
28. **Simulation and Experimentation of a Single-Phase Claw-Pole Motor**
A. Reinap, M. Alaküla, G. Nord, L.O. Hultman – *Sweden*, (746)
29. **Optimal Excitation Parameters of a Single-Phase SR Generator**
M. Lipták, P. Rafajdus, V. Hrabovcová, I. Zrak, – *Slovak Republic*, (760)
30. **Comparison of brushless DC motors with concentrated winding and segmented stator**
J. Cros, P. Viarouge – *Canada*, R. Carlson, L. V. Dokonal – *Brazil*, (761)

<p>Tuesday, 7 September 2004,</p> <p>9.00 – 11.00 Oral Session 4 (ICC)</p> <p>Special Machines</p>
<p>Chairmen: M. Donsion / J. Gyselinck</p>

1. **Design of a high speed permanent magnet brushless generator for microturbines**
J.F. Gieras, U. Jonsson – *USA*, (363)
2. **Asynchronous wheel hub motor with massive rotor iron and open rotor slots for wheel hub drives in street cars**
W. Hackmann – *Austria*, A. Binder – *Germany*, (463)
3. **Control of Switched Reluctance Machines for Flywheel Energy Storage Applications**
M. Holub, R. Palka, W.R. Canders – *Germany*, (492)
4. **Study on Magnetic Field and Output Voltage of Axial Type Generator for Wind Power Generation**
E. Mukai, S. Washimiya – *Japan*, (462)
5. **Electrostatic Synchronous Motors**
M. Crivii, M. Jufer – *Switzerland*, (460)

<p>Tuesday, 7 September 2004, 9.00 – 11.00 Oral Session 5 (Palace “Pod Baranami”) Special Machines</p>
<p>Chairmen: G. Henneberger / R. Rabinovici</p>

1. **Stator Optimization of 6-phase Claw-Pole Alternators Using Asymmetric Winding Arrangements**
S. Schulte, C. Kaehler, C. Schlensok, G. Henneberger – *Germany*, (134)
2. **Equivalent Circuit Parameter Calculation of Canned Solid Rotor Induction Motor Using Finite Element Method**
L.T. Ergene, S.J. Salon – *USA*, (177)
3. **Design of High-Speed Brushless DC Motors for Sensorless Operation**
Z.Q. Zhu, J.D. Ede, D. Howe – *UK*, (235)
4. **The Influence of Stator Design on the Performance of Fault Tolerant Machines**
G.J. Atkinson, B.C. Mecrow, A.G. Jack, D.J. Atkinson, B. Green – *UK*, (381)

<p>Tuesday, 7 September 2004, 9.00 – 11.00 Oral Session 6 (Palace “Pod Baranami”) Special Machines</p>
<p>Chairmen: G. A. Capolino / J. Turowski</p>

1. **Performance Analysis of a Transverse Flux Wheel Motor by a Non-linear Mathematical Model**
M. Andriollo, M. Forzan, A. Morini, G. Martinelli, A. Tortella, M. Zerbetto – *Italy*, (406)
2. **Axial Flux Machine Stator Construction with Concentrated Windings**
P. Anpalahan, A. Walker, S. Meister, S. Tsakok, M. Lampérth – *UK*, (435)
3. **Structural Design-Optimization of Switched Reluctance Motors Based on Magnetic Forces Using Finite Element Method coupled with a Genetic Algorithm**
F. Bokose, L. Vandeveld, J. Melkebeek – *Belgium*, (688)
4. **An Internally Regulated Axial flux Generator for the Independent Control of High Intensity Discharge (HID) Lamps**
N. Jakeman, N. Al-Khayat – *UK*, (632)
5. **Evaluation of a Radial Flux BLDC Drive and an Induction Motor Drive for Washing Machine Applications**
C. Karacan, H. B. Ertan – *Turkey*, (776)
6. **Permanent Magnet Motor Improvement, Using the Concept of Longitudinal Flux Concentration**
I.E. Chabu, S.I. Nabeta, J.R. Cardoso – *Brazil*, (525)

Tuesday, 7 September 2004,
9.00 – 11.00 Poster Session 3 (Palace “Pod Baranami”)
Special Machines, Actuators

Chairmen: J. Gieras / E. Napieralska

- 1. Performance of Mixed Pole Machines as Stand Alone Generator**
A.L. Mohamadein, R.A. Hamdy, A.S. Abdel-khalik – *Egypt*, (105)
- 2. Finite Element Modeling of a Two-Degree of Freedom Spherical Actuator**
G. Galary, B. Dehez, D. Grenier – *Belgium*, (289)
- 3. Control of a Shape Memory Alloy (SMA) Actuator**
F. Castelli Dezza, E.A. Longaretti, G. Bucca, M. Mauri, – *Italy*, (586)
- 4. Modelling of Two-Dimensional Electromagnetic Field in both Linear and Tubular Actuators**
J. Guerreiro Gonçalves – *Portugal*, (407)
- 5. Sizing of automotive claw-pole alternator based on analytical modelling**
L. Albert, C. Chillet, A. Jarosz, J. Rousseau, F. Wurtz – *France*, (400)
- 6. Fast and original modeling of actuators: Example on a switched reluctance motor drive**
F. Sixdenier, L. Morel, J.P. Masson – *France*, (423)
- 7. Design of a Moving Coil Linear Actuator for High-Dynamic Strong-Force Applications**
H. Muamer, B. Reimann, M.G.H.S. Diab, S. Liu – *Germany*, (446)
- 8. Study the Influence of geometric Parameters on the Torque of electrostatic micromotor**
V. Behjat, A. Vahedi, H. Kouhnavard, I. Ziari – *Iran*, (465)
- 9. Modelling and Position Control of Voltage Forced Electromechanical Actuator**
A. Patecki, S. Stepień – *Poland*, (512)
- 10. Overlapping Mesh Model for the Analysis of Electrostatic Microactuators with Eccentric Rotor**
P. Rembowski, A. Pelikant – *Poland*, (558)
- 11. Constructions and models of induction motors with dual stator windings**
K. Pienkowski – *Poland*, (619)
- 12. Dynamic Analysis of Electromechanical Valve Actuators by means of FEM Techniques**
Ch. Boccaletti, P. Di Felice, E. Santini – *Italy*, (628)
- 13. Wobble Step Motor**
N. Ben-Hail, B.Z. Sandler, R. Rabinovici – *Israel*, (85)
- 14. Position Sensorless Control of Interior Permanent Magnet Synchronous Motor Using Extended Electromotive Force**
K. Tanaka, I. Miki – *Japan*, (119)
- 15. Speed Sensorless Field Oriented Control of Induction Motor Based on Sliding Mode Operating in Low Speed Conditions**
F.M. Garcia, E.M. Hemerly – *Brazil*, (124)
- 16. Fuzzy Logic Based Cost Effective Induction Motor Drives**
M. Nasir Uddin, T.S. Radwan, M.A. Rahman – *Canada*, (227)
- 17. Sensorless Control of Synchronous Reluctance Motor Using Modified Flux Linkage Observer with an Estimation Error Correct Function**
T. Hanamoto, A. Ghaderi, T. Fukuzawa, T. Tsuji – *Japan*, (249)
- 18. Fuzzy Logic Based High Performance Control of Induction Motor Including Core Loss**
M. Abdul Mannan, M. Hasan Ali, T. Murata, J. Tamura, T. Tsuchiya – *Japan*, (256)
- 19. Position Sensorless Method for Switched Reluctance Motor Drives**
A. Komatsuzaki, K. Yoshida, I. Miki, H. Noda – *Japan*, (299)

20. **Combination of Voltage Model and High-Frequency Signal Injection for Sensorless Permanent Magnet Synchronous Motor Drives**
A. Piippo, M. Hinkkanen, J. Luomi – *Finland*, (333)
21. **Sensorless Operation of a Permanent Magnet Generator for Future Embedded Aircraft Generation Systems**
S.G. Burrow, P.H. Mellor, T. Sawata, M. Holme – *UK*, (385)
22. **3-Phase Induction Motor Drive with PWM Modulator Using a 8-Bit Low Cost Microcontroller**
E. Kucukguzel, O. Bilgic – *Turkey*, (477)
23. **Sensorless control of a PMSM using an efficient extended Kalman filter**
Z. Boulbair, M. Hilairret, F. Auger, L. Loron – *France*, (637)
24. **Adjustment of Classical and Fuzzy Logic Speed Controllers for Electrical Drives with Elastic Joint**
K. Szabat, T. Orłowska-Kowalska – *Poland*, (797)

<p>Tuesday, 7 September 2004, 9.00 – 11.00 Poster Session 4 (Palace “Pod Baranami”) Finite Element Methodology</p>
<p>Chairmen: A. Binder / K. Komezá</p>

1. **Induction Motor Magnetizing Inductance Modelling as a Function of Torque**
J. Nerg, J. Pyrhönen, J. Partanen – *Finland*, E. Richie – *Denmark*, (200)
2. **Modeling of High Speed, Solid Rotor Induction Machine with Adaptive Finite Element Procedures**
M. Jagieła - *Poland*, J.R. Bumby, E. Spooner – *UK*, (260)
3. **Clustering events related to restricted earth fault and differential relaying on the protection of power transformer**
G. Díaz, P. Arboleya, J. Gómez-Aleixandre, N. de Abajo – *Spain*, (274)
4. **GA Based Optimal Design of Shaded Pole Motor**
V. Sarac, L. Petkovska, M. Cundev, G. Cvetkovski – *Macedonia*, (313)
5. **A new method of numeric magnetic field calculation and field current calculation for synchronous generators**
St. Kunckel, M. Liese – *Germany*, (335)
6. **Unique Determination of One-Damper D-Axis Circuits of Synchronous Machines Using Finite-Element Simulations**
R. Escarela-Perez, E. Campero-Littlewood, T. Niewierowicz, O. Hernández-Anaya – *Mexico*, (152)
7. **Determination of performance characteristics of axially laminated synchronous reluctance motor by means of field-circuit method**
R. Machlarz – *Poland*, (380)
8. **The analysis of the induction motor with magnetic changer of frequency and phases**
R. Goleman – *Poland*, (402)
9. **Two Techniques for Modeling an Induction Motor with Skewed Slots with a Time-Stepping 2D-3D Finite Element Method**
C. Guérin, R. Ruiz, Y. Le Floch, P. Lombard, M. Vilcot, J.P. Ducreux, A. Abakar, L. Sadi-haddad – *France*, (417)
10. **Coupled FEM and System Simulator in the Simulation of A Synchronous Machine Drive with Direct Torque Control**
S. Kanerva – *Finland*, C. Stulz – *Switzerland*, B. Gerard – *Finland*, H. Burzanowska – *Switzerland*, J. Järvinen, S. Seman – *Finland*, (503)
11. **Analysis of Gravitational Generator by Using Finite Element Method**
A. Špérová, P. Fiala – *Czech Republic*, (548)

12. **Transient Performance Analysis for Universal Motors Taking Into Account Commutation and Rotational Loss**
K. Kurihara, S. Sakamoto – *Japan*, (539)
13. **Frequency-dependence of Magnetization of a Slip-ring Induction Generator**
R. Lin, A. Arkkio – *Finland*, (593)
14. **Iron Loss Analysis of Surface Permanent Magnet Motor - Comparison of Measurement and Calculation by FEM**
K. Yamazaki – *Japan*, (585)
15. **The Stereoscopy Visualization in the 3D presentation System of the Electromagnetic Fields**
A. Krolewiak, E. Napieralska – Juszczyk – *France*, M. Pietruszka – *Poland*, (587)
16. **Flux Linkage Calculation in 2D and 3D Finite Element Analysis Including Permanent Magnets**
K.Y. Lu, E. Ritchie, P.O. Rasmussen – *Denmark*, (595)
17. **Harmonic Iron Losses in Stator Core of Brushless Motor with Various Electrical Steels**
K.H. Ha, S.Y. Cha, J.K. Kim, Y. Hur, Y.S. Lim, J.P. Hong – *Korea*, (630)
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- 33. Conditioning of Aircraft Flight Control Surface Loads**
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- 2. 3D Nonlinear Transient Finite Element Analysis of Eddy Currents in the Stator Clamping System of Large Hydro Generators**
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- 4. Extraction of Circuit Parameters from Time Stepping FEM Computation for Coupled Field-Circuit Simulation**
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- 5. Transient Electromagnetic and Coolant Flow Investigations of Synchronous Generators Using Numerical Approaches**
E. Schlemmer, J. Schoenauer, E. Farnleitner, F. Mueller – *Austria*, (511)
- 6. Eccentric air-gap element for transient finite-element machine simulation**
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- 1. Modelling of a six-phase series-connected two-motor drive system**
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- 3. Fields, Damper Currents and Losses in Large Salient-Pole Synchronous Machines with Skewed Stator Slots**
H. Karmaker, A. Knight – *Canada*, (185)
- 4. A Method for the Evaluation of the Universal Machine Performance by Magnetic Network Analysis**
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- 5. Performance of rotors in a Brushless Doubly Fed Induction Machine (BDFM)**
P.C. Roberts, R.A. McMahon, P.J. Tavner, J.M. Maciejowski, T.J. Flack, X. Wang – *UK*, (450)
- 6. Representation of Permanent Magnet Brushless Machine by means of Orthogonal Functions**
P. Witczak, B. Wawrzyniak – *Poland*, E. Napieralska-Juszczak – *France*, (758)

<p>Tuesday, 7 September 2004, 14.45 – 16.45 Oral Session 12 (Palace “Pod Baranami”) Modelling and Simulation of Induction Motors</p>
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2. **A Compact Dynamic Model of Induction Machine for PSPICE Simulation**
W. Jamal, G.V. Williams, P. Igic, P.A. Mawby – *UK*, (89)
3. **Transient Performance of Squirrel Cage Induction Motors with Frequency Inverter Supply taking into Account 2D Field Distribution and 2D Current Displacement in Cylindrical Rotor Bars**
E. Bolte, S. Fiebig – *Germany*, (425)
4. **Dependence of the locked-rotor torque of induction motors on the rotor position**
M. Pineda Sánchez, L. Serrano Iribarnegaray – *Spain*, (727)
5. **Inclusion of Inter-Bar Currents in Multi-Slice FE Modelling of Induction Motors - Influence of Inter-Bar Resistance and Skew Discretisation**
J. Gyselinck – *Belgium*, X. Lopez-Fernandez – *Spain*, (790)
6. **Advanced Methods for Teaching Electrical Machines based on Virtual Laboratories**
P.G. Rovolis, A.G. Kladas, J.A. Tegopoulos – *Greece*, (534)

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<p>Chairmen: A. Arkkio / J. F. Brudny</p>

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3. **Comparison Between TFPM Generator with Toothed Rotor and Conventional PM Synchronous Generator for Direct-Drive Wind Turbines**
M.R. Dubois – *Canada*, H. Polinder – *The Netherlands*, (228)
4. **A New Control Method of Doubly-Fed Synchronous Machine for a Wind Energy Conversion System**
R. Takahashi, J. Tamura, K. Ide – *Japan*, (248)
5. **Wind Generator Stabilization with Doubly-fed Asynchronous Machine**
L. Wu, R. Takahashi, T. Murata, J. Tamura – *Japan*, (255)
6. **Effect of Variable Wind Speed on Wind Turbines with Induction and Doubly Fed Machines**
M. Chomat, L. Schreier, J. Bendl – *Czech Republic*, (295)
7. **Design Optimization of a Low Speed Switched Reluctance Machine for Wind Turbine Applications.**
L. Moreau, M.I. Lamghari-Jamal, M. Machmoum, M.E. Zaim – *France*, (399)
8. **Direct driven synchronous generator for low power wind turbines (vernier reluctance magnet machine)**
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9. **Robust controller for Variable Speed Stall Regulated Wind Turbines**
C. Pournaras, A. Soldatos S. Papathanassiou, A. Kladas – *Greece*, (469)
10. **Analysis of Transient Stability of Fixed Speed Wind Farms**
I. Zubia, X. Ostolaza, J. Molina – *Spain*, (527)
11. **Transient Stability Simulation of Wind Generator Expressed by Multi-Mass Shaft Model**
J. Tamura, Y. Shima, R. Takahashi, T. Murata, S. Yonaga, S. Tominaga, A. Sakahara, Shin-ich Suzuki – *Japan*, (236)
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N. Herrero, C. Veganzones, J.A. Sánchez, S. Martínez, J.R. Wilhelmi – *Spain*, (614)
13. **Unit Sizing of a Small Hybrid Renewable Energy Conversion Systems Under Uncertainty**
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14. **Static and Dynamic Measurements of a Permanent Magnet Induction Generator: Test Results of a New Wind Generator Concept**
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E.J.R. Sambatra, G. Barakat, B. Dakyo – *France*, (679)
17. **Design optimization of axial flux permanent magnet synchronous generator for direct-drive wind energy application**
J. Azzouzi, G. Barakat, B. Dakyo – *France*, (680)
18. **Maximum wind power control using torque characteristic in a Wind diesel system with battery storage**
M. El Mokadem, C. Nichita, B. Dakyo – *France*, W. Koczara – *Poland*, (689)
19. **Losses and Efficiency of a Flywheel Energy Storage System with Permanent- Magnet Synchronous Machine Associated to a Variable-Speed Wind Generator**
G. Cimuca, M.M. Radulescu – *Romania*, Ch. Saudemont, B. Robyns – *France*, (694)
20. **Study of Current and electromotive Force Waveforms in Order to Improve the Performance of Large PM Synchronous Wind Generator**
D. Vizireanu, S. Brisset, P. Brochet, Y. Milet, D. Laloy – *France*, (699)
21. **Voltage Regulation of a Wind Axial-Flux PM Generator with a Novel Mechanical Device**
F. Caricchi, G. De Donato, L. Del Ferraro, F. Giulii Capponi – *Italy*, (756)

<p>Tuesday, 7 September 2004, 14.45 – 16.45 Poster Session 8 (Palace “Pod Baranami”) Thermal, Acoustic Noise and Vibration Aspects</p>
<p>Chairmen: Semyung Wang / W.-R. Canders</p>

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2. **Compensation of Unbalanced Magnetic Forces by Distributed Parallel Circuits**
O.W. Andersen – *Norway*, (88)
3. **Mechanical Model to Study Induction Motor Under Fault Conditions**
P. Jover, M. Negrea, A. Arkkio – *Finland*, (100)
4. **Mechanical Imbalances - Test Bed, Measurement, Detection Technique**
C. Kral, C.J. Fenz, M. Plainer, F. Pirker, G. Pascoli – *Austria*, (176)

5. **Effect of Stress-Dependent Magnetostriction on Vibrations of an Induction Motor**
A. Belahcen – *Finland*, (267)
6. **Comparison of stator- and Rotor-Force Excitation for the acoustic Simulation of an Induction Machine with Squirrel Cage Rotor**
C. Schlensok, G. Henneberger – *Germany* (321)
7. **Routine calculation of losses and temperature rises at the stator end portion of air cooled turbine generators considering the stator slot end field**
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4. **Diagnosis of Induction Machines: Definition of health Machine electromagnetic Signature**
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19. **Diagnostic of inter-turn defect in three phase system by studing hysteresis magnetic harmonics signatures**
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21. **Indirect Vibration Sensors for Switched Reluctance Motors**
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22. **Spectrum Analysis of Turbogenerator Rotor Magnetic Field**
M. Roytgarts – *Russia*, (508)
23. **A New Method for the Diagnosis of Rotor Bar Failures in Induction Machines via wavelet Decomposition**
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27. **Failure Prognosis for Permanent Magnet AC Machines Based on Time-Frequency Analysis**
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28. **MCSA in Inverter Fed Machines: Pitfall and Fallacies**
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29. **Simulation of induction hardening of massive elements**
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30. **Testing of two-speed synchronous motor**
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31. **Diagnostics for Mechanical Fault Finding in Electrical Motor by Current Distortion of Inverter**
L. Szentirmai, A.V. Szarka – *Hungary*, (795)
32. **Systems for Monitoring and analysing Torsional Vibrations in Turbine Generator Shaft Lines**
A. Wirsén, P. Lang, M. Humer – *Germany*, (631)
33. **Power drive analysis for diagnostic purpose by inverter DC bus magnetic field measures**
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<p>Chairmen: R. Cardoso / O.W. Andersen</p>

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2. **Coupled Analytical and Finite Element Calculations to Study the Thermal Behaviour of Transformers under Nonlinear Loads**
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3. **A new power transformer relaying technique based on delta residual current as applied to three- and four-wired systems**
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4. **Rapid Evaluation of Excessive Local Heating Hazard in Bushing Turrets of Large Power Transformers**
J. Turowski – *Poland*, (286)
5. **Numerical Determination of Tank Losses in Distribution Transformers**
R. Escarela-Perez, J.C. Olivares-Galvan, M.A. Venegas-Vega – *Mexico*, (344)
6. **A closer view into progressive internal faults in transformers by means of the analysis of instantaneous currents sequences**
P. Arboleya, G. Díaz, J. Gómez-Aleixandre, N. de Abajo – *Spain*, (345)
7. **Power transformer overload forecasting using unsupervised learning neural networks**
P. Arboleya, G. Díaz, J. Gómez-Aleixandre, N. de Abajo – *Spain*, (346)
8. **Application of a moisture-in-oil model to in-service power transformers monitoring**
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9. **Comparison between three iron-powder topologies of electrically magnetized synchronous machines**
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- 11. Analysis of Interdependences of Transformers Energy Parameters and Generalized Linear Dimension**
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- 12. A Novel Design of Resistance Welding Transformer**
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- 13. Filter Winding Problematic in Traction Transformers**
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- 14. Determination of the Hysteresis Core Losses on a Single-Phase Transformer by using a Dynamic Preisach-type Hysteresis Model**
A. de Blas, R. Bargalló, J. de la Hoz – *Spain*, P.G. Pereirinha, C. Lemos Antunes – *Portugal*, (347)
- 15. B-H characteristic determination of magnetic circuit and analysis of magnetic field in a single-phase transformer**
M. Hadžiselimović, D. Miljavec, I. Zagradišnik – *Slovenia*, (570)
- 16. Influence of the Effective Core Permeability on Eddy Current Losses in Power Transformers**
E. Schmidt, J. Schöberl, P. Hamberger – *Austria*, (605)
- 17. Electromagnetic Analysis Applied to the Prediction of Stray Losses in Power Transformer**
L. Susnjic, Z. Haznadar, Z. Valkovic – *Croatia*, (659)
- 18. EMC Problems with Dry Cast Resin Transformers - A Case Study**
C.L. Antunes, A.P. Coimbra – *Portugal*, (751)
- 19. Application of Boundary-Approximated Method for Calculation of Transformer Leakage Field**
S. Pawłowski – *Poland*, (711)
- 20. Design and Characteristic Analysis of new type Transformer Coupled Inductor with the Independent Auxiliary Magnet Cores**
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- 21. Effect of Short-Circuit Impedance on Three Windings autotransformers Optimal Design**
C. Candela, M.A. Salvatore – *Venezuela*, (741)
- 22. Autotransformers for Multipulse Converters**
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- 23. New Materials and Innovative Technologies to Improve the Efficiency of Three-phase Induction Motors. A Case Study**
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- 24. Loss Calculations for Soft Magnetic Composites**
G. Nord, L.O. Pennander – *Sweden*, A. Jack – *England*, (170)
- 25. Electroactive materials: towards novel actuation concepts**
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- 26. Compaction of SMC Powders for High Saturation flux Density**
M.R. Dubois, L.P. Lefebvre, P. Lemieux, E. Dusablon – *Canada*, (230)
- 27. High Dense Soft Magnetic Composites Made by Combined Sinter-oxidizing-forging Technique**
M. Zagirnyak - *Ukraine*, D. Miljavec, H. Weinert – *Slovenia*, V. Leschinsky – *Poland*, (489)
- 28. Advanced materials for high speed motor drives**
G. Kalokiris, A.G. Kladas, J.A. Tegopoulos – *Greece*, (533)
- 29. Soft Magnetic Composite in Design of BLDC Motor**
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- 30. Potential of Soft Magnetic Powders for Switched Reluctance Machines in Comparison with the Laminations Solution**
Y. Alhassoun, C. Henaux, B. Nogarede – *France*, (188)
- 31. Field Modeling and Force Analysis of Shell-Type Shunt Reactor 3-D Structures**
S. Wiak, P. Drzymala, H. Welfle (820)

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Chairmen: T. Lipo / K. Kluszczynski

- 1. Design and Modeling of the Electric Part of an Experimental Power Plant from Sea Waves**
N.M. Kimoulakis, S.A. Papathanassiou, A.G. Kladas – *Greece*, (467)
- 2. Improved Modeling of Three-Phase Transformer Analysis Based on Nonlinear B-H Curve and Taking into Account Zero-Sequence Flux**
B. Kawkabani, J.J. Simond – *Switzerland*, (262)
- 3. Coupled field, circuit and mechanical model for efficient representation of permanent magnet generator wind turbine**
A. Haniotis, A.G. Kladas, J.A. Tegopoulos – *Greece*, (531)
- 4. Saturation Effects in a Three-phase Transformer Bank Composed by Single-phase Transformers**
C.H. Salerno, D. Bispo, J.R. Camacho, F.E.R. Morikawa, G.T. Matumoto – *Brazil*, (471)
- 5. Analysis of a three-limb core power transformer under earth fault**
M.A. Tsili, S.A. Papathanassiou – *Greece* (734)
- 6. Avoiding the Switching-off Failure in Capacitor Motors**
R.N. Hasanah, M. Jufer – *Switzerland*, (312)

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11.15 – 13.15 Oral Session 17 (Palace “Pod Baranami”)
Use of Advanced Materials

Chairmen: M. Radulescu / V. Bartos

- 1. Generator Behaviour of Induction Machines with a Copper Die-cast Squirrel Cage Rotor**
N. Castéras, L. Doffe, O. Walti – *France*, (127)
- 2. Comparative Field Analysis of PM Disc Motor Designs Using SMC Material**
G. Cvetkovski, L. Petkovska – *Macedonia*, S. Gair – *UK*, (360)
- 3. Axial Gap Permanent Magnet DC Motor with Powder Iron Armature**
S.M. Abu-Sharkh, M.T.N. Mohammad, Shu Hau Lai – *UK*, (298)
- 4. Mass Reduction of an AC inductor**
J. Saitz, A. Arkkio – *Finland*, (610)
- 5. Relationship Between Magnetization Characteristics and Torque Mechanism in High Temperature Superconducting Bulk Motor**
T. Nakamura, H.J. Jung, I. Muta, T. Hoshino – *Japan*, (712)
- 6. Recent Advances in Development of the Die-Cast Copper Rotor Motor**
E.F. Brush Jr., D.T. Peters, J.G. Cowie – *USA*, M. Doppelbauer, R. Kimmich – *Germany* (589)

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Chairmen: K. Hameyer /D. Dolinar

- 1. Thrust Calculation of Transverse Flux Linear Motor Considering End Effect of Mover**
Ji-Young Lee, Jung-Pyo Hong, Do-Hyun Kang – *Korea*, (669)
- 2. Comparative Thrust Analysis of Transverse – flux Linear Motors**
D.H. Kang – *Korea*, H. Weh – *Germany*, (189)
- 3. Eddy Current Loss in Tubular Modular Permanent Magnet Machines**
Y. Amara, J. Wang, D. Howe – *UK*, (192)
- 4. Thrust and Cogging Force Improvement on Inductor Linear Motor**
T. Shikayama, R. Oguro, T. Tsuji, T. Hanamoto – *Japan*, (254)
- 5. Investigation of slotless permanent magnet excited linear synchronous machines with concentrated stator windings**
W.R. Canders, H. Mosebach, Z. Shi – *Germany*, (542)

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Chairmen: L. S. Iribarnegaray/ R. Nadolski

- 1. Indirect Space Vector Control of a Double Star Induction Machine fed by Two Five - Levels NPC VIS**
Z. Oudjebour, E.M. Berkouk, N. Sami, S. Belgasmi, S. Arezki, I. Messaif – *Algerie*, (155)
- 2. Control of a bi-converter mono-machine system based on the energetic macroscopic representation**
P.E. Vidal, P. Delarue, M. Pietrzak-David, A. Bouscayrol – *France*, (191)
- 3. Influence of the control on induction machine affected from electric asymmetries**
F. Esposito, G. Gentile, S. Meo, A. Ometto – *Italy*, (213)
- 4. Torque Oriented Control of Induction Motor From a View Point of Magnetic Energy Conversion**
T. Murata, M. Yamashita, T. Tsuchiya, J. Tamura – *Japan*, (257)
- 5. Output-Feedback Decoupling of Currents in Vector Control of a Doubly Fed Induction Machine**
G. Salloum – *France*, R. Ghosn – *Liban*, M. Pietrzak-David, B. De Fornel – *France*, (291)
- 6. Design and Modeling of Controllers in PM Drives for Wheelchairs**
M. Raganella, A. Di Napoli, F. Crescimbin, A. Lidozzi, L. Solero – *Italy*, (730)
- 7. Identification and Verification of Parameters of the Asynchronous Machine During Field-Orientedly Controlled Operation**
U. Beckert, H. Arnold – *Germany*, (372)
- 8. The Simplify Control Algorithm for Permanent Magnet Synchronous Motors with Sinusoidal Current Control (BLAC)**
V. Olarescu, S. Musuroi – *Romania*, (401)
- 9. A Simple Method for Flux-Weakening Operation of DTC Based Induction Motor Drives**
D. Casadei, G. Serra, A. Tani, L. Zarri – *Italy*, (403)

- 10. Impact of magnetic saturation on the input-output linearising tracking control of an induction motor**
D. Dolinar – *Slovenia*, P. Ljušev – *Denmark*, G. Štumberger – *Slovenia*, (452)
- 11. Low Cost Digital Controller for Switched Reluctance Motor**
B. Blanqué, J.I. Perat, P. Andrada – *Spain*, (454)
- 12. Immediate Stator Flux Control of AC Machines**
V. Ambrožič, D. Nedeljković, R. Fišer, M. Nemec – *Slovenia*, (466)
- 13. Simple Control System for Field Weakening of Surface Mounted PM Brushless Motors**
J. Figueroa, J. Cros, P. Viarouge – *Canada*, (521)
- 14. On Line Estimation of the Stator Resistance of a Doubly Fed Induction Machine by an Adaptive Method**
R. Ghosn – *Liban*, M. Pietrzak-David, B. De Fornel – *France*, (544)
- 15. Micro Hydropower station based on a doubly fed induction generator excited by a PM synchronous machine**
A. Ansel, M. Biet, B. Robyns – *France*, (580)
- 16. Power System Stabiliser Design Based on Robust Control Techniques**
M. Bouhamida, M.A. Denai – *Algeria*, (592)
- 17. Quantitative Influences of the Stator Resistance variation on the behavior of the Stator Flux Oriented Vector Controlled Induction Machines**
E. Mitronikas, A. Safacas – *Greece*, (603)
- 18. Fault Tolerant Operating Strategies Applied to Three-Phase Induction Motor Drives**
A.M.S. Mendes, A.J. Marques Cardoso – *Portugal*, (617)
- 19. Electromechanical Characteristics Improvement in a Twelve-Pulse LCI Drive System Under Faulty Operating Conditions**
A.N. Alcaso, A.J.M. Cardoso – *Portugal*, (622)
- 20. Control of Six Two-Level PWM Rectifiers - Half Clamping Bridge - Seven Level NPC VSI Cascade**
A. Talha, I. Messaif, E.M. Berkouk, M.S. Boucherit – *Algeria*, (629)
- 21. Torque strategies control of the double star synchronous machine drive under fault condition**
M. Merabtene, M.F. Benkhoris, N. Mokhtari, R. LE Doeuff – *France*, (633)
- 22. SVPWM Observer-based Input-Output Linearization of Induction Motor with Saturation of the Main Flux Path**
H. Martín, J. Llaverías, R. Bargalló – *Spain*, (640)
- 23. Comparison between different regulation structures for a five phases permanent magnet synchronous machine**
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- 24. Modelling and Controlling of Surface-Mounted PM Motors Including Saturation Effects**
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- 25. H_{∞} Current Control for Permanent Magnet Synchronous Machine**
S. Machmoum – *Maroc*, P. Chevrel, M. Machmoum, C. Darengosse – *France*, (675)
- 26. The application of Multi-Variable-Frequency Resonant Controller to torque control of Permanent Magnet Synchronous Motor**
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- 27. Improved decentralised control system for hybrid vehicle energy transducer test bench**
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- 28. Improved Performance of Industrial Servo-Drive Systems by SAW Shaft Torque Feedback**
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- 29. Direct Power and Torque Control Scheme for Space Vector Modulated AC/DC/AC Converter- Fed Induction Motor**
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30. Simple DTC-SVM Control Scheme for Induction and PM Synchronous Motor

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31. DC Permanent Magnet Motor for Electric Bike and their Impulse System for Battery Charging

S. Wiak, R. Nadolski, K. Ludwinek, Z. Gawęcki – *Poland*, (930)

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2. Reduction of Thrust Ripple in Linear Induction Motor

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3. Comparison of various constructions of the linear synchronous-like motors based on finite-element method

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4. Evaluation of the Current Distribution in the Secondary of A High Speed Linear Induction Motor

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7. Basic Analytical Study on On-board Wound - Secondary Type of Linear Induction Motor for Light Transit

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N. Fujii, Y. Tanabe, Y. Ito – *Japan*, (505)

9. Reduction of the Cogging in a Linear Synchronous Motor with a Claw-Pole-Structured Mover - Trial Fabrication 2 -

K. Shiroshita, K. Iijima, T. Kichiji, K. Shimogawa, H. Wakiwaka – *Japan*, (579)

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11. The experimental verification to improve the efficiency for vertical linear synchronous motor using the maximum efficiency point tracking method

T. Tsukinaga, S. Torii, M. Watada, D. Ebihara – *Japan*, (621)

12. Linear Synchronous Drive in Flying Shear Application

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13. A Transverse Force Reduction in a Transverse-Flux Tubular Linear Switched Reluctance Motor

A.F. Flores Filho, R.P. Homrich, V. Rinaldi – *Brazil*, (706)

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15. 3-D Numerical Analysis of a Short Primary Linear Reluctance Motor

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16. Development of a Stocker System Using Transverse Flux Linear Motors with Permanent Magnet

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- 18. Analysis of Tubular Linear Reluctance Motor (TLRM) under Various Voltage Supplying**
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- 19. Forces analysis of a new linear bearingless drive**
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