

Tuesday - May 23rd 2006

16:00 Pre-Registration (at "Palazzo dei Congressi" in Taormina)

19:30 Welcome Cocktail

Wednesday - May 24th 2006

8:00 Registration

9:00 Formal Opening

9:15 WA1 - Identification Problems in Electrical Drives

[Room A]

Chairman:

- 19052 *Kral C., Gragger J.V., Pirker F., Pascoli G.* - (Austria)
Sensorless rotor position estimation through current signature analysis based on rotor saliency harmonic
- 19136 *Repo A., Arkkio A.* - (Finland)
Parameter estimation of induction machines using the numerical impulse method
- 19190 *Aoulkadi M., Binder A.* - (Germany)
Evaluation of different measurement methods to determine stray load losses in induction machines
- 19258 *Bellini A., Bifaretti S.* - (Italy)
A method for magnetizing curve identification in vector controlled induction motor drives
- 19296 *Stiebler M., Plotkin Y.* - (Germany)
Superposition methods for on-line determination of a.c. machine winding resistance
- 19299 *Dobrucky B., Michalik J., Spanik P., Bobek V.* - (Slovak Republic)
Virtual HF injection method (VHFIM) of rotor position estimation of PMSM under field oriented control
- 19326 *Picardi C., Rogano N.* - (Italy)
Parameter identification of induction motor based on particle swarm optimization
- 19342 *Balestrino A., Landi A.* - (Italy)
Autotuning and monitoring

Wednesday - May 24th 2006**9:15 WB1 - Drives and Converters for Railways Applications****[Room B]***Chairman:*

- 04328 *Accardo L., Fioretto M., Giannini G., Marino P.* - (Italy)
Techniques of PWM space vector modulation for the reduction of magnetic acoustic noise in traction motor
- 04102 *Brenna M., Foadelli F., Zaninelli D.* - (Italy)
A new concept of a light rail vehicle for city, interurban and subway services
- 04198 *Henning U., Thoolen F., Lampérth M., Berndt J., Lohner A., Jänig N.* - (Germany)
Ultra low emission traction drive system for hybrid light rail vehicles
- 04361 *Carpita M., Pellerin M., Herminjard J.* - (Switzerland)
Medium frequency transformer for traction applications making use of multilevel converter: small scale prototype test results
- 04307 *Cascone V., Giannini G.* - (Italy)
Two-stage converters for multi-system high power locomotive. The case of the new loco E403
- 04245 *Germishuizen J., Jöckel A., Hoffmann T., Teichmann M., Löwenstein L., v.Wangelin F.* - (Germany)
Syntegra™ - next generation traction drive system, total integration of traction, bogie and braking technology
- 04359 *Giulii Capponi F., Del Ferraro L., Caricchi F., Fedeli E.* - (Italy)
Measurement of traction current harmonics on the track circuits of the Rome-Naples high-speed railway

9:15 WC1 - Generators and Converters for Renewable Sources of Energy**[Room C]***Chairman:*

- 11020 *Joshi N.N., Mohan N.* - (USA)
Application of TCSC in wind farm application
- 11171 *Kasa N., Harada Y., Iida T., Bhat A.K S.* - (Japan)
Zero-current transition converters for independent small scale power network system using lower power wind turbines
- 11357 *Degobert P., Kreuawan S., Guillaud X.* - (France)
Use of super capacitors to reduce the fast fluctuations of power of a hybrid system composed of photovoltaic and micro turbine
- 11355 *Rabelo B., Pinheiro L., Hofmann W.* - (Germany)
Loss reduction methods for doubly fed induction generator drives in wind turbines
- 11372 *Magureanu R., Albu M., Dumitrescu A.M., Priboianu M.* - (Romania)
A practical solution for grid connected dispersed generation from renewable sources: DC connection
- 11329 *Liccardo F., Marino P., Triggianese M.* - (Italy)
An efficient connection between grid and wind farm by a Synchronous active front-end
- 10033 *Silva N., Martins A., Carvalho A.* - (Portugal)
Design and evaluation of a PWM rectifier control system for testing renewable DC sources connected to the grid
- 11050 *Ghedamsi K., Aouzellag D., Berkouk E.M.* - (Algeria)
Application of matrix converter for variable speed wind turbine driving a doubly fed induction generator

11:00 Coffee Break

Wednesday - May 24th 2006**11:15 WA2 - Sensorless Control****[Room A]***Chairman:*

- 16060 *Chatterjee D., Ganguli A.K., Chakraborti R.N.* - (India)
A fuzzy-logic based stator resistance compensated simplified speed sensorless vector control of induction motor in the low speed region
- 16234 *Bensiali N., Chaigne C., Etien E.* - (France)
Optimal observer design for sensorless control of induction motor in regenerating-mode
- 16319 *Alonge F., Di Tommaso A.O., Miceli R., Rando C.* - (Italy)
Sensorless control of permanent magnet synchronous motors for wide speed range applications
- 16244 *Komatsuzaki A., Yoshida K., Miki I.* - (Japan)
A position sensorless drive technique considering magnetic saturation for switched reluctance motor
- 16080 *Somanatham R., Prasad P.V.N., Rajkumar A.D.* - (India)
Modeling and simulation of sensorless control of PMSBLDC motor using zero-crossing back E.M.F. detection
- 16081 *Tsuji M., Chen S., Kai T., Yamada E., Hamasaki S., Del Pizzo A.* - (Japan)
A precise torque and high efficiency control for Q-axis flux-based induction motor sensorless vector control system

11:15 WB2 - Electromagnetic Compatibility and Power Quality in Traction Systems**[Room B]***Chairman:*

- 05024 *Lucca G., Pagani A., Moro M., Zucchelli L.* - (Italy)
Measurement of magnetic field produced by the 25kV-50Hz Italian high speed railway line
- 05077 *Fedeli E., Stellin M., Vannini E.* - (Italy)
Signalling system interferences due to electric substation failures on Italian conventional railway networks
- 05212 *Falvo M.C., Fedeli E., Lamedica R.* - (Italy)
A measurement campaign on audio frequency track circuits of Italian high speed railway systems
- 05371 *Acampora G., Landi C., Luiso M., Pasquino N.* - (Italy)
Optimization of energy consumption in a railway traction system
- 05025 *Lucca G., Moro M., Zucchelli L.* - (Italy)
A survey of the 50 Hz interference impact of the Italian high speed railway line on extended metallic structures
- 05388 *Tortia A. M. L.* - (Italy)
Turin-Milan high-speed railway-line, 2x25 kV 50 Hz AC electrified. EMC problems in earthing exposed conductive parts

11:15 WC2 - PWM Active Front-Ends/ Active Filtering**[Room C]***Chairman:*

- 10330 *Liccardo F., Marino P., Triggianese M.* - (Italy)
Design criteria for a synchronous active front-end in high power applications

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- 10266 Timbus A.V., Teodorescu R., Liserre M., Dell'Aquila A. - (Denmark-Italy)
Independent synchronization and control of three phase grid converters
- 10256 Tnani S., Coirault P. - (France)
Output feedback control strategy of parallel filters
- 10179 Ordonez R., Sadarnac D. - (France)
Three phase four branch active filter for non-active power compensation under non-sinusoidal conditions
- 10362 Dell'Aquila A., Monopoli V. G., Lecci A., Marinelli M. - (Italy)
A study on different modulation techniques in presence of resonant controllers applied to active power filters
- 10043 Mingtao Y., Mingcai K., Jianye C. - (China)
A double tuned filter based on controllable reactor

12:45 Lunch

14:15 WA3 - PM Brushless Motor Drives

[Room A]

Chairman:

- 13262 Gatto G., Marongiu I., Perfetto A., Serpi A. - (Italy)
Performance improvement of brushless dc motor drive controlled by a predictive algorithm
- 13191 Hörz M., Herzog H-G., Mendler N. - (Germany)
System design and comparison of calculated and measured performance of a bearing less BLDC-drive with axial flux path for an implantable blood pump
- 13072 de Sousa M.A.T.F., Caux S., Fadel M. - (France)
Controllers' robust design for PMSM drive fed with PWM voltage inverter with elastic joint and inertia load variation
- 13119 Chun Y.D., Koo D.H., Cho Y.H., Cho W.Y. - (Korea)
Cogging torque reduction in a novel axial flux PM motor
- 13209 Carmeli M.S., Castelli Dezza F., Mauri M. - (Italy)
Electromagnetic vibration and noise analysis of an external rotor permanent magnet motor

14:15 WB3 - Converter Control

[Room B]

Chairman:

- 02341 Balestrino A., Corsanini D., Landi A. - (Italy)
Pulse width modulation and pulse ratio modulation: experimental comparison in DC/DC conversion
- 02294 Grandi G., Serra G., Tani A. - (Italy)
Space vector modulation of a seven-phase voltage source inverter
- 02034 Zhang X.F., Yu F., Li H.S., Song Q.G. - (China)
A novel discontinuous space vector PWM control for multiphase inverter
- 02257 Bellini A., Bifaretti S. - (Italy)
A simple control technique for three-phase four-leg inverters

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- 02235 *Kömürçügil H., Kükreler O., Doğanalp A.* - (Turkey)
Optimal control for single-phase UPS inverters based on linear quadratic regulator approach
- 02346 *Hofmann W., Zitzelsberger J.* - (Germany)
PWM-control methods for common mode voltage minimization - a survey

14:15 WC3 - Diagnostics in Electrical Drives**[Room C]***Chairman:*

- 18105 *Beneduce L., Iovieno S., Masucci A., Picardi A.* - (Italy)
Detection broken rotor bar in cage induction motor
- 18272 *Thomsen J.S., Kallesøe C.S.* - (Denmark)
Stator fault modeling in induction motors
- 18323 *Filippetti F., Rossi C., Stefani A., Yazidi A., Capolino G.A.* - (Italy-France)
Experimental fault characterization of doubly-fed induction machines for wind power generation
- 19204 *do Prado Jr A., de Sousa A.H., Ferrari S.M.* - (Brazil)
On-line identification of induction motors through discrete models for sinusoidal signals
- 18268 *Tiainen R., Särkimäki V., Ahola J., Lindh T.* - (Finland)
Utilization possibilities of frequency converter in electric motor diagnostics

15:45 WA4 - Mechatronic Systems**[Room A]***Chairman:*

- 39358 *Invited Paper*
Vandenput A.J.A., Lomonova E.A., Makarovic J., Hol S.A.J., Lebedev A., Jansen J.W.
- (The Netherlands)
Novel types of the multi-degrees-of-freedom electromagnetic actuators
- 35207 *Schäfers E., Denk J., Hamann J.* - (Germany)
Mechatronic design of direct drive systems
- 34259 *Rosario J.M., Oliveira E., Dumur D.* - (Brazil-France)
Conception of Stewart-Gough platform with reconfigurable control using integrate prototyping
- 35115 *Ikeda H., Hanamoto T., Tsuji T., Tomizuka M.* - (Japan-USA)
Design of vibration suppression controller for 3-inertia systems using Taguchi method

15:45 WB4 - Magnetic Levitation Applications**[Room B]***Chairman:*

- 31079 *Enomoto J., Kitano J., Ikeda H.* - (Japan)
Parallel feeding of the high power inverters for superconducting Maglev
- 31157 *Morishita M., Itoh H.* - (Japan)
The self-gap-detecting electromagnetic suspension system with robust stability against variation of levitation mass

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- 31094 *Schuhmann T., Hofmann W., Werner R.* - (Germany)
Sensor integration and state estimation on magnetically levitated rotors
- 31344 *Andriollo M., Carmeli S., Castelli Dezza F., Mauri M.* - (Italy)
Control design aspects for an EDS levitation system

15:45 WC4 - Power Quality in Power Systems**[Room C]***Chairman:*

- 10315 *Menniti D., Picardi C., Pinnarelli A., Sorrentino N.* - (Italy)
A voltage reactive power and harmonics compensation applied on a DSTATCOM
- 09232 *Benghanem M., Alradadi E.A., Draou A.* - (Algeria-Saudi Arabia)
A new modified PQ theory used for reactive power and current harmonic compensation
- 09375 *Bracale A., Carpinelli G.* - (Italy)
Double stage adaptive method for an accurate spectral analysis of AC waveforms in adjustable speed drives
- 09378 *Di Perna C., Verde P.* - (Italy)
On robustness of distribution systems against voltage dips
- 22336 *Cavallaro C., Musumeci S., Raciti A., Santanocito C.* - (Italy)
CAD analysis on electrical field of load break switch devoted to medium voltage applications

17:00 End of Sessions**17:00 WP1- Converter Topologies and Control****[Poster Session]***Chairman:*

- 02289 *Jeyalakshmi A., Prabhakar M.* - (India)
Effect of leakage inductance on the performance of parallel resonant converter
- 02113 *Shyu K.K., Yang M.J., Chen Y.M., Lin Y.F.* - (Taiwan)
A three-phase four-wire AVR with IP control under unipolar PWM operation
- 02114 *Tounsi B., Astier S.* - (France)
Comparative study of power electronics converters associated to variable speed permanent magnet alternator
- 02045 *Sobczyk T. J., Sienko T.* - (Poland)
Application of matrix converter as a voltage phase controller in power systems
- 03189 *Lalili D., Lourci N., Berkouk E. M., Boudjema F., Petzoldt J., Dali M.Y.* - (Algeria)
A simplified space vector pulse width modulation algorithm for five level diode clamping inverter
- 03243 *Halász S., Varjasi I.* - (Hungary)
Analysis of three phase PWM strategies of three-level inverters
- 19343 *Balestrino A., Landi A., Sani L.* - (Italy)
Performance indices and controller design for switching converters

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- 02228 *Fathy K., Morimoto K., Ahmed N., Woo Lee, Nakaoka M.* - (Korea)
A new soft-switching PWM half-bridge DC-DC converter with high and low side DC rail active edge resonant snubber
- 03163 *Sahali F., Fellah M.K.* - (Algeria)
Application of the optimal minimization of the THD technique to the multilevel symmetrical inverters and study of its performance in comparison with the selective harmonic elimination technique
- 02229 *Fathy K., Morimoto K., Ahmed N., Woo Lee, Nakaoka M.* - (Korea)
A switched capacitor lossless inductor quasi resonant snubber assisted series resonant high frequency inverter

17:00 WP2 - Controlled Electrical Drives**[Poster Session]***Chairman:*

- 15131 *Sayyah A., Aflaki M., Rezazade A.R.* - (Iran)
GA - based optimization of total harmonic current distortion and suppression of chosen harmonics in induction motors
- 15161 *Khaldi B.S., Kouzou A., Grouni S., Boukhetala D.* - (Algeria)
An approach for rotor time-constant adaptation with FOC induction motors drives
- 15374 *Oh W. S., Cho K. M., Kim S., Kim H. J.* - (Korea)
Optimized neural network speed control of induction motor using genetic algorithm
- 15340 *Rechberger T., Ingruber R.* - (Austria)
Influence of different types of supply cables on shaft currents in VSI-fed induction motors
- 14018 *Zareh M.R., Marzband M., Nejad S.M.S.* - (Iran)
Finding optimum parameters for vector control of salient pole synchronous motor using Fuzzy-genetic algorithm
- 28084 *Moghani J.S., Heidari M.* - (Iran)
High efficient low cost induction motor drive for residential applications
- 07099 *Sadeghi S., Sadeghi R., Sadeghi M.* - (Iran)
Dynamic performance of a switched reluctance motor for propulsion systems
- 16098 *Huang M.C., Moses A.J., Anayi F., Yao X.G.* - (U. K.)
Linear Kalman filter (LKF) sensorless control for permanent magnet synchronous motor based on orthogonal output linear model
- 23220 *Galan N., Mammadov A.* - (Romania)
The building system and the mathematical model of axial air-gap three-phased asynchronous motor
- 37318 *Pessina G., Morra E.* - (Italy)
Reliability evaluation of a multi-motor drive system for daily newspaper printing plants
- 38197 *Hendijani Zadeh M., Yazdian A., Mohamadian M.* - (Iran)
Robust position control in DC motor by fuzzy sliding mode control
- 25265 *Jeftenic B., Bebic M.* - (Serbia & Montenegro)
Controlled multi-motor drives
- 33186 *Larabi A., Mhmoudi M.O., Boucherit M.S.* - (Algeria)
Robust control position of machine tools with a strategy of linearization by state return of using fuzzy regulators
- 07387 *Nicolae P. M., Nicolae I. D., Mandache L., Sirbu I. G.* - (Romania)
Improved technological solution for urban transportation system by tram

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- 15110 *Rajawat R.S., Kumar R., Gupta R.A.* - (India)
Power quality analysis of PFC based high performance induction motor drive

17:00 WP3- Design and Modeling of Electrical Machines**[Poster Session]***Chairman:*

- 21277 *Neves C.G.C., Rincos F., Ferreira da Luz M.V., Lefèvre Y.* - (Brazil)
3D eletromagnetic simulation of a claw-pole generator
- 21350 *Kappatou J., Safacas A.N.* - (Greece)
Finite element inductance calculations in 3-phase squirrel-cage induction machines with broken rotor bars
- 22223 *Turcanu O.A., Tudorache T., Firețeanu V.* - (Romania)
Influence of squirrel-cage bar cross-section geometry on induction motor performances
- 23206 *Vyncke T.J., De Belie F.M.L.L., Geldhof K.R., Vandeveld L., Boel R.K., Melkebeek J.A.A.* - (Belgium)
A Simulink state-space model of induction machines including magnetizing-flux saturation
- 30313 *Elia S., Fabbri G., Nisticò E., Santini E.* - (Italy)
Design of cast-resin distribution transformers by means genetic algorithms
- 30345 *Bucci G., Fiorucci E., Ometto A., Rotondale E.* - (Italy)
Effects of voltage amplitude modulations on mechanical vibrations in low voltage transformers
- 37269 *Seo J.M., Jung I.S., Sung H.G.* - (Korea)
Thrust force analysis of spindle motor for HDDs
- 26091 *Haznadar Z., Berberovic S., Stih Z., Jokic R.* - (Croatia)
Modeling of ship's shaft generator
- 22322 *Hörz M., Herzog H.G., Haas A.* - (Germany)
Axial flux machine with single tooth fractional slot winding - Comparison of different winding design approaches
- 32276 *Cardoso C., Ferreira J., Alves V., Araújo R.E.* - (Portugal)
The design and implementation of an electric go-kart for education in motor control
- 32185 *Dobriceanu O. D., Nicola S.* - (Romania)
Low cost literacy e-learning tool
- 23218 *Kishore A., Kumar G.S.* - (India)
Dynamic modeling and analysis of three phase self-excited induction generator using generalized state space approach
- 23056 *Braslavsky I., Ishmatov Z., Plotnikov Y., Averbakh I.* - (Russia)
Energy consumption and losses calculation approach for different classes of induction motor drives
- 23247 *Khashimov A., Mirisaev A., Shamiyev M.* - (Uzbekistan)
Automated energy saving AC motor electrical drives

Thursday - May 25th 2006**8:30 TA1 - Special Electrical Machines****[Room A]***Chairman:***Keynotes Speech**

- 00249 *Yano T.* - (Japan)
Multi dimensional drive system and their applications
- 24246 *Hosseini S.M., Mirsalim M., Mirzayee M.* - (Iran)
Design and analysis of a novel disk permanent magnet generator
- 24290 *Kaufhold M., Nerowski G., Fraunhofer J.* - (Germany)
High-temperature-superconducting machines: a high-technology step for large rotating electric machines
- 24165 *Ohsaki H., Ueda Y.* - (Japan)
Numerical simulation of mover motion of a surface motor using Halbach permanent magnets
- 24238 *Slusarek B., Dlugiewicz L.* - (Poland)
Powder magnetic materials - areas of application
- 17280 *Gehrking R., Demmig S., Feldmann M., Ponick B., Buttgenbach S.* - (Germany)
Specific design rules for micro-linear motors
- 24042 *Jindal A., Krishnamurthy M., Fahimi B.* - (USA)
Modeling and analysing of a micro variable capacitance electromechanical energy converter

8:30 TB1 - Distributed Generation and Electricity Market**[Room B]***Chairman:*

- 08035 *Schellong W.* - (Germany)
Integrated energy management in distributed systems
- 08085 *Chen W-L, Hsu Y-Y* - (Taiwan)
Experimental evaluation of an isolated induction generator with voltage and frequency control
- 08104 *Bertling F., Soter S.* - (Germany)
A novel converter integrable impedance measuring method for islanding detection in grids with widespread use of decentral generation
- 08349 *Carmeli M.S., Castelli Dezza F., Faranda R., Marchegiani G., Mauri M.* - (Italy)
Universal digital controller for power quality and distributed generation systems
- 08368 *Zobaa A.F., Cecati C.* - (Italy - Egypt)
A comprehensive review on distributed power generation - Part 1
- 08373 *Conti S., Greco A., Messina N., Raiti S.* - (Italy)
Local voltage regulation in LV distribution networks with PV distributed generation
- 11274 *Guillaud X., Degobert P., Loriol D., Mogos E.* - (France)
Real-time simulation of a micro-turbine integrated in a distribution network
- 09216 *Marinescu C., Serban I., Ion C., Clotea L.* - (Romania)
Controlling a stand-alone power system

Thursday - May 25th 2006**8:30 TC1 - Converter Topologies and Technology****[Room C]***Chairman:*

- 02125 *Cuong M. D., Guldner H.* - (Germany)
High output voltage DC/DC converter based on parallel connection of piezoelectric transformers
- 02380 *Cavallaro C., Chimento F., Musumeci S., Raciti A., Scollo R., Buonomo S.* - (Italy)
Low power converter applications with wide range input voltage using a monolithic cascade device
- 02170 *Abe S., Hirokawa M., Zaitzu T., Ninomiya T.* - (Japan)
Design consideration of full regulated bus converter for system stability of on board distributed power system
- 02236 *Popovic J., Ferreira B., Gerber M., Konig A., De Doncker R.* - (The Netherlands - Germany)
Integration technologies for high power density power electronic converters for AC drives
- 02111 *Postiglione G., Ladoux P.* - (France)
A new concept of electrical power supply for AC arc furnaces
- 02108 *Nguyen-Quang N., Stone D.A., Bingham C.M.* - (U. K.)
Single phase matrix converter for radio frequency induction heating
- 02364 *Cacciato M., Consoli A., De Caro S., Testa A.* - (Italy)
Two innovative unipolar current converters for low power electrical motor drives

10:30 Coffee Break**10:45 TA2 - Modeling of Electrical Machines****[Room A]***Chairman:*

- 23021 *Grabner C.* - (Germany)
Comparative study on the analytical and numerical calculation of higher harmonics in large salient-pole synchronous machines
- 23385 *Contin A., Grava A., Tessarolo A., Zocco G.* (Italy)
A novel modeling approach to a multi-phase, high power synchronous machine
- 23214 *De Belie F.M.L.L., Vyncke T.J., Vandeveld L., Melkebeek J.A.A., Geldhof K.R., Boel R.K.* - (Belgium)
Modelling air gap flux harmonic components to describe motion-state estimators for PMSMs including magnetic saturation and multiple-pole spatial saliencies
- 23314 *De Donato G., Terrigi R., Giulii Capponi F.* - (Italy)
A synchronous axial flux PM machine d, q axes model which takes into account iron losses, saturation and temperature effects on the windings and the permanent magnets
- 23027 *Salvatore N., Gerada C., Cascella G.L., Sumner M.* - (Italy - U. K.)
Transient torque response improvement in presence of axial saturation due to skewing of rotor slots in induction motors
- 23070 *Bocker J., Meyer M.* - (Germany)
Transient peak currents in permanent magnet synchronous motors for symmetrical short circuits
- 23291 *Seebacher R.R., Dannerer G., Ofner G.* - (Austria)
Analysis and modeling of the oscillations of the induced voltage in a dc-motor caused by slotting effects

Thursday - May 25th 2006**10:45 TB2 - Photovoltaic and Fuel Cells Systems****[Room B]***Chairman:*

- 11078 *Cancro C., Graditi G., Leanza G., Pascarella F., Sarno A.* - (Italy)
The phocus plant: experimental analysis of solar tracker accuracy using a novel optoelectronic device
- 11090 *Chicco G., Giaccone L., Graditi G., Spertino F.* - (Italy)
Experimental methods to evaluate the impact of a photovoltaic system at the point of common coupling low voltage networks
- 11321 *Prochazka Z., Gregor J., Jakubova I.* - (Czech Republic)
Optimized energy transfer from a photovoltaic system to electrical distribution network
- 11356 *Fiorucci E., Bucci G., Ciancetta F., Rotondale E.* - (Italy)
Experimental validation of a PEM fuel cell dynamic model
- 11030 *Graditi G., Favuzza S., Riva Sanseverino E.* - (Italy)
Technical, environmental and economical aspects of hybrid system including renewables and fuel cells
- 11254 *Bello M. M., Davidson E.* - (South Africa)
Load management control of a photovoltaic fuel cell generator

10:45 TC2 - Motion Control**[Room C]***Chairman:*

- 33222 *Sulligoi G., Kavanagh C.* - (Italy)
An innovative method for improved real-time measurements of angular acceleration in motion control systems
- 33242 *Dallefrate D., Colombo D., Molinari Tosatti L.* - (Italy)
Development of robot controllers based on PC hardware and open source software
- 33255 *Rosario J.M., Dumur D.* - (Brazil-France)
A 3 dof robotic platform dynamics control using rapid prototyping tools
- 33382 *Kovacs E., Varadine A.* - (Hungary)
Laser sensor based measurement system with 2D motion control
- 33174 *Chuang C. W., Li J.R.* - (Taiwan)
Applying experienced self-tuning PID control to position control of slider crank mechanisms

12:30 Lunch**14:00 TA3 - Synchronous Motor Drives****[Room A]***Chairman:*

- 14092 *Du C., Zhang X., Gao X.* - (China)
Modeling, simulation and test of direct torque-controlled multi phase synchronous propulsion motor drives

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- 14106 *Kestelyn X., Crévits Y., Semail E.* - (France)
Investigation on Vector control of three-phase synchronous machines under fault supply condition
- 14143 *Ye Z.-H., Zhang X.-F., Li H.-J., Yang F.* - (China)
Improvement on single "Y" current of the variable speed system with cycloconverter-fed 12-phase synchronous motor
- 14177 *Leidhold R., Benavides R., Mutschler P.* - (Germany)
Comparison of control oriented models for the long stator synchronous motor and their experimental validation
- 14237 *Bergh T., Alakula M., Karlsson P., Hagstedt D.* - (Sweden)
Modeling and presentation of the Series Magnetized Synchronous Machine
- 14159 *Oleschuk V., Ermuratski V., Profumo F., Tenconi A., Bojoi R., Stankovic A.M.* - (Moldova-Italy-USA)
Novel schemes of synchronous PWM for dual inverter-fed drives with cancellation of the zero sequence currents

14:00 TB3 - Multilevel Inverters**[Room B]***Chairman:*

- 03331 *M. Carpaneto, G. Maragliano, M. Marchesoni, L. R. Vaccaio* - (Italy)
A Novel approach for DC-link voltage ripple reduction in cascaded multilevel converters
- 03103 *Munduate A., Garin I., Figueres E., Garcerá G.* - (Spain)
Analytical study of the DC link capacitors voltage ripple in three level Neutral Point Clamped Inverters
- 03332 *Leskovar S., Marchesoni M., Mazzucchelli M.* - (Italy)
Development of open-loop and closed-loop techniques for the optimization of modular multilevel conversion structures
- 03123 *Camur S., Arifoglu B., Beser E., Beser E. K.* - (Turkey)
A novel topology for single-phase five-level inverter compared with H-bridge inverter
- 03140 *Song Q., Zhang X., Yu F., Zhang C.* - (China)
Research on PWM techniques of five-phase three-level inverter
- 03158 *Purkait P., Ravisrikanth S.* - (India)
A simple SVPWM algorithm for elimination of neutral point current in multilevel inverter
- 03370 *Casadei D., Serra G., Tani A., Zarri L.* - (Italy)
Cascaded three-level inverter modulation strategies: unifying point of view based on duty-cycle space vector approach

14:00 TC3 - Special Control Solutions**[Room C]***Chairman:*

- 34101 *Jokinen M.* - (Finland)
Bump-less transfer algorithm between two different velocity controllers in an electric drive
- 34253 *Ottosson J.* - (Sweden)
A compact field weakening controller implementation
- 34044 *Marano V., Arrigo D.* - (Italy)
Novel fully integrated 65 W stepper motor driver IC

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- 34134 *Nedeljkovic D., Nemeč M., Ambrožič V.* - (Slovenia)
Modulation in VSI for immediate flux control (IFC) with reduced flux error
- 34335 *Botan C., Ostafi F.* - (Romania)
Free and fixed end-point optimal control problems for a servo drive system
- 17264 *Reinschke J.* - (Germany)
Stroke control of a reciprocating linear motor connected to a slowly varying mechanical load
- 34337 *Deliang Liang, Zhuping Cheng, Feng Xiangyang, Wu Jianjun* - (China)
Control strategies research of switched reluctance starter/generator system

15:30 TA4 - Drives for Generation and Storage**[Room A]***Chairman:*

- 27270 *Leuchter J., Bauer P., Hajek V.* - (Czech Republic)
Efficiency investigation of mobile power sources with VSCF technology
- 27064 *Rufer A.* - (Switzerland)
Energetic performance of a hybrid energy storage system based on compressed air and super capacitors
- 27306 *Giorgetti F., Pastena L., Tarantino A., Velotto F.* - (Italy)
Energy saving by onboard storage
- 27381 *Yamauchi Y., Uchiyama N., Suzuki E., Kubota M., Fujii M., Ohsaki H.* - (Japan)
Development of 50kWh-class superconducting flywheel system

15:30 TB4 - EMC and EMI Problems**[Room B]***Chairman:*

- 36196 *Serrao V., Conti L., Di Napoli A., Solero L.* - (Italy)
Emission testing for the EMC performance evaluation of an electric wheelchair
- 36142 *Cecconi V., Matranga A., Ragusa A.* - (Italy)
EMI analysis in electrical drives when the grounding system is excited by a lightning strike using a suitable circuital model
- 36284 *Zhao D., Ferreira J.A., Polinder H., Laferink F.B.J.* - (The Netherlands)
Investigation of EMI noise transfer characteristic of adjustable speed drive system
- 05095 *Alexandersson S., Alaküla M.* - (Sweden)
Automotive power electronic future-from an EMC perspective
- 36316 *Khoudiri S., Abidi Z., Djennah M.* - (Algeria)
Three dimensional modeling of an enclosure illuminated by electromagnetic source

Thursday - May 25th 2006**15:30 TC4 - Soft Computing Applications****[Room C]***Chairman:*

- 38205 *Arena P., Brunno F., Caponetto R.* - (Italy)
A genetic algorithm optimized SDT for state feedback control
- 38151 *Malyna D.V., Duarte J.L., Hendrix M.A.M., van Horck F.B.M.* - (The Netherlands)
Multi-objective optimization of power converters using genetic algorithms
- 38203 *Braslavsky I., Kostylev A. V., Stepanuk D.P.* - (Russia)
Energy consumption optimization using genetic algorithm during starting of thyristor voltage converter-induction motor system
- 38182 *Monadi M., Gharaveisi A. A., Darabi A.* - (Iran)
Performance evaluation of an ANFIS based power system stabilizer applied in multi-machine power systems

17:00 End of Sessions**17:00 TP1 - Measurements, Monitoring and Diagnostics in Electrical Drives****[Poster Session]***Chairman:*

- 18183 *Eltabach M., Charara A.* - (Libano)
Comparative investigation of electrical diagnostic procedures in induction motors
- 18366 *Bruzzese C., Honorati O., Santini E.* - (Italy)
Laboratory prototype for induction motor bar breakages experimentation and bar current measuring
- 19053 *Hilairat M., Auger F.* - (France)
Sensorless speed measurement using current harmonic spectral estimation in a DC-motor
- 20168 *Dobriceanu M., Bitoleanu A., Popescu M., Vladut G.* - (Romania)
Automated monitoring system for environment quality in industrial areas
- 20201 *Kang W., Yan X., Li H.* - (China)
The application of DSP and virtual instrument to online power quality detection
- 20283 *Lombardi P., Giaconia C., Di Dio V.* - (Italy)
An embedded diagnostic system for wheelchairs brushless drives monitoring
- 20180 *Munk-Nielsen S., Bendicsen F. B., Christiansen H.* - (Denmark)
Characterization of 50/60 Hz current transformers from 20 Hz to 10 kHz
- 20202 *Kang W., Yan X., Li H.* - (China)
A modified demodulation method for flicker measurement
- 35062 *Becker M., Landre J., Santos S.C.* - (Switzerland-Brazil)
The design of mechatronic system to inspect power transmission lines and towers
- 20037 *Denić D., Randjelović I., Miljković G.* - (Serbia & Montenegro)
Recent trends of linear and angular pseudorandom encoder development

Thursday - May 25th 2006**17:00 TP2 - Power Quality in Power Systems****[Poster Session]***Chairman:*

- 09376 *Caramia P., Carpinelli G., Esposito T., Varilone P.* - (Italy)
Probabilistic harmonic power flow for assessing waveform distortions in distribution systems with wind embedded generation
- 09325 *Montano J.C., Bravo J.C., Borrás D., Castilla M., Lopez A., Gutierrez J.* - (Spain)
Voltage quality index
- 09377 *Di Perna C., Verde P., Varilone P.* - (Italy)
Power converters for fuel-cells based UPS to improve power quality: modeling considerations and experimental results
- 09215 *Bitoleanu A., Popescu M., Dobriceanu M.* - (Romania)
Power quality to the input of DC motor and controlled rectifier driving systems
- 09012 *Moreno-Muñoz A., Galisteo P.* - (Spain)
Voltage sag in highly automated plants
- 09304 *Lauria D., Griffò A.* - (Italy)
Advanced series and parallel converters for power system stability improvement
- 10001 *Benslimane T., Aliouane K., Chetate B.* - (Algeria)
Voltage and current disturbances elimination with reactive power compensation using unified power quality conditioner
- 37144 *Aguirre-Zamalloa G., Uriondo Arrue F., Hernandez Gonzalez J.R.* - (Spain)
The three-phase instantaneous reactive power defined anew
- 09305 *Lauria D., Griffò A.* - (Italy)
Sliding sector control for thyristor controlled series compensator

17:00 TP3 - Power System and Traction System Problems**[Poster Session]***Chairman:*

- 37317 *Grasselli U., Terramano S., Ricci B.* - (Italy)
Reliability evaluation of airport power systems
- 37166 *Ji Y., Wei X., Mu X., Tan A.* - (China)
Analysis of the orthogonal arc-suppression coil and ground fault protection
- 37147 *Di Silvestre M.L., Massaro F., Mineo L., Zizzo G.* - (Italy)
A statistic approach of cables ageing in MV lines on thermal and electrical combined stress
- 37347 *Benhaddadi M., Olivier G.* - (Canada)
Canada's Kyoto GHG emissions gap analysis
- 37137 *Chiodo E., Mazzanti G.* - (Italy)
A new reliability model for power system components characterized by dynamic stress and strength
- 37107 *Mazzanti G., Passarelli G.* - (Italy)
A probabilistic life model for reliability analysis of power cables feeding electric traction systems
- 34351 *Battistelli L., Lauria D., Morvillo C., Proto D.* - (Italy)
A comparison among various optimization control strategies for dc electrified transportation systems

Thursday - May 25th 2006**17:00 TP4 - Power Electronics and Drives Applications****[Poster Session]***Chairman:*

- 37239 *Szentirmai L., Szarka T.* - (Hungary)
Electrical engineering and drives in the globalisation age and their contribution to sustainable development and knowledge-based society
- 39333 *Kyu-Min Cho , Won-Seok Oh , Jae-Eul Yeon , Hee-Jun Kim* - (Korea)
A novel average burst-duty control method for the dimming of induction lamps
- 39365 *Arabia E., Consoli A., Ciofi C., Testa A.* - (Italy)
Electromechanical actuators for automotive applications exploiting power line communication
- 39352 *Chiodo E., Mazzanti G.* - (Italy)
Indirect reliability estimation for electric devices via a dynamic "stress - strength" model
- 34167 *Dopatka F., Wismueller R.* - (Germany)
A top-down approach for real time industrial-ethernet networks using edge-coloring of conflict-multigraphs
- 04138 *Zhang L., Yan X., Li H.* - (China)
Design and simulation of bilateral LC filter based on the locomotive battery charge-discharge system
- 06038 *Bolvashenkov I., Herzog H-G., Engstle A.* - (Germany)
Factor of hybridization of a hybrid electrical vehicle and its influence on technical and economical parameters of the automobile
- 06016 *Alaoui C.* - (Morocco)
A novel system-on-chip system for diagnostic and rejuvenation for electric and hybrid vehicles
- 25014 *Budig P.K.* - (Germany)
Simplification of the mechanical design of drives with the application of direct drives
- 26169 *Arcidiacono V., Castellan S., Menis R., Sulligoi G.* - (Italy)
Integrated voltage and reactive power control for all electric ship power systems
- 25116 *Oswald A., Herzog H.G., Merwert J., Hörz M.* - (Germany)
A simple method for developing and testing a drive intended to be used in vacuum

20:00 Social Dinner

8:30 FA1 - Induction Motor Drives and Systems**[Room A]***Chairman:*

- 15022 *Grabner C.* - (Germany)
Various control strategies of power converters and their effects on induction drive systems
- 15109 *Huikuri M.* - (Finland)
Simulation of direct torque controlled drive with torque reference filtering
- 15175 *Rees S., Ammann U.* - (Germany)
Field oriented control of current source inverters fed high speed induction machines using steady-state stator voltages
- 15302 *Abbasian T., Salmasi F.R., Yazdanpanah M.J.* - (Iran)
Improved adaptive feedback linearization control of induction motors based on online estimation of core loss and rotor resistance
- 15384 *D'Arco S., Iannuzzi D., Pagano E., Piegari L.* - (Italy)
Torsional stress analysis of squirrel cage windings of asynchronous motors
- 15363 *Cacciato M., Consoli A., Scarcella G., Scelba G.* - (Italy)
Efficiency optimization techniques via constant optimal slip control of induction motor drives
- 15240 *Grune R., Saniter C., Wood A.R., Hanitsch R.* - (Germany)
Reduction of stator current harmonics in doubly-fed induction machines

8:30 FB1 - Design of Electrical Machines**[Room B]***Chairman:*

- 22156 *Hanitsch R., Widyan M.* - (Germany)
Cogging torque reduction of a novel low-speed high-energy permanent-magnet electrical machine
- 22164 *Aho T., Nerg J., Pyrhönen J.* - (Finland)
Analysing the effect of the rotor coating on the rotor losses of medium-speed solid-rotor induction motor
- 22279 *Centner M., Hanitsch R.* - (Germany)
Fractional slot-winding with asymmetrical stator slot-layout for reduced harmonics and cogging torque in subfractional horse-power permanent-magnet machines
- 22312 *Boccaletti C., Elia S., Nisticò E.* - (Italy)
A comparison between deterministic and stochastic optimisation algorithms in design of axial flux PM machines
- 22145 *Werner U., Binder A.* - (Germany)
Rotor dynamic analysis of asynchronous machines including the finite-element method for engineering low vibration motors
- 22013 *Budig P.K.* - (Germany)
The influence of the third deviation of way above time on the design of Electrical Machines
- 22135 *Cui X., Binder A., Funieru B.* - (Germany)
Calculation of no-load additional losses in the rotor of a StrafloMatrix synchronous turbine-generator
- 22383 *Cecconi V., Trapanese M.* - (Italy)
An optimum design of the magnetic circuit of a PM linear electrical generator for the exploitation of sea waves.

Friday - May 26th 2006**8:30 FC1 - Electric and Hybrid Vehicles Drives****[Room C]***Chairman:*

- 06046 *Čeřovský Z.* - (Czech Republic)
Physical modeling of electric hybrid vehicle
- 07130 *O'Sullivan T.M., Bingham C.M., Clark R.E.* - (U. K.)
Zebra battery technologies for all electric smart car
- 07213 *Eberleh B., Hartkopf T.* - (Germany)
A high speed induction machine with two-speed transmission as drive for electric vehicles
- 13320 *Cvetkovski G., Petkovska L., Gair S.* - (U. K. - Macedonia)
Torque analysis of axial field PM synchronous motor for EV
- 06054 *Mauldin R., Hurt R., Baghzouz Y., Boehm R.F.* - (USA)
Light-weight fuel cell-battery hybrid vehicle demonstration project
- 06224 *Andriollo M., Martinelli G., Morini A., Stellin S., Tortella A.* - (Italy)
Rating of the power components in series-hybrid buses with different supply control strategies
- 06071 *Hannoun H., Diallo D., Marchand C.* - (France)
Energy management strategy for a parallel hybrid electric vehicle using fuzzy logic
- 06386 *Argondizza A., Naretto R., Dufour C., Abouridad S., Belanger J.* - (Italy)
Real-time simulation of fuel cell hybrid electric vehicles

10:45 Coffee Break**11:00 FA2- Dependable Design of Power Electronics, Electric Drives and Machines, Automation Systems****[Room A]***Chairman:*

- 29089 *Buja G., Menis R.* - (Italy)
Conceptual frameworks dependability and safety of a system
- 29324 *Bolognesi P., Bruno O., Sani L., Taponecco L.* - (Italy)
An unconventional fault-tolerant switched-reluctance motor for high-torque low-speed applications
- 29093 *Leonhard W.* - (Germany)
Dependable energy supply from fluctuating natural sources-a case for energy storage
- 29112 *Schramm A., Gerling D.* - (Germany)
Researches on the suitability of switched reluctance machines and permanent magnet machines for specific aerospace applications demanding fault tolerance
- 29155 *Tahami F., Shojaei A., Khatir D.A.* - (Iran)
A diversity based reconfigurable method for fault tolerant control of induction motors
- 29152 *Drif M., Marques Cardoso A.J.* - (Portugal)
Air-gap eccentricity fault diagnosis, in three-phase induction motors, by the complex apparent power signature analysis

Friday - May 26th 2006**11:00 FB2 - Measurements and Tests in Electrical Drives****[Room B]***Chairman:*

- 20297 *Sarkimaki V., Tiainen R., Lindh T., Ahola J.* - (Finland)
Applicability of zigbee technology to electric motor rotor measurements
- 20367 *Bruzzese C., Honorati O., Santini E.* - (Italy)
Spectral analyses of directly measured stator and rotor currents for induction motor bar breakages characterization by M.C.S.A.
- 20354 *Gabano J. D., Champenois G.* - (France)
Synchronous generator parameters measurement from load impacts and shedding experiments
- 20195 *Kosonen A., Jokinen M., Sarkimaki V., Ahola J., Niemela M.* - (Finland)
Motor feedback speed control by utilizing the motor feeder cable as a communication channel
- 20019 *Feng Z., Acarnley P.* - (U. K.)
Interpolation technique for encoder resolution improvement in permanent magnet synchronous motor drives
- 20073 *Ahola J., Kosonen A., Toukonen J., Lindh T.* - (Finland)
A new approach to data transmission between an electric motor and an inverter

11:00 FC2a - Linear Motors and Actuators**[Room C]***Chairman:*

- 17126 *Nasr Khoidja M. A., Ben Salah B., Brochet P.* - (Tunisie-France)
Fuzzy logic control for a single sided linear induction motor
- 17293 *Bacher J.* - (Austria)
Innovative designs of high dynamic linear asynchronous motors
- 17250 *Honda Y., Torii S., Ebihara D., Hasegawa Y., Hirata K.* - (Japan)
Development of cylindrical two-dimensional linear oscillatory actuator
- 17338 *Deliang Liang, Sun Shumin, Xie Zengrong* - (China)
Analysis on control system of linear permanent magnet brushless DC motor based on single neuron PID

12:00 FC2b - Power Devices in Power Electronics**[Room C]***Chairman:*

- 01065 *Enea V., Kröll D., Messina M., Ronsisvalle C.* - (Italy)
Different designs for the optimization of monolithic ESBT® (Emitter-Switched Bipolar Transistor)
- 01149 *Vershinin K.V., Sweet M.R., Ngwendson L.K., Ekkanath Madathil S.N.* - (U. K.)
Influence of the device layout on the performance of 20A 1.2kV clustered insulated gate bipolar transistor (CIGBT) in PT technology
- 01252 *Napoli E., Udrea F.* - (Italy)
Circuitual implementation of deep depletion SOI power devices

12:45 Lunch

Friday - May 26th 2006**14:00 FB3 - Finite Element Analysis of Electrical Machines****[Room B]***Chairman:*

- 21055 *Lin T-K., Meydan T.* - (U. K.)
Parameters design with magnetic forces by 3D-FEM for high positioning motor
- 21074 *Neumayer F., Schlemmer E., Ramsauer F.* - (Austria)
Finite element analysis of the starting behaviour of large salient pole machines
- 21128 *Valtonen M., Pyrhönen J., Parviainen A.* - (Finland)
Electromagnetic field analysis of 3D structure of axial-flux solid-rotor induction motor
- 21303 *Tröster E., Sperling M., Hartkopf Th.* - (Germany)
Finite element analysis of a permanent magnet induction machine
- 21049 *Puranen J., Pyrhönen J.* - (Finland)
Optimization of induction servomotor loadability with coupled electromagnetic-thermal model
- 21117 *Koo D-H., Chun Y-D., Cho Y-H* - (Korea)
Analysis of overhang effect in a novel axial flux PM motor
- 22009 *Shivkumar V.J., Rao Sr., Rao Sa., Vadivel M.* - (India)
Design and simulation of a 5 kW single stage permanent magnet generator

14:00 FC3 - Drive System Applications**[Room C]***Chairman:*

- 25015 *Budig P.K.* - (Germany)
Direct linear drives for the application in high- vacuum
- 25063 *Goncalves A.C.V., Ardisson E.V., Dias E.V., Campos J.F., Zanandrea P.H.F.* - (Brazil)
Non-conventional application of AC drives - Use of Ac drives in emergency systems. Case study: tilting system of torpedo car in CST BOF Shop
- 25173 *Moehle A.* - (Germany)
Optimization of converter-fed super-large drives with parallel winding systems
- 25188 *Wallace R. R., Tapia J. A., Diaz L.A.* - (Chile)
Design of a 75 kW - 167 rpm axial-flux permanent magnet synchronous motor for copper mining applications
- 25192 *Dlugiewicz L., Kolowrotkiewicz J., Neumann R., Szelag W.* - (Poland)
Electrical motor for liquid gas pump
- 26310 *Castellan S., Quaia S., Scialla P., Sulligoi G.* - (Italy)
All electric Mega Yachts: Integrated power system operation and its interaction with propulsion converters

Friday - May 26th 2006**15:30 FB4 - Converter Analysis and Modeling****[Room B]***Chairman:*

- 02039 *Li H., Li Z., Halang W.A., Cheni G.* - (Germany)
Analyzing chaotic spectra of DC-DC converters using Prony method
- 02017 *Moreno-Muñoz A.* - (Spain)
Analysis of voltage dips in PWM AC-DC converters
- 02339 *Buti B., Nagy I., Masada E.* - (Hungary-Japan)
Stability analysis of PWM-controlled dual channel resonant buck converter using PI controller
- 02146 *De Simone S., Adragna C., Spini C., Gattavari G.* - (Italy)
Design-oriented steady-state analysis of LLC resonant converters based on first-harmonic approximation

15:30 FC4 - Variable Reluctance Motor Drives**[Room C]***Chairman:*

- 12124 *Mendrela E. A., Xinglong L.* - (USA)
Jumping switched reluctance motor operating as a hoist
- 12172 *Chai J. Y., Liaw C. M.* - (Taiwan)
Power factor and vibration assessments for switched-reluctance motor fed by switch-mode rectifier
- 12193 *Bhiwapurkar N., Mohan N.* - (USA)
Torque ripple optimization in switched reluctance motor using two-phase model and optimization search technique
- 10129 *Chang H.J., Liaw C.M.* - (Taiwan)
Development of a front-end converter for switched-reluctance motor drive
- 12295 *Hudak P., Hrabovcova V., Rafajdus P.* - (Slovak Republic)
Geometrical dimension influence of multi-barrier rotor on reluctance synchronous motor performances

17:00 Conclusive Remarks**17:15 End of Symposium**



Tuesday, May 23rd	16:00	Pre-Registration		
	19:30	Welcome Cocktail		
		Room "A"	Room "B"	Room "C"
Wednesday, May 24th	08:00	Registration		
	09:00	Formal Opening		
	09:15	WA1 - Identification Problems in Electrical Drives	WB1 - Drives and Converters for Railways Applications	WC1 - Generators and Converters for Renewable Sources of Energy
	11:00	Coffee break		
	11:15	WA2 - Sensorless Control	WB2 - EMC and Power Quality in Traction Systems	WC2 - PWM Active Front-Ends/ Active Filtering
	12:45	Lunch		
	14:15	WA3 - PM Brushless Motor Drives	WB3 - Converter Control	WC3 - Diagnostics in Electrical Drives
	15:45	WA4 - Mechatronic Systems	WB4 - Magnetic Levitation Applications	WC4 - Power Quality in Power Systems
	17:00	Poster sessions: WP1 - Converter Topologies and control WP2 - Controlled Electrical Drives WP3 - Design and Modelling of Electrical Machines		
18:30	Session close			
Thursday, May 25th	08:30	TA1 - Keynotes Speech	TB1 - Distributed Generation and Electricity Market	TC1 - Converter Topologies and Technology
		TA1 - Special Electrical Machines		
	10:30	Coffee break		
	10:45	TA2 - Modelling of Electrical Machines	TB2 - Photovoltaic and Fuel Cells Systems	TC2 - Motion Control
	12:30	Lunch		
	14:00	TA3 - Synchronous Motor Drives	TB3 - Multilevel Inverters	TC3 - Special Control Solutions
	15:30	TA4 - Drives for Generation and Storage	TB4 - EMC and EMI Problems	TC4 - Soft Computing Applications
	17:00	Poster sessions: TP1 - Measurements, Monitoring and Diagnostics in Electrical Drives TP2 - Power Quality in Power Systems TP3 - Power System and Traction System Problems TP4 - Power Electronics and Drives Applications		
	18:30	Session close		
20:00	Social Dinner			
Friday, May 26th	08:30	FA1 - Induction Motor Drives and Systems	FB1 - Design of Electrical Machines	FC1 - Electric & Hybrid Vehicles Drives
	10:45	Coffee break		
	11:00	FA2 - Dependable Design of Power Electronics, Electric Drives and Machines	FB2 - Measurements and Tests in Electrical Drives	FC2a - Linear Motors and Actuators
				FC2b - Power Devices in Power Electronics
	12:30	Lunch		
	14:00		FB3 - Finite Element Analysis of Electrical Machines	FC3 - Drive System Applications
	15:30		FB4 - Variable Reluctance Motor Drives	FC4 - Converter Analysis and Modelling
	17:00		Conclusive Remarks	
17:15	Symposium Close			