

People

[Professor](#)

[Doctoral students & Employees](#)

[Visiting Researchers](#)

[Alumni](#)

Professor at the Institute PES



Prof. Dr. Johann Walter Kolar

Address

Leistungselektronik/Kolar
ETH Zürich, ETL H 22
Physikstrasse 3
8092 Zürich



Publications prior to 2001

Publications after 2001

Room ETL H 22
Phone +41 44 632 28 34
Fax +41 44 632 12 12
eMail kolar@lem.ee.ethz.ch

CV

Johann W. Kolar received his M.Sc. degree in Industrial Electronics and Control Engineering (with highest honors) and the Ph.D. degree in Electrical Engineering (summa cum laude / promotio sub auspiciis praesidentis rei publicae) from the Vienna University of Technology, Austria, in 1997 and 1999, respectively. Since 1984 he has been working as an independent researcher and international consultant in close collaboration with the Vienna University of Technology, in the fields of power electronics, industrial electronics and high performance drives. He was appointed Assoc. Professor and Head of the Power Electronic Systems Laboratory at the Swiss Federal Institute of Technology (ETH) Zurich on Feb. 1, 2001, and was promoted to the rank of Full Prof. in 2004. Dr. Kolar has proposed numerous novel converter topologies and modulation and control concepts, e.g., the VIENNA Rectifier, the SWISS Rectifier, the Delta-Switch Rectifier, the Isolated Y-Matrix AC-DC Converter and the three-phase AC-AC Sparse Matrix Converter. He has published over 500 scientific papers at main international conferences, over 200 papers in international journals, and 3 book chapters. Furthermore, he has filed more than 140 patents. He has presented over 20 educational seminars at leading international conferences and has served as IEEE PELS Distinguished Lecturer from 2012 through 2016.

The focus of his current research is on AC-AC and AC-DC converter topologies with low effects on the mains, e.g. for data centers, More-Electric-Aircraft and distributed renewable energy systems, Solid-State Transformers for smart microgrid systems, and Inductive Power Transfer for EV/HEV charging and medical applications). Further main research areas are the realization of ultra-compact and ultra-efficient converter modules employing latest power semiconductor technology (SiC and GaN), Micro Power Electronics and/or Power Supplies on Chip, multi-domain/scale modeling/simulation and multi-objective (Pareto) optimization, as well as ultra-high speed and ultra-light weight drives, bearingless motors, and energy harvesting.

Dr. Kolar has received 11 IEEE Transactions Prize Paper Awards, 14 IEEE Conference Prize Paper Awards, the PCIM Europe Conference Prize Paper Award 2013, the SEMIKRON Innovation Award 2014, the 2014 IEEE Power Electronics Society R. David Middlebrook Achievement Award, and the 2016 IEEE William E. Newell Power Electronics Award. Furthermore, he received the ETH Zurich Golden Owl Award 2011 for Excellence in Teaching and an Erskine Fellowship from the University of Canterbury, New Zealand, in 2003. In 2006, the European Power Supplies Manufacturers Association (EPSMA) awarded the Power Electronics Systems Laboratory of ETH Zurich as the leading academic research institution in Power Electronics in Europe.

He has supervised over 60 Ph.D. students and PostDocs and has initiated and/or is the founder/co-founder of 4 spin-off companies targeting ultra-high speed drives, multi-domain/level simulation, ultra-compact/efficient converter systems and pulsed power/electronic energy processing.

Dr. Kolar is a Fellow of the IEEE, a Member of the IEEE, and a member of International Steering Committees and Technical Program Committees of numerous international conferences in the field (e.g. Director of the Power Quality Branch of the International Conference on Power Conversion and Intelligent Motion). He is the founder and chair of the IEEE PELS Austria Chapter (1997-2001) and of the IEEE PELS Switzerland Chapter (2001-2011), and Chairman of the Education Chapter of the European Power Electronics (EPE) Association (since 2001). From 1997 through 2000 he has been serving as Associate Editor of the IEEE Transactions on Industrial Electronics and from 2001 through 2013 as Associate Editor of the IEEE Transactions on Power Electronics. Since 2002 he also is an Associate Editor of the Journal of Power Electronics of the Korean Institute of Power Electronics and a member of the Editorial Advisory Board of the IEEE Transactions on Electrical and Electronic Engineering.

Courses

- Networks and Circuits I
- Networks and Circuits I
- Networks and Circuits II
- Power Electronic Systems I
- Power Electronic Systems I
- Power Electronic Systems II
- Power Electronics
- Power Electronics

Publications

Conference Papers

- **D. Rothmund, D. Bortis, J. Huber, D. Biadene, J. W. Kolar**, *10kV SiC-Based Bidirectional Soft-Switching Single-Phase AC/DC Converter for Medium-Voltage Solid-State Transformers*, Proceedings of the 8th International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2017), Florianopolis, Brazil, April 17-20, 2017.
- **O. Knecht, J. W. Kolar**, *Comparative Evaluation of IPT Resonant Circuit Topologies for Wireless Power Supplies of Implantable Mechanical Circulatory Support Systems*, Proceedings of the 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
- **T. Guillod, F. Krismer, J. W. Kolar**, *Electrical Shielding of MV/MF Transformers Subjected to High dv/dt PWM Voltages*, Proceedings of the 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
- **L. Schrittwieser, M. Leibl, M. Haider, F. Thöny, J. W. Kolar, T. B. Soeiro**, *99.3% Efficient Three-Phase Buck-Type All-SiC SWISS Rectifier for DC Distribution Systems*, Proceedings of the 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
- **O. Knecht, Y. Jundt, J. W. Kolar**, *Planar Inverted-F Antenna Design for a Fully Implantable Mechanical Circulatory Support System*, Proceedings of the IEEE Industrial Electronics Society's 18th International Conference on Industrial Technology (ICIT 2017), Toronto, Canada, March 22-25, 2017.
- **I. Subotic, C. Gammeter, A. Tüysüz, J. W. Kolar**, *Weight Optimization of an Axial-Flux PM Machine for Airborne Wind Turbines*, Proceedings of the IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES 2016), Trivandrum, India, December 14-17, 2016.
- **A. Tüysüz, M. Flankl, J. W. Kolar, A. Mütze**, *Eddy-Current-Based Contactless Speed Sensing of Conductive Surfaces*, Proceedings of the Southern Power Electronics Conference (SPEC 2016), Auckland, New Zealand, December 5-8, 2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar**, *Impact of Iron Dust on Electromechanical Systems: A Case Study*, Proceedings of the Southern Power Electronics Conference (SPEC 2016), Auckland, New Zealand, December 5-8, 2016.
- **J. W. Kolar**, *Multi-Objective Optimization in Power Electronics*, Plenary Presentation at the Southern Power Electronics Conference (SPEC 2016), Auckland, New Zealand, December 5-8, 2016.
- **K. Kajiwara, S. Kuboyama, T. Higuchi, J. W. Kolar, F. Kurokawa**, *A New Digital Current Control AC-DC Converter for Wind Turbine*, Proceedings of the 5th International Conference on Renewable Energy Research and Applications (ICRERA 2016), Birmingham, UK, November 20-23, 2016.
- **L. Schrittwieser, J. W. Kolar, T. B. Soeiro**, *99% Efficient Three-Phase Buck-Type SiC MOSFET PFC Rectifier Minimizing Life Cycle Cost in DC Data Centers*, Proceedings of the 38th International Communications Energy Conference (INTELEC 2016), Austin, TX, USA, October 23-27, 2016.
- **M. Antivachis, M. Kasper, D. Bortis, J. W. Kolar**, *Analysis of Capacitive Power Transfer GaN ISOP Multi-Cell DC/DC Converter Systems for Single-Phase Telecom Power Supply Modules*, Proceedings of the 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON 2016), Florence, Italy, October 23-27, 2016. [Video](#)
- **J. W. Kolar, R. Bosshard**, *Inductive EV Battery Charging Systems - Requirements, Basics, Limitations, Future Research*, Keynote Presentation at the 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON 2016), Florence, Italy, October 23-27, 2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar**, *Outrunner Generator with Optimized Cogging Torque Pattern for an Electromechanical Energy Harvester*, Proceedings of the 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON 2016), Florence, Italy, October 23-27, 2016. [Video](#)
- **M. Mauerer, A. Tüysüz, J. W. Kolar**, *Voltage/Current Measurement Performance and Power Supply Rejection in All-Digital Class-D Power Amplifiers*, Proceedings of the 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON 2016), Florence, Italy, October 23-27, 2016.
- **C. Gammeter, F. Krismer, J. W. Kolar**, *Weight and Efficiency Analysis of Switched Circuit Topologies for Modular Power Electronics in MEA*, Proceedings of the 42nd Annual Conference of the IEEE Industrial Electronics Society (IECON 2016), Florence, Italy, October 23-27, 2016.

- **O. Knecht, D. Bortis, J. W. Kolar**, *Comparative Evaluation of a Triangular Current Mode (TCM) and Clamp-Switch TCM DC-DC Boost Converter*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2016), Milwaukee, WI, USA, September 18-22, 2016.
- **T. Guillod, R. Färber, F. Krismer, C. M. Franck, J. W. Kolar**, *Computation and Analysis of Dielectric Losses in MV Power Electronic Converter Insulation*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2016), Milwaukee, WI, USA, September 18-22, 2016.
- **J. E. Huber, D. Rothmund, L. Wang, J. W. Kolar**, *Full-ZVS Modulation for All-SiC ISOP-Type Isolated Front End (IFE) Solid-State Transformer*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2016), Milwaukee, WI, USA, September 18-22, 2016.
- **M. Schuck, D. Steinert, J. W. Kolar**, *Active Radial Magnetic Bearing for an Ultra-High Speed Motor*, Proceedings of the 18th European Conference on Power Electronics and Applications (ECCE Europe 2016), Karlsruhe, Germany, September 5-9, 2016.
- **M. Schuck, D. Steinert, J. W. Kolar**, *Rotor Losses in an Ultra-High Speed Spinning Ball Motor*, Proceedings of the XXIIth International Conference on Electrical Machines (ICEM'2016), Lausanne, Switzerland, September 4-7, 2016.
- **T. Wellerdieck, P. Reichmuth, D. Steinert, J. W. Kolar**, *Experimental Verification of a Model-Based Zero- and Low-Speed Angle Observer for Bearingless Permanent Magnet Machines*, Proceedings of the 15th International Symposium on Magnetic Bearings (ISMB15), Kitakyushu, Fukuoka, Japan, August 3-6, 2016.
- **D. Rothmund, D. Bortis, J. W. Kolar**, *Accurate Transient Calorimetric Measurement of Soft-Switching Losses of 10kV SiC MOSFETs*, Proceedings of the 7th International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2016), Vancouver, Canada, June 27-30, 2016.
- **M. Guacci, D. Neumayr, D. Bortis, J. W. Kolar, G. Deboy**, *Analysis and Design of a Multi-Tapped High-Frequency Auto-Transformer Based Inverter System*, Proceedings of the 17th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2016), Trondheim, Norway, June 27-30, 2016.
- **D. Neumayr, D. Bortis, J. W. Kolar**, *Comprehensive Large-Signal Performance Analysis of Ceramic Capacitors for Power Pulsation Buffers*, Proceedings of the 17th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2016), Trondheim, Norway, June 27-30, 2016.
- **D. Bortis, D. Neumayr, J. W. Kolar**, *η -Pareto Optimization and Comparative Evaluation of Inverter Concepts considered for the GOOGLE Little Box Challenge*, Proceedings of the 17th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2016), Trondheim, Norway, June 27-30, 2016.
- **M. Kaufmann, A. Tüysüz, J. W. Kolar, C. Zwyssig**, *High-Speed Magnetically Levitated Reaction Wheels for Small Satellites*, Proceedings of the 23rd International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM 2016), Anacapri, Capri, Italy, June 22-24, 2016.
- **M. Schuck, J. Schäfer, J. W. Kolar, D. Steinert**, *Improved Stator Design for an Ultra-High Speed Spinning Ball Motor*, Proceedings of the 23rd International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM 2016), Anacapri, Capri, Italy, June 22-24, 2016.
- **J. W. Kolar, D. Bortis, D. Neumayr**, *The Ideal Switch is Not Enough*, Proceedings of the 28th IEEE International Symposium on Power Semiconductor Devices and ICs (ISPSD 2016), Prague, Czech Republic, June 12-16, 2016.
- **J. Huber, D. Rothmund, J. W. Kolar**, *Comparative Evaluation of Isolated Front End and Isolated Back End Multi-Cell SSTs*, Proceedings of the 8th International Power Electronics and Motion Control Conference (IPEMC 2016-ECCE Asia), Hefei, China, May 22-25, 2016.
- **D. Bortis, O. Knecht, D. Neumayr, J. W. Kolar**, *Comprehensive Evaluation of GaN GIT in Low- and High-Frequency Bridge Leg Applications*, Proceedings of the 8th International Power Electronics and Motion Control Conference (IPEMC 2016-ECCE Asia), Hefei, China, May 22-25, 2016.
- **D. Neumayr, D. Bortis, J. W. Kolar**, *Ultra-Compact Power Pulsation Buffer for Single-Phase DC/AC Converter Systems*, Proceedings of the 8th International Power Electronics and Motion Control Conference (IPEMC 2016-ECCE Asia), Hefei, China, May 22-25, 2016.
- **M. Kasper, M. Antivachis, D. Bortis, J. W. Kolar**, *4D-Interleaving of Isolated ISOP Multi-Cell Converter Systems for Single Phase AC/DC Conversion*, Proceedings of the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM Europe 2016), Nuremberg, Germany, May 10-12, 2016.
- **J. W. Kolar, J. Huber, T. Guillod, D. Rothmund, D. Bortis, F. Krismer**, *Smart (Solid-State) Transformers - Concepts/Challenges/Applications*, Keynote Presentation at the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM Europe 2016), Nuremberg, Germany, May 10-12, 2016.
- **M. Kaufmann, A. Tüysüz, J. W. Kolar**, *New Optimum Modulation of Three-Phase ZVS Triangular Current Mode GaN Inverter Ensuring Limited Switching Frequency Variation*, Proceedings of the 8th IET International Conference on Power Electronics, Machines and Drives (PEMD 2016), Glasgow, Scotland, April 19-21, 2016.
- **A. Tüysüz, J. W. Kolar**, *Comparison of Lateral- and Cylindrical-Stator Electrical Machines for High-Speed Direct-Drive Applications in Confined Spaces*, Proceedings of the 31st Applied Power Electronics Conference and Exposition (APEC 2016), Long Beach, CA, USA, March 20-24, 2016.
- **M. Mauerer, A. Tüysüz, J. W. Kolar**, *Gate Signal Jitter Elimination and Noise Shaping Modulation for High-SNR Class-D Power Amplifiers*, Proceedings of the 31st Applied Power Electronics Conference and Exposition (APEC 2016), Long Beach, CA, USA, March 20-24, 2016.
- **M. Flankl, A. Tüysüz, I. Subotic, J. W. Kolar**, *Novel Contactless Axial-Flux Permanent-Magnet Electromechanical Energy Harvester*, Proceedings of the 31st Applied Power Electronics Conference and Exposition (APEC 2016), Long Beach, CA, USA, March 20-24, 2016.
- **M. Schuck, J. Schäfer, T. Nussbaumer, J. W. Kolar**, *Analysis and Design of a Passive Electrodynamic Bearing for an Ultra-High Speed Spinning Ball Motor*, Proceedings of the Conference „Advances in Magnetism“ (AIM 2016), Bormio, Italy, March 14-16, 2016.
- **T. Wellerdieck, P. Peralta, D. Steinert, J. W. Kolar**, *Thermal Analysis of a Bearingless Permanent Magnet Pump at Ultra-High Temperatures*, Proceedings of the Conference "Advances in Magnetism" (AIM 2016), Bormio, Italy, March 14-16, 2016.

- **J. W. Kolar, D. Bortis, D. Neumayr, M. Kasper, et al.**, *GOOGLE/IEEE Little-Box Challenge*, Keynote Presentation at the 9th International Conference on Integrated Power Electronics Systems (CIPS 2016), Nuremberg, Germany, March 8-10, 2016.
- **M. Schuck, T. Nussbaumer, J. W. Kolar**, *Electromagnetic Suitability Analysis and Characterization of Ultra-High Speed Spherical Steel Rotors*, Proceedings of the 13th Joint MMM-Intermag Conference (INTERMAG 2016), San Diego, CA, USA, January 11-15, 2016.
- **T. Wellerdieck, T. Nussbaumer, J. W. Kolar**, *Zero- and Low-Speed Angle Observer for Bearingless Permanent Magnet Machines*, Proceedings of the 13th Joint MMM-Intermag Conference (INTERMAG 2016), San Diego, CA, USA, January 11-15, 2016.
- **P. A. M. Bezerra, F. Krismer, J. W. Kolar**, *Modeling and Multi-Objective Optimization of 2.5D Inductor-Based Fully Integrated Voltage Regulators for Microprocessor Applications*, Proceedings of the 1st Southern Power Electronics Conference (SPEC 2015), Fortaleza, Brazil, November 29-December 2, 2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar**, *Analysis and Power Scaling of a Single-Sided Linear Induction Machine for Energy Harvesting*, Proceedings of the 41th Annual Conference of the IEEE Industrial Electronics Society (IECON 2015), Yokohama, Japan, November 9-12, 2015.
- **O. Knecht, J. W. Kolar**, *Impact of Transcutaneous Energy Transfer on the Electric Field and Specific Absorption Rate in the Human Tissue*, Proceedings of the 41th Annual Conference of the IEEE Industrial Electronics Society (IECON 2015), Yokohama, Japan, November 9-12, 2015.
- **T. Guillod, F. Krismer, R. Färber, C. Franck, J. W. Kolar**, *Protection of MV/LV Solid-State Transformers in the Distribution Grid*, Proceedings of the 41th Annual Conference of the IEEE Industrial Electronics Society (IECON 2015), Yokohama, Japan, November 9-12, 2015.
- **H. Uemura, D. Yoshida, H. Fujimoto, Y. Okuma, J. W. Kolar**, *Benefits and Challenges of Design Process that employs a Multi-objective Optimization Approach for Industrial Applications*, Proceedings of the IEEE International Future Energy Electronics Conference (IFEEC 2015), Taipei, Taiwan, November 1-4, 2015.
- **T. Wellerdieck, P. Peralta, T. Nussbaumer, J. W. Kolar**, *Contributions to an Ultra-High Temperature (250 °C/500 °F) Bearingless Pump*, Proceedings of the 18th International Conference on Electrical Machines and Systems (ICEMS 2015), Pattaya City, Thailand, October 25-28, 2015.
- **J. W. Kolar, et al.**, *Approaches to Overcome the Google/IEEE Little-Box Challenges*, Keynote Presentation at the 37th International Telecommunications Energy Conference (INTELEC 2015), Osaka, Japan, October 18-22, 2015.
- **J. Huber, J. W. Kolar**, *Analysis and Design of Fixed Voltage Transfer Ratio DC/DC Converter Cells for Phase-Modular Solid-State Transformers*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2015), Montreal, Canada, September 20-24, 2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar**, *Analysis of a Watt-Range Contactless Electromechanical Energy Harvester Facing a Moving Conductive Surface*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2015), Montreal, Canada, September 20-24, 2015.
- **M. Mauerer, A. Tüysüz, J. W. Kolar**, *Distortion Analysis of Low-THD/High-Bandwidth GaN/SiC Class-D Amplifier Power Stages*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2015), Montreal, Canada, September 20-24, 2015.
- **D. Steinert, T. Nussbaumer, J. W. Kolar**, *Loss Investigation of Slotless Bearingless Disk Drives*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2015), Montreal, Canada, September 20-24, 2015.
- **M. Leibl, M. Darani, J. Deuringer, J. W. Kolar**, *New Boundary Mode Sinusoidal Input Current Control of the VIENNA Rectifier*, Proceedings of the IEEE Energy Conversion Congress & Expo (ECCE USA 2015), Montreal, Canada, September 20-24, 2015.
- **I. Kovacevic, R. Burkart, C. Dittli, A. Müsing, J. W. Kolar**, *Fast Method for the Calculation of Power Losses in Foil Windings*, Proceedings of the 17th European Conference on Power Electronics and Applications (ECCE Europe 2015), Geneva, Switzerland, September 8-10, 2015.
- **L. Schrittwieser, J. W. Kolar, T. Soeiro**, *Novel Modulation Concept of the SWISS Rectifier Preventing Input Current Distortions at Sector Boundaries*, Proceedings of the 16th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2015), Vancouver, Canada, July 12-15, 2015.
- **A. Tüysüz, M. Steichen, C. Zwyssig, J. W. Kolar**, *Advanced Cooling Concepts for Ultra-High-Speed Machines*, Proceedings of the 9th International Conference on Power Electronics (ECCE Asia 2015), Seoul, South Korea, June 1-5, 2015.
- **L. Schrittwieser, F. Vancu, J. W. Kolar, T. Soeiro**, *Control of the Input Characteristic and the Displacement Factor of Uni- and Bidirectional SWISS Rectifier for Symmetrical and Unsymmetrical Three-Phase Mains*, Proceedings of the 9th International Conference on Power Electronics (ECCE Asia 2015), Seoul, South Korea, June 1-5, 2015.
- **J. W. Kolar, J. Huber, T. Guillod, D. Rothmund, F. Krismer**, *Research Challenges and Future Perspectives of Solid-State Transformer Technology*, Keynote Presentations at the 5th International Conference on Power Engineering, Energy and Electrical Drives (POWERENG 2015), Riga, Latvia, May 11-13, 2015.
- **D. Rothmund, G. Ortiz, T. Guillod, J. W. Kolar**, *10kV SiC-Based Isolated DC-DC Converter for Medium-Voltage-Connected SSTs*, Proceedings of the 30th Applied Power Electronics Conference and Exposition (APEC 2015), Charlotte, NC, USA, March 15-19, 2015.
- **M. Kasper, C. W. Chen, D. Bortis, J. W. Kolar, G. Deboy**, *Hardware Verification of a Hyper-Efficient (98%) and Super-Compact (3.3kW/dm³) Isolated Multi-Cell AC/DC Telecom Power Supply Module*, Proceedings of the 30th Applied Power Electronics Conference and Exposition (APEC 2015), Charlotte, NC, USA, March 15-19, 2015.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. A. Francese**, *A Feedforward Controlled On-Chip Switched-Capacitor Voltage Regulator Delivering 10W in 32nm SOI CMOS*, Proceedings of the IEEE International Solid-State Circuits Conference (ISSCC 2015), San Francisco, USA, February 22-26, 2015.
- **P. A. M. Bezerra, F. Krismer, R. Burkart, J. W. Kolar**, *Bidirectional Isolated Non-Resonant DAB DC-DC Converter for Ultra-Wide Input Voltage Range Applications*, Proceedings of the IEEE International Power Electronics and Application Conference and Exposition (PEAC 2014), Shanghai, China, November 5-8, 2014.
- **J.W. Kolar, G. Ortiz**, *Solid-State Transformers*, Plenary Session Presentation at the IEEE International Power Electronics and Applications Conference and Exhibition

(PEAC 2014), Shanghai, Nov. 5-8, 2014.

- **C. Gammeter, Y. Drapela, A. Tüysüz, J. W. Kolar**, *Weight Optimization of a Machine for Airborne Wind Turbines*, Proceedings of the 40th Annual Conference of the IEEE Industrial Electronics Society (IECON 2014), Dallas, Texas, USA, October 29-November 1, 2014..
- **G. Ortiz, J. W. Kolar**, *Advanced Measurement Technology for Power Electronics Systems*, Keynote Paper at the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM South America 2014), São Paulo, Brazil, October 14-15, 2014.
- **T. Andersen, P. A. M. Bezerra, F. Krismer, J. W. Kolar, A. Sridhar, T. Brunschwiler, T. Toifl, C. Rabot, Z. Pavlovic, C. O'Mathuna, S. Gaborieau, C. Bunel**, *CarrICool: Interposer supporting optical signaling, liquid cooling, and power conversion for 3D chip stacks*, Proceedings of the 4th International Power Supply on Chip Workshop (PwrSoC 2014), Boston, MA, USA, October 6-8, 2014.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl**, *Granular Power Management*, Proceedings of the 4th International Power Supply on Chip Workshop (PwrSoC2014), Boston, MA, USA, October 6-8, 2014.
- **D. Rothmund, G. Ortiz, J. W. Kolar**, *SiC-Based Unidirectional Solid-State Transformer Concepts for Directly Interfacing 400V DC to Medium-Voltage AC Distribution Systems*, Proceedings of the IEEE International Telecommunications Energy Conference (INTELEC 2014), Vancouver, Canada, September 28-October 2, 2014.
- **T. Guillod, J. Huber, G. Ortiz, A. De, C. Franck, J. W. Kolar**, *Characterization of the Voltage and Electric Field Stresses in Multi-Cell Solid-State Transformers*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2014), Pittsburgh, PA, USA, September 14-18, 2014.
- **M. Kasper, D. Bortis, J. W. Kolar, G. Deboy**, *Hyper-Efficient (98%) and Super-Compact (3kW/dm³) 3.3kW Telecom Rectifier Module based on Series/Parallel Multi-Cell Converter Approach*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2014), Pittsburgh, PA, USA, September 14-18, 2014.
- **M. Leibl, J. Deuringer, J. W. Kolar**, *New Current Control Scheme for the Vienna Rectifier in Discontinuous Conduction Mode*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2014), Pittsburgh, PA, USA, September 14-18, 2014.
- **J. Huber, J. W. Kolar**, *Volume/Weight/Cost Comparison of 1 MVA 10kV/400 V Solid-State against a Conventional Low-Frequency Distribution Transformer*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2014), Pittsburgh, PA, USA, September 14-18, 2014.
- **S. Schroth, F. Krismer, J. W. Kolar, H. Ertl**, *Analysis and Practical Relevance of CM/DM EMI Noise Separator Characteristics*, Proceedings of the 16th European Conference on Power Electronics and Applications (EPE 2014 - ECCE Europe), Lappeenranta, Finland, August 26-28, 2014.
- **P. Cortes, D. Bortis, R. Pittini, J. W. Kolar**, *Comparative Evaluation of Three-Phase Isolated Matrix-Type PFC Rectifier Concepts for High Efficiency 380VDC Supplies of Future Telco and Data Centers*, Proceedings of the 16th European Conference on Power Electronics and Applications (EPE 2014 - ECCE Europe), Lappeenranta, Finland, August 26-28, 2014.
- **M. Kasper, S. Herden, D. Bortis, J. W. Kolar**, *Impact of PV String Shading Conditions on Panel Voltage Equalizing Converters and Pareto Optimization of a Single Converter System*, Proceedings of the 16th European Conference on Power Electronics and Applications (EPE 2014 - ECCE Europe), Lappeenranta, Finland, August 26-28, 2014.
- **O. Knecht, R. Bosshard, J. W. Kolar, C. T. Starck**, *Optimization of Transcutaneous Energy Transfer Coils for High Power Medical Applications*, Proceedings of the 15th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2014), Santander, Spain, June 22-25, 2014.
- **J. W. Kolar**, *Future Challenges for Research and Teaching in Power Electronics*, Presentation held at the 14th International Conference on Optimization of Electrical and Electronic Equipment (OPTIM 2014), Brasov, Romania, May 22-24, 2014.
- **J. Huber, J. W. Kolar**, *Common-Mode Currents in Multi-Cell Solid-State Transformers*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **M. Leibl, J. W. Kolar**, *Comparative Analysis of Inductor Concepts for High Peak Load Low Duty Cycle Operation*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **Y. Lobsiger, G. Ortiz, D. Bortis, J. W. Kolar**, *Concept and Experimental Evaluation of a Novel DC - 100 MHz Wireless Oscilloscope*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **R. Bosshard, J. W. Kolar, B. Wunsch**, *Control Method for Inductive Power Transfer with High Partial-Load Efficiency and Resonance Tracking*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **P. Cortes, M. Silva, L. Fässler, D. Bortis, J. W. Kolar**, *Detailed Analysis and Design of a Three-Phase Phase-Modular Isolated Matrix-Type PFC Rectifier*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **C. Zwyssig, T. Baumgartner, J. W. Kolar**, *High-Speed Magnetically Levitated Reaction Wheel Demonstrator*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **D. O. Boillat, J. W. Kolar**, *Integrated Isolation and Voltage Balancing Link of 3-Phase 3-Level PWM Rectifier and Inverter Systems*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **R. Burkart, J. W. Kolar**, *Low-Complexity Analytical Approximations of Switching Frequency Harmonics of 3-Phase N-Level Voltage-Source PWM Converters*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **M. Mauerer, L. Schrittwieser, G. Ortiz, D. Bortis, J. W. Kolar**, *Novel Principle for Flux Sensing in the Application of a DC + AC Current Sensor*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **R. Burkart, H. Uemura, J. W. Kolar**, *Optimal Inductor Design for 3-Phase Voltage-Source PWM Converters Considering Different Magnetic Materials and a Wide Switching Frequency Range*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.

- **C. Zingerli, T. Nussbaumer, J. W. Kolar**, *Optimizing Repulsive Lorentz Forces for a Levitating Induction Cooker*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **A. Tüysüz, R. Bosshard, J. W. Kolar**, *Performance Comparison of a GaN GIT and a Si IGBT for High-Speed Drive Applications*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **M. Kasper, D. Bortis, J. W. Kolar**, *Scaling and Balancing of Multi-Cell Converters*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **J. W. Kolar, G. Ortiz**, *Solid-State-Transformers: Key Components of Future Traction and Smart Grid Systems*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **A. Müsing, J. W. Kolar**, *Successful Online Education - GeckoCIRCUITS as Open-Source Simulation Platform*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **D. Steinert, T. Nussbaumer, J. W. Kolar**, *Topology Evaluation of Slotless Bearingless Motors with Toroidal Windings*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **H. Uemura, F. Krismer, Y. Okuma, J. W. Kolar**, *η -p Pareto Optimization of 3-Phase 3-Level T-Type AC-DC-AC Converter Comprising Si and SiC Hybrid Power Stage*, Proceedings of the International Power Electronics Conference - ECCE Asia (IPEC 2014), Hiroshima, Japan, May 18-21, 2014.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. Buchmann, P. Francese**, *A Deep Trench Capacitor Based 2:1 and 3:2 Reconfigurable On-Chip Switched Capacitor DC-DC Converter in 32 nm SOI CMOS*, Proceedings of the 29th Applied Power Electronics Conference and Exposition (APEC 2014), Texas, Houston, USA, March 16-20, 2014.
- **R. Bosshard, J. W. Kolar, B. Wunsch**, *Accurate Finite-Element Modeling and Experimental Verification of Inductive Power Transfer Coil Design*, Proceedings of the 29th Applied Power Electronics Conference and Exposition (APEC 2014), Texas, Houston, USA, March 16-20, 2014.
- **S. Schroth, D. Bortis, J. W. Kolar**, *Impact of Stator Grounding in Low Power Single-Phase EC-Motors*, Proceedings of the 29th Applied Power Electronics Conference and Exposition (APEC 2014), Texas, Houston, USA, March 16-20, 2014.
- **J. W. Kolar, F. Krismer, H. P. Nee**, *What are the "Big CHALLENGES" in Power Electronics?*, Presentation for the 8th International Conference of Integrated Power Electronics Systems (CIPS 2014), Nuremberg, Germany, February 25-27, 2014.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. Buchmann, P. A. Francese**, *A Sub-ns Response On-Chip Switched-Capacitor DC-DC Voltage Regulator Delivering 3.7W/mm² at 90% Efficiency using Deep Trench Capacitors in 32nm SoI CMOS*, Proceedings of the IEEE International Solid-State Circuits Conference (ISSCC 2014), San Francisco, USA, February 9-13, 2014.
- **P. Cortes, J. Huber, M. Silva, J. W. Kolar**, *New Modulation and Control Scheme for Phase-Modular Isolated Matrix-Type Three-Phase AC/DC Converter*, Proceedings of the 39th Annual Conference of the IEEE Industrial Electronics Society (IECON 2013), Vienna, Austria, November 10-13, 2013.
- **T. Soeiro, M. Heldwein, J. W. Kolar**, *Three-Phase Modular Multilevel Current Source Rectifiers for Electric Vehicle Battery Charging Systems*, Proceedings of the Brazilian Power Electronics Conference (COBEP 2013), Gramado, Brazil, October 27-31, 2013.
- **M. Kasper, M. Ritz, D. Bortis, J. W. Kolar**, *PV Panel-Integrated High Step-Up High Efficiency Isolated GaN DC-DC Boost Converter*, Proceedings of the 35th IEEE International Telecommunications Energy Conference (INTELEC 2013), Hamburg, Germany, October 13-17, 2013.
- **J. Everts, F. Krismer, J. Van den Keybus, J. Driesen, J. W. Kolar**, *Charge-Based ZVS Soft Switching Analysis of a Single-Stage Dual Active Bridge AC-DC Converter*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **H. Uemura, F. Krismer, J. W. Kolar**, *Comparative Evaluation of T-Type Topologies Comprising Standard and Reverse-Blocking IGBTs*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **R. Burkart, J. W. Kolar**, *Component Cost Models for Multi-Objective Optimizations of Switched-Mode Power Converters*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **M. Kasper, D. Bortis, J. W. Kolar**, *Novel High Voltage Conversion Ratio "Rainstick" DC/DC Converters*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **J. Huber, J. W. Kolar**, *Optimum Number of Cascaded Cells for High-Power Medium-Voltage Multilevel Converters*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **P. Cortes, D. O. Boillat, J. W. Kolar**, *Phase-Oriented Control of a Modular 3-Phase 3-Level 4-Leg Inverter AC Power Source Supplying Floating or Grounded Loads*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **D. O. Boillat, J. W. Kolar, J. Mühlethaler**, *Volume Minimization of the Main DM/CM EMI Filter Stage of a Bidirectional Three-Phase Three-Level PWM Rectifier System*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **C. Gammeter, J. W. Kolar**, *Weight Optimization of a Cooling System Composed of Fan and Extruded Fin Heat Sink*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2013), Denver, Colorado, USA, September 15-19, 2013.
- **J. Mühlethaler, M. Schubiger, U. Badstübner, J. W. Kolar**, *Acoustic Noise in Inductive Power Components*, Proceedings of the 15th European Conference on Power Electronics and Applications (and Exhibition, EPE'13-ECCE Europe), Lille, France, September 3-5, 2013.
- **Y. Lobsiger, J. W. Kolar**, *Closed-Loop di/dt & dv/dt Control and Dead Time Minimization of IGBTs in Bridge Leg Configuration*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.

- **R. Burkart, J. W. Kolar**, *Comparative Evaluation of SiC and Si PV Inverter Systems Based on Power Density and Efficiency as Indicators of Initial Costs and Operating Revenue*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **D. Bortis, L. Fässler, J. W. Kolar**, *Comprehensive Analysis and Comparative Evaluation of the Isolated True Bridgeless Cuk Single-Phase PFC Rectifier System*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **G. Ortiz, C. Gammeter J. W. Kolar**, *Mixed MOSFET/IGBT Bridge for High-Efficient Medium-Frequency Dual-Active-Bridge Converter in Solid State Transformers*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **D. Rothmund, J. Huber, J. W. Kolar**, *Operating Behavior and Design of the Half-Cycle Discontinuous-Conduction-Mode Series-Resonant-Converter with Small DC Link Capacitors*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **D. Bortis, I. Kovacevic, J. W. Kolar**, *Optimization of Rotary Transformer for High-Speed Applications*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **I. Kovacevic, F. Krismer, S. Schroth, J. W. Kolar**, *Practical Characterization of EMI Filters Replacing CISPR 17 Approximate Worst Case Measurements*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **P. Cortes, F. Vancu, J. W. Kolar**, *Swiss Rectifier Output Voltage Control with Inner Loop Power Flow Programming (PFP)*, Proceedings of the 14th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2013), Salt Lake City, USA, June 23-26, 2013.
- **E. Hoene, A. Ostmann, B. T. Lai, C. Marczok, A. Müsing, J. W. Kolar**, *Ultra-Low-Inductance Power Module for Fast Switching Semiconductors*, Proceedings of the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM), Nuremberg, Germany, May 14-16, 2013.
- **D. Steinert, T. Nussbaumer, J. W. Kolar**, *Concept of a 150 krpm Bearingless Slotless Disc Drive with Combined Windings*, Proceedings of the IEEE International Electric Machines and Drives Conference (IEMDC 2013), Chicago, USA, May 12-15, 2013.
- **A. Tüysüz, A. Schaubhut, C. Zwyssig, J. W. Kolar**, *Model-Based Loss Minimization in High-Speed Motors*, Proceedings of the IEEE International Electric Machines and Drives Conference (IEMDC 2013), Chicago, USA, May 12-15, 2013.
- **T. Baumgartner, J. W. Kolar**, *Multivariable State Feedback Control of a 500 000 rpm Self-Bearing Motor*, Proceedings of the IEEE International Electric Machines and Drives Conference (IEMDC 2013), Chicago, USA, May 12-15, 2013.
- **G. Ortiz, M. Leibl, J. W. Kolar, O. Apeldoorn**, *Medium Frequency Transformers for Solid-State-Transformer Applications - Design and Experimental Verification*, Proceedings of the 10th IEEE International Conference on Power Electronics and Drive Systems (PEDS 2013), Kitakyushu, Japan, April 22-25, 2013.
- **C. Zingerli, I. Coray, J. Weber, T. Nussbaumer, J. W. Kolar**, *Scaling of Magnetically Levitated Homopolar Hollow-Shaft Machines*, Proceedings of the 10th IEEE International Conference on Power Electronics and Drive Systems (PEDS 2013), Kitakyushu, Japan, April 22-25, 2013.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. Buchmann, P. Francese**, *A 4.6 W/mm² Power Density 86% Efficiency On-Chip Switched Capacitor DC-DC Converter in 32nm SOI CMOS*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **D. Bortis, L. Fässler, A. Looser, J. W. Kolar**, *Analysis of Rotary Transformer Concepts for High-Speed Applications*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **G. Ortiz, L. Fässler, J. W. Kolar, O. Apeldoorn**, *Application of the Magnetic Ear for Flux Balancing of a 160kW/20kHz DC-DC Converter Transformer*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **U. Badstuebner, J. Miniböck, J. W. Kolar**, *Experimental Verification of the Efficiency/Power-Density (n-p) Pareto Front of Single-Phase Double-Boost and TCM PFC Rectifier Systems*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **R. Bosshard, J. Mühlethaler, J. W. Kolar, I. Stevanovic**, *Optimized Magnetic Design for Inductive Power Transfer Coils*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **Y. Lobsiger, J. W. Kolar**, *Stability and Robustness Analysis of d/dt-Closed-Loop IGBT Gate Drive*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **J. Huber, G. Ortiz, F. Krismer, N. Widmer, J. W. Kolar**, *η -p Pareto Optimization of Bidirectional Half-Cycle Discontinuous-Conduction-Mode Series-Resonant DC/DC Converter with Fixed Voltage Transfer Ratio*, Proceedings of the 28th Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **R. Bosshard, U. Badstübner, J. W. Kolar, I. Stevanovic**, *Comparative Evaluation of Control Methods for Inductive Power Transfer*, Proceedings of the International Conference on Renewable Energy Research and Applications (ICRERA 2012), Nagasaki, Japan, November 11-14, 2012.
- **P. Cortes, D. O. Boillat, H. Ertl, J. W. Kolar**, *Comparative Evaluation of Multi-Loop Control Schemes for a High-Bandwidth AC Power Source with a Two-Stage LC Output Filter*, Proceedings of the International Conference on Renewable Energy Research and Applications (ICRERA 2012), Nagasaki, Japan, November 11-14, 2012.
- **D. O. Boillat, J. W. Kolar**, *Modeling and Experimental Analysis of a Coupling Inductor Employed in a High Performance AC Power Source*, Proceedings of the International Conference on Renewable Energy Research and Applications (ICRERA 2012), Nagasaki, Japan, November 11-14, 2012.
- **T. Baumgartner, R. Burkart, J. W. Kolar**, *Analysis and Design of an Ultra-High Speed Slotless Self-Bearing Permanent Magnet Motor*, Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.

- **M. F. Vancu, T. Soeiro, J. Mühlethaler, J. W. Kolar, D. Aggeler**, *Comparative Evaluation of Bidirectional Buck-Type PFC Converter Systems for Interfacing Residential DC Distribution Systems to the Smart Grid*, Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.
- **J. Mühlethaler, H. Uemura, J. W. Kolar**, *Optimal Design of EMI Filters for Single-Phase Boost PFC Circuits*, Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.
- **G. Ortiz, D. Bortis, J. W. Kolar, O. Apeldoorn**, *Soft-Switching Techniques for Medium-Voltage Isolated Bidirectional DC/DC Converters in Solid State Transformers*, Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.
- **R. Bosshard, J. Mühlethaler, J. W. Kolar, I. Stevanovic**, *The η - α -Pareto Front of Inductive Power Transfer Coils*, Proceedings of the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.
- **R. Burkart, J. W. Kolar, G. Griepentrog**, *Comprehensive Comparative Evaluation of Single- and Multi-Stage Three-Phase Power Converters for Photovoltaic Applications*, Proceedings of the 34th IEEE International Telecommunications Energy Conference (INTELEC 2012), Scottsdale, USA, September 30-October 4, 2012.
- **Y. Lobsiger, J. W. Kolar**, *Closed-Loop IGBT Gate Drive Featuring Highly Dynamic di/dt and dv/dt Control*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2012), Raleigh, USA, September 16-20, 2012.
- **A. Tüysüz, M. Schöni, J. W. Kolar**, *Novel Signal Injection Methods for High-Speed Self-Sensing Electrical Drives*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2012), Raleigh, USA, September 16-20, 2012.
- **R. Burkart, J. W. Kolar**, *Overview and Comparison of Grid Harmonics and Conducted EMI Standards for LV Converters Connected to the MV Distribution System*, Proceedings of the first Power Electronics South America 2012 Conference and Exhibition (PCIM 2012) São Paulo, Brazil, September 11-13, 2012.
- **M. Kasper, T. Friedli, J. W. Kolar**, *Classification and Comparative Evaluation of PV Panel Integrated DC-DC Converter Concepts*, Proceedings of the 15th International Power Electronics and Motion Control Conference (ECCE Europe 2012), Novi Sad, Serbia, September 4-6, 2012.
- **M. Jankovic, M. Darijevic, P. Pejovic, J. W. Kolar, Y. Nishida**, *Hybrid Three-Phase Rectifier with Switched Current Injection Device*, Proceedings of the 15th International Power Electronics and Motion Control Conference (ECCE Europe 2012), Novi Sad, Serbia, September 4-6, 2012.
- **Y. Nishida, H. Ohyama, P. Pejovic, J. W. Kolar**, *Three-Phase Harmonic Reducing Diode Rectifier*, Proceedings of the 15th International Power Electronics and Motion Control Conference (ECCE Europe 2012), Novi Sad, Serbia, September 4-6, 2012.
- **L. Schwager, A. Tüysüz, C. Zwyssig, J. W. Kolar**, *Modeling and Comparison of Machine and Converter Losses for PWM and PAM in High-Speed Drives*, Proceedings of the International Conference on Electrical Machines (ICEM 2012), Marseille, France, September 2-5, 2012.
- **P. M. Cortes Estay, J. W. Kolar, J. Rodriguez**, *Comparative Evaluation of Predictive Control Schemes for Three-Phase Buck-Type PFC Rectifiers*, Proceedings of the 7th IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2012), Harbin, China, June 2-5, 2012.
- **C. Zingerli, T. Nussbaumer, J. W. Kolar**, *Analysis of Rotor Shell Losses in a Magnetically Levitated Homopolar Hollow-Shaft Permanent Magnet Synchronous Motor*, Proceedings of the 7th IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2012), Harbin, China, June 2-5, 2012.
- **P. M. Cortes, D. O. Boillat, T. Friedli, M. Schweizer, J. W. Kolar, J. Rodriguez, W. Hribernik**, *Comparative Evaluation of Control Schemes for a High Bandwidth Three-Phase AC Source*, Proceedings of the 7th IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2012), Harbin, China, June 2-5, 2012.
- **B. Wrzcionko, L. Steinmann, J. W. Kolar**, *Fast High-Temperature (250°C/500°F) Isolated DC and AC Current Measurement: Bidirectionally Saturated Current Transformer*, Proceedings of the 7th IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2012), pp. 480-487, Harbin, China, June 2-5, 2012.
- **A. J. Korn, M. Winkelkemper, P. Steimer, J. W. Kolar**, *Capacitor Voltage Balancing in Modular Multilevel Converters*, Proceedings of the 6th IET International Conference on Power Electronics, Machines and Drives (PEMD 2012), Bristol, UK, March 27-29, 2012.
- **D. O. Boillat, T. Friedli, J. Mühlethaler, J. W. Kolar, W. Hribernik**, *Analysis of the Design Space of Single-Stage and Two-Stage LC Output Filters of Switched-Mode AC Power Sources*, Proceedings of the IEEE Power and Energy Conference at Illinois (PECI 2012), Illinois, USA, February 24-25, 2012.
- **B. Cougo, T. Friedli, D. O. Boillat, J. W. Kolar**, *Comparative Evaluation of Individual and Coupled Inductor Arrangements for Input Filters of PV Inverter Systems*, Proceedings of the International Conference of Integrated Power Electronics Systems (CIPS 2012), Nuremberg, Germany, March 6-8, 2012.
- **I. Kovacevic, A. Müsing, T. Friedli, J. W. Kolar**, *Electromagnetic Modeling of EMI Input Filters*, Proceedings of the International Conference of Integrated Power Electronics Systems (CIPS 2012), Nuremberg, Germany, March 6-8, 2012.
- **J. W. Kolar, F. Krismer, Y. Lobsiger, J. Mühlethaler, T. Nussbaumer, J. Miniböck**, *Extreme Efficiency Power Electronics*, Proceedings of the International Conference of Integrated Power Electronics Systems (CIPS 2012), Nuremberg, Germany, March 6-8, 2012.
- **B. Cougo, J. W. Kolar**, *Integration of Leakage Inductance in Tape Wound Core Transformers for Dual Active Bridge Converters*, Proceedings of the International Conference of Integrated Power Electronics Systems (CIPS 2012), Nuremberg, Germany, March 6-8, 2012.
- **R. A. Friedemann, F. Krismer, J. W. Kolar**, *Design of a Minimum Weight Dual Active Bridge Converter for an Airborne Wind Turbine System*, Proceedings of the 27th Applied Power Electronics Conference and Exposition (APEC 2012), Orlando Florida, USA, February 5-9, 2012.
- **T. Soeiro, T. Friedli, J. W. Kolar**, *SWISS Rectifier – A Novel Three-Phase Buck-Type PFC Topology for Electric Vehicle Battery Charging*, Proceedings of the 27th Applied Power Electronics Conference and Exposition (APEC 2012), Orlando Florida, USA, February 5-9, 2012.
- **T. Soeiro, T. Friedli, J. W. Kolar**, *Three-Phase High Power Factor Mains Interface Concepts for Electric Vehicle Battery Charging Systems*, Proceedings of the 27th

Applied Power Electronics Conference and Exposition (APEC 2012), Orlando Florida, USA, February 5-9, 2012.

- **J. Everts, F. Krismer, J. Van den Keybus, J. Driesen, J. W. Kolar**, *Comparative Evaluation of Soft-Switching, Bidirectional, Isolated AC/DC Converter Topologies*, Proceedings of the 27th Applied Power Electronics Conference and Exposition (APEC 2012), Orlando Florida, USA, February 5-9, 2012.
- **J. Everts, J. Van den Keybus, F. Krismer, J. Driesen, J. W. Kolar**, *Switching Control Strategy for Full ZVS Soft-Switching Operation of a Dual Active Bridge AC/DC Converter*, Proceedings of the 27th Applied Power Electronics Conference and Exposition (APEC 2012), Orlando Florida, USA, February 5-9, 2012.
- **J. W. Kolar**, *Intelligent Solid State Transformers (SSTs) - A Key Building Block of Future Smart Grid Systems*, Presentation only, no paper. (CPSSC 2011), Shanghai, China, November 18-21, 2011.
- **B. Cougo, A. Tüysüz, J. Mühlethaler, J. W. Kolar**, *Increase of Tape Wound Core Losses Due to Interlamination Short Circuits and Orthogonal Flux Components*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **A. Müsing, U. Drofenik, J. W. Kolar**, *New Circuit Simulation Applets for Online Education in Power Electronics*, Proceedings of the 5th IEEE International Conference on E-Learning in Industrial Electronics (ICELIE 2011), Melbourne, Australia, November 7-10, 2011.
- **T. Soeiro, J. W. Kolar**, *Novel 3-Level Hybrid Neutral-Point-Clamped Converter*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **B. Cougo, J. W. Kolar, G. Ortiz**, *Strategies to Reduce Copper Losses in Connections of Medium-Frequency High-Current Converters*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **D. O. Boillat, T. Friedli, J. W. Kolar**, *Electronically Controllable Impedance for Tuning of Active Metamaterials*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **A. Looser, J. W. Kolar**, *A Hybrid Bearing Concept for High-Speed Applications Employing Aerodynamic Gas-Bearings and a Self-Sensing Active Magnetic Damper*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **A. Tüysüz, D. Koller, A. Looser, J. W. Kolar**, *Design of a Test Bench for a Lateral Stator Electrical Machine*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **B. Wrzecionko, A. Looser, J. W. Kolar, M. Casey**, *High-Temperature (250 °C / 500 °F) 19'000 rpm BLDC Fan for Forced Air-Cooling of Advanced Automotive Power Electronics*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, pp. 4162-4169, November 7-10, 2011.
- **T. Soeiro, T. Friedli, M. Hartmann, J. W. Kolar**, *New Unidirectional Hybrid Delta-Switch Rectifier*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **J. Mühlethaler, M. Schweizer, R. Blattmann, J. W. Kolar, A. Ecklebe**, *Optimal Design of LCL Harmonic Filters for Three-Phase PFC Rectifiers*, Proceedings of the 37th Annual Conference of the IEEE Industrial Electronics Society (IECON 2011), Melbourne, Australia, November 7-10, 2011.
- **M. Darjovic, P. Pejovi?, Y. Nishida, J. W. Kolar**, *Active Resistance Emulation in Three-Phase Rectifier with Suboptimal Current Injection*, Proceedings of the 16th International Symposium on Power Electronics (EE 2011), Novi Sad, Republic of Serbia, October 26-28, 2011.
- **P. Pejovi?, J. W. Kolar, Y. Nishida**, *Bidirectional AC-DC Converter for Regenerative Braking*, Proceedings of the 16th International Symposium on Power Electronics (EE 2011), Novi Sad, Republic of Serbia, October 26-28, 2011.
- **J. W. Kolar, T. Friedli**, *The Essence of Three-Phase PFC Rectifier Systems*, Proceedings of the 33rd IEEE International Telecommunications Energy Conference (INTELEC 2011), Amsterdam, Netherlands, October 9-13, 2011.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Design Study for Exterior Rotor Bearingless Permanent Magnet Machines*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2011), Phoenix, USA, September 18-22, 2011.
- **T. Andersen, C. Zingerli, F. Krismer, C. O'Mathuna, J. W. Kolar**, *Inductor Optimization Procedure for Power Supply in Package and Power Supply on Chip*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2011), Phoenix, USA, September 18-22, 2011.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *PEEC-based Virtual Design of EMI Input Filters*, Proceedings of the 3rd IEEE Energy Conversion Congress & Exposition (ECCE USA 2011), Phoenix, USA, September 17-22, 2011.
- **C. Zingerli, P. Imoberdorf, T. Nussbaumer, J. W. Kolar**, *Rotor Position Measurement for a Magnetically Levitated 500'000 rpm Permanent Magnet Machine*, Proceedings of the 3rd IEEE Energy Conversion Congress & Exposition (ECCE USA 2011), Phoenix, USA, September 17-22, 2011.
- **Y. Lobsiger, D. Bortis, J. W. Kolar**, *Decentralized Active Gate Control for Current Balancing of Parallel Connected IGBT Modules*, Proceedings of the 14th European Conference on Power Electronics and Applications (ECCE Europe 2011), Birmingham, UK, August 30-September 1, 2011.
- **A. J. Korn, M. Winkelkemper, P. Steimer, J. W. Kolar**, *Direct Modular Multi-Level Converter for Gearless Low-Speed Drives*, Proceedings of the 14th European Conference on Power Electronics and Applications (ECCE Europe 2011), Birmingham, UK, August 30 - September 1, 2011.
- **M. Schweizer, J. W. Kolar**, *High Efficiency Drive System with 3-Level T-Type Inverter*, Proceedings of the 14th European Conference on Power Electronics and Applications (ECCE Europe 2011), Birmingham, UK, August 30 - September 1, 2011.
- **S. Schoening, P. Steimer, J. W. Kolar**, *Braking chopper solutions for Modular Multilevel Converters*, Proceedings of the 14th IEEE International Power Electronics and Motion Control Conference (ECCE Europe 2011), Birmingham, UK, August 30 - September 1, 2011.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *A Full PEEC Modeling of EMI Filter Inductors in Frequency Domain*, Proceedings of the 18th International Conference on

The Computation of Electromagnetic Fields - COMPUMAG, Sydney, Australia, July 12-15, 2011.

- **J. W. Kolar, T. Friedli, F. Krismer, A. Looser, M. Schweizer, P. Steimer, J. Bevirt**, *Conceptualization and Multi-Objective Optimization of the Electric System of an Airborne Wind Turbine*, Proceeding of the 20th IEEE International Symposium on Industrial Electronics (ISIE 2011), Gdansk, Poland, pp. 32-55, June 27-30, 2011 .
- **G. Ortiz, J. Mühlethaler, J. W. Kolar**, *"Magnetic Ear"- Based Balancing of Magnetic Flux in High Power Medium Frequency Dual Active Bridge Converter Transformer Cores*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **J. Mühlethaler, J. W. Kolar, A. Ecklebe**, *A Novel Approach for 3D Air Gap Reluctance Calculations*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **T. Soeiro, M. Schweizer, J. Linner, P. Ranstad, J. W. Kolar**, *Comparison of 2- and 3-Level Active Filters with Enhanced Bridge-Leg Loss Distribution*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **T. Soeiro, T. Friedli, J. Linner, P. Ranstad, J. W. Kolar**, *Comparison of Electrostatic Precipitator Power Supplies with Low Effects on the Mains*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **J. Mühlethaler, J. W. Kolar, A. Ecklebe**, *Loss Modeling of Inductive Components Employed in Power Electronic Systems*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **C. Marxgut, J. Mühlethaler, F. Krismer, J. W. Kolar**, *Multi-Objective Optimization of Ultra-flat Magnetic Components with a PCB-Integrated Core*, Proceedings of the 8th International Conference on Power Electronics (ECCE Asia 2011), The Shilla Jeju, Korea, May 30-June 3, 2011.
- **Y. Lobsiger, D. Bortis, H. Ertl, J. W. Kolar**, *100 MS/s 10-25 MHz Wireless Voltage Probe*, Proceedings of the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM), pp. 627-633, Nuremberg, Germany, May 17-19, 2011 .
- **D. Bortis, B. Wrzecionko, J. W. Kolar**, *A 120 °C Ambient Temperature Forced Air-Cooled Normally-off SiC JFET Automotive Inverter System*, Proceedings of the 26th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2011), pp. 1282-1289, Ft. Worth, TX, USA, March 6-10, 2011 .
- **J. Mühlethaler, J. Biela, J. W. Kolar, A. Ecklebe**, *Improved Core Loss Calculation for Magnetic Components Employed in Power Electronic Systems*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC), Fort Worth, TX, March 6-10, 2011.
- **U. Badstübner, A. Stupar, J. W. Kolar**, *Sensitivity of Telecom DC-DC Converter Optimization to the Level of Detail of the System Model*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC), Fort Worth, TX, March 6-10, 2011.
- **A. Stupar, T. Friedli, J. Miniböck, M. Schweizer, J. W. Kolar**, *Towards a 99% Efficient Three-Phase Buck-Type PFC Rectifier for 400 V DC Distribution Systems*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC), Fort Worth, TX, March 6-10, 2011.
- **G. Ortiz, A. Müsing, J. Biela, D. Bortis, J. W. Kolar**, *A 180MW, 450kV Solid State Modulator Based on Press Pack IGBT Technology*, Proceedings of the IEEE International Power Modulator and High Voltage Conference (IPMHVC 2010), Atlanta, USA, May 23-27, 2010.
- **P. Pejović, J. W. Kolar**, *An Analysis of Three-Phase Rectifiers with Constant Voltage Loads*, Proceedings of the 5th European Conference on Circuits and Systems for Communications (ECCSC 2010), Belgrade, Serbia, November 23-25, 2010.
- **T. Soeiro, J. Biela, J. Linnér, P. Ranstad, J. W. Kolar**, *Comparison of Concepts for Improving the Line Power Quality of Electrostatic Precipitator Systems*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010.
- **M. Schweizer, I. Lizama, T. Friedli, J. W. Kolar**, *Comparison of the Chip Area Usage of 2-level and 3-level Voltage Source Converter Topologies*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010.
- **T. Soeiro, J. Biela, J. Linner, P. Ranstad, J. W. Kolar**, *Line Power Quality Improvement for ESP Systems Using Multi-pulse and Active Filter Concepts*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010.
- **B. Wrzecionko, S. Käch, D. Bortis, J. Biela, J. W. Kolar**, *Novel AC Coupled Gate Driver for Ultra Fast Switching of Normally-Off SiC JFETs*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Glendale, AZ, USA, November 7-10, 2010, pp. 605-612.
- **A. Tüysüz, A. Looser, C. Zwyssig, J. W. Kolar**, *Novel Miniature Motors with Lateral Stator for a Wide Torque and Speed Range*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010 .
- **G. Ortiz, J. Biela, J. W. Kolar**, *Optimized Design of Medium Frequency Transformers with High Isolation Requirements*, Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010.
- **A. Looser, T. Baumgartner, C. Zwyssig, J. W. Kolar**, *Analysis and Measurement of 3D Torque and Forces for Permanent Magnet Motors with Slotless Windings*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2010), Atlanta, USA, September 12-16, 2010.
- **T. Baumgartner, A. Looser, C. Zwyssig, J. W. Kolar**, *Novel High-Speed, Lorentz-Type, Slotless Self-Bearing Motor*, Proceedings of the IEEE Energy Conversion Congress and Exposition (ECCE USA 2010), Atlanta, USA, September 12-16, 2010.
- **P. Imoberdorf, T. Nussbaumer, J. W. Kolar**, *Analytical Model of Current-Force Characteristics of a Combined Radial-Axial Magnetic Bearing*, Proceedings of the 12th International Symposium on Magnetic Bearings (ISMB12), Wuhan, China, August 22-25, 2010.
- **F. Zürcher, T. Nussbaumer, S. Walter, C. Wegmüller, J. W. Kolar**, *Comparison of Different Control Concepts for Bearingless Brushless Motors*, Proceedings of the 12th International Symposium on Magnetic Bearings (ISMB12), Wuhan, China, August 22-25, 2010.

- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Performance Comparison of Bearingless Motor Topologies in Exterior Rotor Construction*, Proceedings of the 12th International Symposium on Magnetic Bearings (ISMB12), Wuhan, China, August 22-25, 2010.
- **J. Rodriguez, J. W. Kolar, J. Espinoza, M. Rivera, C. Rojas**, *Predictive Torque and Flux Control of an Induction Machine fed by an Indirect Matrix Converter with Reactive Power Minimization*, Proceedings of the IEEE International Symposium on Industrial Electronics (ISIE 2010), Bari, Italy, July 4-7, 2010.
- **T. Soeiro, J. Biela, J. Linner, P. Ranstad, J. W. Kolar**, *Line Power Quality Improvement for Pulsed Electrostatic Precipitator Systems*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **A. Stupar, D. Bortis, U. Drofenik, J. W. Kolar**, *Advanced Setup for Thermal Cycling of Power Modules following Definable Junction Temperature Profiles*, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **S. Waffler, J. W. Kolar**, *Comparative Evaluation of Soft-Switching Concepts for Bi-Directional Buck+Boost DC-DC Converters*, Invited Paper at the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **I. Kovacevic, U. Drofenik, J. W. Kolar**, *New Physical Model for Lifetime Estimation of Power Modules*, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **C. Zingerli, J. W. Kolar**, *Novel Observer Based Force Control for Active Magnetic Bearings*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **U. Drofenik, A. Müsing, J. W. Kolar**, *Novel Online Simulator for Education of Power Electronics and Electrical Engineering*, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **A. Looser, L. Linares, C. Zwyssig, J. W. Kolar**, *Novel Power Supply Topology for Large Working Gap Dry EDM*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **A. Müsing, G. Ortiz, J. W. Kolar**, *Optimization of the Current Distribution in Press-Pack High Power IGBT Modules*, Invited Paper, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **M. Schweizer, J. W. Kolar**, *Shifting Input Filter Resonances - An Intelligent Converter Behavior for Maintaining System Stability*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **U. Drofenik, A. Müsing, J. W. Kolar**, *Voltage-Dependent Capacitors in Power Electronic Multi-Domain Simulations*, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **C. Wildmann, T. Nussbaumer, J. W. Kolar**, *10 Mrpm Spinning Ball Motor: Preparing the Next Generation of Ultra-High Speed Drive Systems*, Proceedings of the International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **G. Ortiz, J. Biela, D. Bortis, J. W. Kolar**, *1 Megawatt, 20 kHz, Isolated, Bidirectional 12kV to 1.2kV DC-DC Converter for Renewable Energy Applications*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **U. Badstübner, J. Biela, J. W. Kolar**, *An Optimized, 99% Efficient, 5kW, Phase-Shift PWM DC-DC Converter for Data Centers and Telecom Applications*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **M. Hartmann, J. W. Kolar**, *Analysis of the Trade-Off Between Input Current Quality and Efficiency of High Switching Frequency PWM Rectifiers*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **D. Christen, U. Badstübner, J. Biela, J. W. Kolar**, *Calorimetric Power Loss Measurement for Highly Efficient Converters*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **T. Friedli, J. W. Kolar**, *Comprehensive Comparison of Three-Phase AC-AC Matrix Converter and Voltage DC-Link Back-to-Back Converter Systems*, Invited Paper, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **J. Mühlethaler, J. Biela, J. W. Kolar, A. Ecklebe**, *Core Losses under DC Bias Condition Based on Steinmetz Parameters*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **C. Marxgut, J. Biela, J. W. Kolar**, *Interleaved Triangular Current Mode (TCM) Resonant Transition, Single Phase PFC Rectifier with High Efficiency and High Power Density*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **J. Biela, D. Hassler, J. Miniböck, J. W. Kolar**, *Optimal Design of a 4.9kW/dm³ / 98.3% Efficient TCM Resonant Transition Single-Phase PFC Rectifier*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **J. Biela, D. Hassler, J. Miniböck, J. W. Kolar**, *Optimal Design of a 5kW/dm³ / 98.5% Efficient TCM Resonant Transition Single-Phase PFC Rectifier*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **T. Soeiro, J. Biela, J. Mühlethaler, J. Linner, P. Ranstad, J. W. Kolar**, *Optimal Design of Resonant DC-DC Converter for Electrostatic Precipitators*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **I. Kovacevic, A. Müsing, J. W. Kolar**, *PEEC Modeling of Toroidal Magnetic Inductor in Frequency Domain*, Proceedings of the IEEE/IEEJ International Power Electronics Conference (ECCE Asia 2010), Sapporo, Japan, June 21-24, 2010.
- **C. Wildmann, T. Nussbaumer, J. W. Kolar**, *Design Considerations for the Drive of an Ultra-High Speed Spinning Ball Motor*, Proceedings of the 20th International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM), Pisa, Italy, June 14-16, 2010.
- **B. Warberger, T. Reichert, T. Nussbaumer, J. W. Kolar**, *Design Considerations of a Bearingless Motor for High-Purity Mixing Applications*, Proceedings of the 20th

International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM), Pisa, Italy, June 14-16, 2010.

- **J. Biela, J. W. Kolar,**, *Pareto Optimal Design and Performance Mapping of Telecom Rectifier Module Concepts*, Keynote Paper at the Conversion and Intelligent Motion (PCIM) Conference China, Shanghai, China, June 1-3, 2010.
- **D. Bortis, J. Biela, G. Ortiz, J. W. Kolar,** *Design Procedure for Compact Pulse Transformers with Rectangular Pulse Shape and Fast Rise Times*, Proceedings of the IEEE International Power Modulator and High Voltage Conference (IPMHVC 2010), Atlanta, USA, May 23-27, 2010.
- **A. Knott, T. Stegenborg-Andersen, O. C. Thomsen, D. Bortis, J. W. Kolar, G. Pfafflinger, M. A. E. Andersen,** *Modeling Distortion Effects in Class-D Amplifier Filter Inductors*, Proceedings of the 128th Convention of the Audio Engineering Society Convention (AES 2010), London, UK, May 22-25, 2010.
- **I. Kovacevic, A. Müsing, J. W. Kolar,** *An Extension of PEEC Method for Magnetic Materials Modeling in Frequency Domain*, Proceedings of the 14th Biennial IEEE Conference on Electromagnetic Field Computation (CEFC 2010), Chicago IL, USA, May 10-12, 2010.
- **J. Biela, J. W. Kolar, A. Stupar, U. Drofenik, A. Müsing,** *Towards Virtual Prototyping and Comprehensive Multi-Objective Optimisation in Power Electronics*, Keynote Paper at the Power Conversion and Intelligent Motion Conference Europe (PCIM 2010), Nuremberg, Germany, May 4-6, 2010.
- **P. Imoberdorf, T. Nussbaumer, J. W. Kolar,** *Analysis of a Combined Radial-Axial Magnetic Bearing for a High-Speed Drive System*, Proceedings of the 5th IET International Conference on Power Electronics, Machines and Drives (PEMD 2010), Brighton, UK, April 19-21, 2010.
- **B. Warberger, J. Feller, C. Guntermann, T. Nussbaumer, J. W. Kolar,** *High-Dynamics Low-Cost Flow Control with Solenoid Actuator for Ultra-High Purity Applications*, Proceedings of the 5th IET International Conference on Power Electronics, Machines and Drives (PEMD 2010), Brighton, UK, April 19-21, 2010.
- **T. Reichert, T. Nussbaumer, J. W. Kolar,** *Novel Bearingless Brushless Motor in Exterior Rotor Construction for Stirred Bioreactors*, Proceedings of the 5th IET International Conference on Power Electronics, Machines, and Drivers (PEMD 2010), Brighton UK, April 19-21, 2010.
- **A. Stupar, U. Drofenik, J. W. Kolar,** *Application of Phase Change Materials for Low Duty Cycle High Peak Load Power Supplies*, Proceedings of the 6th International Conference on Integrated Power Electronic Systems (CIPS 2010), Nuremberg, Germany, March 16-18, 2010.
- **C. Marxgut, J. Biela, J. W. Kolar,** *Design of a Multi-Cell, DCM PFC Rectifier for a 1mm thick, 200W Off-line Power Supply – The Power Sheet*, Proceedings of the 6th International Conference on Integrated Power Electronics Systems (CIPS 2010), Nuremberg/Germany, March 16-18, 2010.
- **J. W. Kolar, J. Biela, S. Waffler, T. Friedli, U. Badstübner,** *Performance Trends and Limitations of Power Electronic Systems*, Invited Plenary Paper at the 6th International Conference on Integrated Power Electronics Systems (CIPS 2010), Nuremberg, Germany, March 16-18, 2010.
- **J. Biela, J. W. Kolar,** *Thermoelectric Cooling (TEC) for Power Density Maximisation of Power Electronic*, Proceedings of the 6th International Conference on Integrated Power Electronics Systems (CIPS 2010), Nuremberg, Germany, March 16-18, 2010.
- **M. Hartmann, H. Ertl, J. W. Kolar,** *EMI Filter Design for High Switching Frequency Three-Phase/Level PWM Rectifier Systems*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **M. Schweizer, T. Friedli, J. W. Kolar,** *Comparison and Implementation of a 3-Level NPC Voltage Link Back-to-Back Converter with SiC and Si Diodes*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **D. Aggeler, J. Biela, J. W. Kolar,** *Controllable dv/dt Behaviour of the SiC MOSFET/JFET Cascode – An Alternative Hard Commutated Switch for Telecom Applications*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **C. Marxgut, J. Biela, J. W. Kolar, R. Steiner, P. K. Steimer,** *DC-DC Converter for Gate Power Supplies with an Optimal Air Transformer*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **U. Badstübner, J. Biela, J. W. Kolar,** *Design of an 99%-Efficient, 5kW, Phase-Shift PWM DC-DC Converter for Telecom Applications*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **J. Biela, J. Miniböck, J. W. Kolar,** *Optimal Design of a Compact, 99.3% Efficient Single-Phase PFC Rectifier*, Proceedings of the Applied Power Electronics Conference and Exposition (APEC 2010), Palm Springs, USA, February 21-25, 2010.
- **R. Steiner, P. K. Steimer, F. Krismer, J. W. Kolar,** *Contactless Energy Transmission for an Isolated 100W Gate Driver Supply of a Medium Voltage Converter*, Proceedings of the 35th Annual Conference of the IEEE Industrial Electronics Society (IECON 2009), Porto, Portugal, pp. 307-312, November 3-5, 2009.
- **T. Reichert, T. Nussbaumer, W. Gruber, J. W. Kolar,** *Design of a Novel Bearingless Permanent Magnet Motor for Bioreactor Applications*, Proceedings of the 35th Annual Conference of the IEEE Industrial Electronics Society (IECON 2009), Porto, Portugal, November 3-5, 2009.
- **D. Krähenbühl, C. Zwyssig, K. Bitterli, M. Imhof, J. W. Kolar,** *Evaluation of Ultra-Compact Rectifiers for Low Power, High-Speed, Permanent-Magnet Generators*, Proceedings of the 35th annual conference of the IEEE Industrial Electronics Society (IECON 2009), Porto, Portugal, November 3-5, 2009.
- **S. Waffler, M. Preindl, J. W. Kolar,** *Multi-Objective Optimization and Comparative Evaluation of Si Soft-Switched and SiC Hard-Switched Automotive DC-DC Converters*, Proceedings of the 35th annual conference of the IEEE Industrial Electronics Society, (IECON 2009), Porto, Portugal, pp. 3850-3857, November 3-5, 2009.
- **F. Zürcher, T. Nussbaumer, J. W. Kolar,** *Principles of Magnetic Levitation Force and Motor Torque Generation by Superposition of Harmonics in Bearingless Brushless Motors*, Proceedings of the 35th annual conference of the IEEE Industrial Electronics Society, (IECON 2009), Porto, Portugal, pp. 1242-1247, November 3-5, 2009.
- **B. Wrzecionko, J. Biela, J. W. Kolar,** *SiC Power Semiconductors in HEVs: Influence of Junction Temperature on Power Density, Chip Utilization and Efficiency*,

Proceedings of the 35th Annual Conference of the IEEE Industrial Electronics Society (IECON 2009), Porto, Portugal, pp. 3834–3841, November 3-5, 2009 .

- **P. Pejovic, J. W. Kolar, V. Svikovic**, *Sinusoidal Approximation in the Analysis of Twelve-Pulse Output Voltage Type Rectifiers*, Proceedings of the 15th International Symposium on Power Electronics (EE 2009), Novi Sad, Republic of Serbia, October 28-30, 2009.
- **D. Cucak, P. Pejovic, J. W. Kolar**, *Analysis of the Magnetizing Current of the Line-Side Interphase Transformer*, Proceedings of the 15th International Symposium on Power Electronics (EE 2009), Novi Sad, Republic of Serbia, October 28-30, 2009.
- **D. Cucak, P. Pejovic, J. W. Kolar**, *Experimental Analysis of the Line-Side Interphase Transformer Magnetizing Currents in Three-Phase Output Voltage Type Rectifiers*, Proceedings of the 15th International Symposium on Power Electronics (EE 2009), Novi Sad, Republic of Serbia, October 28-30, 2009.
- **P. Pejovic, J. W. Kolar, V. Svikovic**, *Experimental Verification of Sinusoidal Approximation in Analysis of Three-Phase Twelve-Pulse Output Voltage Type Rectifiers*, Proceedings of the 15th International Symposium on Power Electronics (EE 2009), Novi Sad, Republic of Serbia, October 28-30, 2009.
- **J. Biela, M. Schweizer, S. Waffler, B. Wrzecionko, J. W. Kolar**, *SiC vs. Si - Evaluation of Potentials for Performance Improvement of Power Electronics Converter Systems by SiC Power Semiconductors*, Proceedings of the 13th International Conference on Silicon Carbide and Related Materials (ICSCRM 2009), Nuremberg, Germany, pp. 1101-1106, October 11-16, 2009 .
- **D. Krähenbühl, C. Zwyssig, H. Weser, J. W. Kolar**, *A Miniature, 500 000 rpm, Electrically Driven Turbocompressor*, Proceedings of the 2009 IEEE International Power Electronics and Motion (ECCE USA 2009) San Jose, CA, September 20-24, 2009.
- **G. Ortiz, D. Bortis, J. Biela, J. W. Kolar**, *Optimal Design of a 3.5-kV/11-kW DC-DC Converter for Charging Capacitor Banks of Power Modulators*, Proceedings of the IEEE Pulsed Power Conference (PPC 2009), Washington D.C., USA, June 28-July 2, 2009 .
- **J. Biela, D. Aggeler, D. Bortis, J. W. Kolar**, *Balancing Circuit for a 5kV/50ns Pulsed Power Switch Based on SiC-JFET Super Cascade*, Proceedings of the IEEE International Pulsed Power Conference (PPC 2009), Washington, DC, USA, June 29-July 2, 2009.
- **J. Biela, D. Aggeler, D. Bortis, J. W. Kolar**, *5kV/100ns Pulsed Power Switch Based on SiC-JFET Super Cascode*, Proceedings of the IEEE International Pulsed Power Conference (PPC 2009), Washington, DC, USA, June 29-July 2, 2009.
- **D. Bortis, J. Biela, J. W. Kolar**, *Optimal Design of a Two-Winding Inductor Bouncer Circuit*, Proceedings of the IEEE International Pulsed Power Conference (PPC 2009), Washington, DC, USA, June 29-July 2, 2009.
- **D. Bortis, J. Biela, J. W. Kolar**, *Transient Behavior of Solid State Modulator with Split Core Transformer*, Proceedings of the IEEE International Pulsed Power Conference (PPC 2009), Washington, DC, June 29-July 2, 2009.
- **D. Bortis, J. Biela, J. W. Kolar**, *Transient Behavior of Solid State Modulators with Matrix Transformers*, Proceedings of the IEEE International Pulsed Power Conference (PPC 2009), Washington, DC, USA, June 29-July 2, 2009.
- **S. Waffler, J. W. Kolar**, *Efficiency Optimization of an Automotive Multi-Phase Bi-directional DC-DC Converter*, Proceedings of the 6th IEEE International Power Electronics and Motion Control Conference, (ECCE Asia 2009), Wuhan, China, pp. 566-572, May 17-20, 2009.
- **J. W. Kolar, J. Biela, J. Miniböck**, *Exploring the Pareto Front of Multi-Objective Single-Phase PFC Rectifier Design Optimization - 99.2% Efficiency vs. 7kW/dm³ Power Density*, Proceedings of the 2009 IEEE International Power Electronics and Motion (ECCE Asia 2009), Wuhan, China, May 17-20, 2009.
- **P. Karutz, T. Nussbaumer, J. W. Kolar**, *Magnetically Levitated Slice Motors - an Overview*, Proceedings of the 2009 IEEE International Power Electronics and Motion (ECCE Asia 2009) , Wuhan, China, May 17-20, 2009.
- **M. Vasic, S. D. Round, J. Biela, J. W. Kolar**, *Mission Profile Based Optimization of a Synchronous-Buck DC-DC Converter for a Wearable Power System*, Proceedings of the 2009 IEEE International Power Electronics and Motion (ECCE Asia 2009) Wuhan, China, pp. 1384-1389, May 17-20, 2009 .
- **J. Biela, S. Waffler, J. W. Kolar**, *Mission Profile Optimized Modularization of Hybrid Vehicle DC/DC Converter Systems*, Proceedings of the 2009 IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2009), Wuhan, China, pp. 1390-1396, May 17-20, 2009.
- **S. Waffler, J. Biela, J. W. Kolar**, *Output Ripple Reduction of an Automotive Multi-Phase Bi-Directional DC-DC Converter*, Proceedings of the 1st IEEE Energy Conversion Congress and Exposition (ECCE USA 2009), San Jose, CA, pp. 2184-2190, September 20-24, 2009.
- **F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Novel Bearingless Fractional Slot Motor*, Proceedings of the IEEE International Magnetism Conference (INTERMAG 2009), Sacramento California, May 4-8, 2009.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Torque Scaling Laws for Interior and Exterior Rotor Permanent Magnet Machines*, Proceedings of the IEEE International Magnetism Conference (INTERMAG 2009), Sacramento California, May 4-8, 2009.
- **T. Friedli, J. W. Kolar**, *A Semiconductor Area Based Assessment of AC Motor Drive Converter Topologies*, Proceedings of the 24th Applied Power Electronics Conference and Exposition (APEC 2009), Washington DC, USA, February 15-19 2009, pp. 336-342 .
- **M. Hartmann, J. Miniböck, J. W. Kolar**, *A Three-Phase Delta Switch Rectifier for More Electric Aircraft Applications Employing a Novel PWM Current Control Concept*, Proceedings of the 24th Applied Power Electronics Conference and Exposition (APEC 2009), Washington DC, USA, February 15-19, 2009.
- **U. Badstübner, J. Biela, B. Fässler, D. Hösl, J. W. Kolar**, *An Optimized 5 kW, 147 W/in³ Telecom Phase-Shift DC-DC Converter with Magnetically Integrated Current Doubler*, Proceedings of the 24th Applied Power Electronics Conference and Exposition, Washington DC, USA, February 15-19, 2009.
- **H. Plesko, J. Biela, J. W. Kolar**, *Novel Modulation Concepts for a Drive-Integrated Auxiliary Dc-Dc Converter for Hybrid Vehicles*, Proceedings of the 24th Applied Power Electronics Conference and Exposition (APEC 2009), Washington DC, USA, pp. 336-342, February 15-19, 2009 .
- **A. Korn, P. K. Steimer, Y. Suh, J. W. Kolar**, *Power-Electronic Transformer Tap-Changer for Increased AC Arc Furnace Productivity*, Proceedings of the IEEE Energy 2030 Conference (IEEE 2008), Atlanta, USA, November 17-18, 2008.

- **S. Waffler, S. D. Round, J. W. Kolar**, *High Temperature (>200°C) Isolated Gate Drive Topologies for Silicon Carbide (SiC) JFET*, Proceedings of the 34th Annual IEEE Conference of Industrial Electronics (IECON 2008), Orlando (Florida), USA, pp. 2867-2872, November 10-13, 2008 .
- **L. A. Serpa, P. K. Steimer, J. W. Kolar**, *Virtual-Flux Decoupling Hysteresis Control for the Five-Level ANPC Inverter Connected to the Grid*, Proceedings of the 34th Annual Conference of the IEEE Industrial Electronics Society (IECON 2008), Orlando (Florida), USA, November 10-13, 2008 .
- **D. Krähenbühl, C. Zwyssig, H. Weser, J. W. Kolar**, *Experimental Results of a Mesoscale Electric Power Generation System from Pressurized Gas Flow*, Proceedings of the 8th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2008), Sendai, Japan, November 9-12, 2008 .
- **D. Krähenbühl, C. Zwyssig, H. Hörler, J. W. Kolar**, *Design Considerations and Experimental Results of a 60 W Compressed-Air-to-Electric-Power System*, Proceedings of the 2008 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA 2008), Beijing, China, Oct. 12-15, 2008.
- **S. Waffler, J. W. Kolar**, *High Temperature Gate Drive for SiC-JFETs*, ECPE - HOPE Symposium on Automotive Power Electronics - High Density Power Electronics for Hybrid Traction, Sindelfingen, Germany, Oct. 7-8, 2008.
- **H. Plesko, J. Biela, J. W. Kolar**, *Design and Analysis of a New Drive-Integrated Auxiliary DC-DC Converter for Hybrid Vehicles*, Proceedings of the IEEE Industry Applications Society Annual Meeting (IAS 2008), Edmonton, Canada, pp. 1-8, October 5-9, 2008 .
- **T. Friedli, S. D. Round, D. Hassler, J. W. Kolar**, *Design and Performance of a 200 kHz All-SiC JFET Current Source Converter*, Proceedings of the 43rd Industry Applications Society Annual Meeting, 2008 (IAS 2008), Edmonton, Canada, pp. 1-8, October 5-9, 2008 .
- **T. Schneeberger, T. Nussbaumer, J. W. Kolar**, *Drehmomentprüfstand für magnetgelagerte Scheibenläufermotoren*, Proceedings of the VDE/VDI-Tagung - Elektrisch-mechanische Antriebssysteme, Böblingen, Germany, September 23-24, 2008 .
- **P. Karutz, T. Nussbaumer, J. W. Kolar**, *Magnetgelagerte Scheibenläufermotoren - Ein Überblick*, Tagungsband der 3. VDE/VDI-Fachtagung - Elektrisch-mechanische Antriebssysteme (VDE 2008), Boeblingen, Germany, pp. 23-28, September 23-24, 2008 .
- **C. Zwyssig, D. Krähenbühl, H. Weser, J. W. Kolar**, *A Miniature Turbocompressor System*, Proceedings of the Smart Energy Strategies 2008 (SES 2008), Zurich, Switzerland, September 8-10, 2008 .
- **D. Aggeler, J. Biela, J. W. Kolar**, *Solid-State Transformer Based on SiC JFETs for Future Energy Distribution Systems*, Proceedings of the Smart Energy Strategies Conference (SES 2008), Zurich, Switzerland, September 8-10, 2008 .
- **P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Maximizing Acceleration Capability of Bearingless Slice Motors*, Proceedings of the 18th International Conference on Electrical Machines (ICEM'08), Vilamoura, Portugal, September 6-9, 2008.
- **J. W. Kolar, T. Friedli, F. Krismer, S. D. Round**, *The Essence of Three-Phase AC/AC Converter Systems*, Proceedings of the 13th Power Electronics and Motion Control Conference (EPE-PEMC 2008), Poznan, Poland, pp. 27-42, September 1-3, 2008.
- **F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Comparison of 2- and 3-Phase Bearingless Slice Motor Concepts*, Proceedings of the 11th International Symposium on Magnetic Bearings (ISMB11), Nara, Japan, August 26-29, 2008.
- **K. Raggl, T. Nussbaumer, J. W. Kolar**, *Model Based Optimization of EMC Input Filters*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, August 18-20, 2008.
- **F. Krismer, J. W. Kolar**, *Accurate Small-Signal Model for an Automotive Bidirectional Dual Active Bridge Converter*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, pp. 1-10, August 18-20, 2008.
- **A. Müsing, J. W. Kolar**, *Efficient Partial Element Calculation and the Extension to Cylindrical Elements for the PEEC Method*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, August 18-20, 2008 .
- **M. Hartmann, S. D. Round, J. W. Kolar**, *High-Frequency, Three-Phase Current Controller Implementation in an FPGA*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, August 18-20, 2008.
- **U. Drofenik, I. Kovacevic, R. Schmidt, J. W. Kolar**, *Multi-Domain Simulation of Transient Junction Temperatures and Resulting Stress-Strain Behavior of Power Switches for Long-Term Mission Profiles*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, pp. 1-7, August 18-20, 2008.
- **I. Kovacevic, S. Round, J. W. Kolar, K. Boulouchos**, *Optimization of a Wearable Power System*, Proceedings of the 11th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2008), Zurich, Switzerland, August 18-20, 2008.
- **K. Raggl, B. Warberger, T. Nussbaumer, S. Burger, J. W. Kolar**, *Robust Sensorless Control of a PMSM Bearingless Pump*, Proceedings of the IEEE International Symposium on Industrial Electronics (ISIE 2008), Cambridge, UK, pp. 538-545, June 30-July 2, 2008 .
- **P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Saturation Effects in High Acceleration Bearingless Slice Motors*, Proceedings of the 2008 IEEE International Symposium on Industrial Electronics (ISIE 2008), Cambridge, UK, pp. 472-477, June 30-July 2, 2008 .
- **O. Keiser, P. K. Steimer, J. W. Kolar**, *High Power Resonant Switched-Capacitor Step-Down Converter*, Proceedings of the Power Electronics Specialists Conference (PESC 2008), Rhodes, Greece, June 15-19, 2008.
- **J. Biela, D. Hassler, J. Schönberger, J. W. Kolar**, *Closed Loop current Control of a Hybrid 12-Pulse Rectifier*, Proceedings of the 39th IEEE Power Electronics Specialists Conference (PESC 2008), Island of Rhodes, Greece, June 15-19, 2008.
- **F. Giezendanner, J. Biela, J. W. Kolar, S. Zudrell-Koch**, *EMI Noise Prediction for Electronic Ballasts*, Proceedings of the IEEE Power Electronics Specialists Conference (PESC 2008), Rhodes, Greece, pp. 4392-4398, June 15-19, 2008, .
- **L. A. Serpa, P. M. Barbosa, P. K. Steimer, J. W. Kolar**, *Five-Level Virtual-Flux Direct Power Control for the Active Neutral-Point Clamped Multilevel Inverter*,

Proceedings of the IEEE Power Electronics Specialists Conference (PESC 2008), Rhodes, Greece, pp. 1668-1674, June 15-19, 2008.

- **D. Bortis, J. Biela, J. W. Kolar**, *Design and Control of an Active Reset Circuit for Pulse Transformers*, Proceedings of the IEEE International Power Modulator Conference (PMC 2008), Las Vegas, USA, May 27-31, 2008 .
- **D. Bortis, P. Steiner, J. Biela, J. W. Kolar**, *Double-Stage Gate Drive Circuit for Parallel Connected IGBT Modules*, Proceedings of the IEEE International Power Modulator Conference (PMC 2008), Las Vegas (NV), USA, May 27-31, 2008 .
- **J. Biela, C. Marxgut, D. Bortis, J. W. Kolar**, *Solid State Modulator for Plasma Channel Drilling*, Proceedings of the IEEE International Power Modulator Conference (PMC 2008), Las Vegas, NV, USA, May 27-31, 2008.
- **A. Müsing, J. Ekman, J. W. Kolar**, *Efficient Calculation of Non-Orthogonal Partial Elements for the PEEC Method*, Proceedings of the 13th Biennial IEEE Conference on Electromagnetic Field Computation (CEFC 2008), Athens, Greece, May 11-15, 2008.
- **J. W. Kolar, M. März, E. Wolfgang, S. D. Round**, *Automotive Power Electronics Roadmap*, Presentation at the 5th International Conference of Integrated Power Electronics Systems (CIPS 2008), Nuremberg, Germany, March 11-13, 2008.
- **A. Müsing, C. Zingerli, P. Imoberdorf, J. W. Kolar**, *PEEC-Based Numerical Optimization of Compact Radial Position Sensors for Active Magnetic Bearings*, Proceedings of the 5th International Conference on Integrated Power Electronics Systems (CIPS 2008), Nuremberg, Germany, March 11-13, 2008.
- **U. Drofenik, J. W. Kolar**, *Thermal Power Density Barriers of Converter Systems*, Proceedings of the 5th International Conference on Integrated Power Electronics Systems (CIPS 2008), Nuremberg, Germany, March 11-13, 2008.
- **D. Aggeler, J. Biela, J. W. Kolar**, *A Compact, High Voltage 25 kW, 50 kHz DC-DC Converter Based on SiC JFETs*, Proceedings of the 23rd Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2008), Austin (Texas), USA, CD-ROM ISBN: 978-1-4244-1874-9, February 24-28, 2008.
- **U. Badstübner, J. Biela, J. W. Kolar**, *Power Density and Efficiency Optimization of Resonant and Phase-Shift Telecom DC-DC Converters*, Proceedings of the 23rd Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2008), Austin (Texas), USA, CD-ROM ISBN: 978-1-4244-1874-9, February 24-28, 2008.
- **T. Friedli, S. D. Round, J. W. Kolar**, *Solar Climber*, 11. ELC-NET Jahrestagung, E-Learning Campus Zürich, Switzerland, January 25, 2008.
- **J. Biela, D. Aggeler, D. Bortis, J. W. Kolar**, *5kV/200ns Pulsed Power Switch based on a SiC-JFET Super Cascode*, Proceedings of the IEEE International Power Modulators and High Voltage Conference (IPMC 2008), Las Vegas, USA, May 27-31, 2008.
- **D. Krähenbühl, C. Zwyssig, H. Weser, J. W. Kolar**, *Mesoscale Electric Power Generation from Pressurized Gas Flow*, Proceedings of the 7th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2007), Freiburg, Germany, November 27-29, 2007.
- **M. Barholet, S. Silber, T. Nussbaumer, J. W. Kolar**, *Performance Investigation of Two-, Three- and Four-Phase Bearingless Slice Motor Configurations*, Proceedings of the International Conference on Power Electronics and Drive Systems (PEDS 2007) Bangkok, Thailand, November 27-30, 2007.
- **P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar**, *The Bearingless 2-Level Motor*, Proceedings of the International Conference on Power Electronics and Drive Systems (PEDS 2007), Bangkok, Thailand, November 27-30, 2007.
- **M. L. Heldwein, J. W. Kolar**, *Design of Minimum Volume EMC Input Filters for an Ultra Compact Three-Phase PWM Rectifier*, Proceedings of the 9th Brazilian Power Electronics Conference (COBEP 2007), Blumenau, Santa Catarina, Brazil, September 30-October 04, 2007.
- **S. Waffler, J. W. Kolar**, *A Novel Low-Loss Modulation Strategy for High-Power Bi-directional Buck+Boost Converters*, Proceedings of the 7th International Conference on Power Electronics (ICPE 2007), Daegu, South Korea, October 22-26, 2007.
- **K. Raggl, T. Nussbaumer, J. W. Kolar**, *Comparison of Winding Concepts for Bearingless Pumps*, Proceedings of the 7th International Conference on Power Electronics (ICPE 2007), Daegu, South Korea, pp. 1013-1020, October 22-26, 2007.
- **J. W. Kolar, J. Biela, U. Badstübner**, *Impact of Power Density Maximization on Efficiency of DC-DC Converter Systems*, Proceedings of the 7th International Conference on Power Electronics - Plenary Paper (ICPE 2007), Daegu, South Korea, October 22-26, 2007.
- **M. Hartmann, A. Müsing, J. W. Kolar**, *Switching Transient Shaping of RF Power MOSFETs for a 2.5 MHz, Three-Phase PFC*, Proceedings of the 7th International Conference on Power Electronics (ICPE 2007), Daegu, South Korea, October 22-26, 2007.
- **L. Serpa, J. W. Kolar**, *Extended Virtual-Flux Decoupling Hysteresis Control for Mains Connected Three-Level NPC Inverter Systems*, Proceedings of the Brazilian Power Electronics Conference (COBEP 2007), Blumenau, Brazil, October 2007.
- **J. Biela, U. Badstübner, J. W. Kolar**, *Design of a 5kW, 1U, 10kW/ltr. Resonant DC-DC Converter for Telecom Applications*, Proceedings of the International Telecommunications Energy Conference (INTELEC 2007), Rome, Italy, pp. 677-685, September 30-October 4, 2007 .
- **J. Biela, U. Drofenik, F. Krenn, J. Miniböck, J. W. Kolar**, *Novel Three-Phase Y-Rectifier Cyclic 2 out of 3 DC Output Voltage Balancing*, Proceedings of the International Telecommunications Energy Conference (INTELEC 2007), Rome, Italy, pp. 677-685, September 30-October 4, 2007.
- **U. Drofenik, D. Cottet, A. Müsing, J. W. Kolar**, *Design Tools for Power Electronics: Trends and Innovations*, Proceedings of the 2nd International Conference on Automotive Power Electronics (APE 2007), Paris, France, September 26-27, 2008.
- **J. Luomi, C. Zwyssig, A. Looser, J. W. Kolar**, *Efficiency Optimization of a 100-W 500000-r/min Permanent-Magnet Machine Including Air-Friction Losses*, Proceedings of the Industry Applications Conference, 42nd IAS Annual Meeting, (IAS 2007), New Orleans, USA, Vol. 45, No. 4, pp.861-868, September 23-27, 2007.
- **T. Friedli, S. D. Round, J. W. Kolar**, *Modelling the Space Elevator - A Project Oriented Approach for Teaching Experimental Power Electronics*, Proceedings of the 12th European Conference on Power Electronics and Applications (EPE 2007), Denmark, Aalborg, CD-ROM, ISBN: 9-7890-7581-5108, September 2-5, 2007.
- **M. L. Heldwein, J. W. Kolar**, *Extending Winding Capacitance Cancellation to Three-Phase EMC Input Filter Networks*, Proceedings of the IEEE International Symposium on Electromagnetic Compatibility (EMC 2007), Honolulu, USA, July 9-13, 2007.

- **D. Bortis, S. Waffler, J. Biela, J. W. Kolar**, *25kW 3-Phase Unity Power Factor Buck Boost Rectifier with Wide Input and Output Range for Pulse Load Application*, Proceedings of the 16th IEEE International Pulsed Power Conference (PPPS 2007), Albuquerque (New Mexico), USA, Vol. 2, pp. 1505-1508, June 17-22, 2007.
- **D. Bortis, J. Biela, J. W. Kolar**, *Active Gate Control for Current Balancing in Paralleled IGBT Modules in a Solid State Modulator*, Proceedings of the 16th IEEE International Pulsed Power Conference (PPPS 2007), Albuquerque (New Mexico), USA, Vol. 2, pp. 1323-1326, June 17-22, 2007.
- **T. Friedli, S. D. Round, J. W. Kolar**, *A 100 kHz SiC Sparse Matrix Converter*, Proceedings of the IEEE 38th Annual Power Electronics Specialists Conference (PESC 2007), Orlando, USA, ISBN 1-4244-0655-2, pp. 2148-2154, June 17-21, 2007.
- **S. Bontemps, A. Calmels, S. D. Round, J. W. Kolar**, *Low Profile Power Module Combined with State of the Art MOSFET Switches and SiC Diodes Allows High Frequency and Very Compact Three-Phase Sinusoidal Input Rectifiers*, Proceedings of the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM 2007), Nuremberg, Germany, CD-ROM, May 22-24, 2007.
- **U. Drofenik, D. Cottet, A. Müsing, J.-M. Meyer, J. W. Kolar**, *Modelling the Thermal Coupling between Internal Power Semiconductor Dies of a Water-Cooled 3300V/1200A HiPak IGBT Module*, Proceedings of the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM 2007), Nuremberg, Germany, CD-ROM, May 22-24, 2007.
- **J. Schönberger, T. Friedli, S. D. Round, J. W. Kolar**, *An Ultra Sparse Matrix Converter with a Novel Active Clamp Circuit*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **C. Zwyssig, M. Dürr, D. Hassler, J. W. Kolar**, *An Ultra-High-Speed, 500000 rpm, 1 kW Electrical Drive System*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **J. Biela, J. W. Kolar**, *Cooling Concepts for High Power Density Magnetic Devices*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **M. Bartholet, T. Nussbaumer, D. Krähenbühl, F. Zürcher, J. W. Kolar**, *Modulation Concepts for the Control of a Two-Phase Bearingless Slice Motor Utilizing Three-Phase Power Modules*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **J. W. Kolar, U. Drofenik, J. Biela, M. L. Heldwein, H. Ertl, T. Friedli, S. D. Round**, *PWM Converter Power Density Barriers*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **A. Müsing, M. L. Heldwein, T. Friedli, J. W. Kolar**, *Steps Towards Prediction of Conducted Emission Levels of an RB-IGBT Indirect Matrix Converter*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **U. Drofenik, J. W. Kolar**, *Sub-Optimum Design of a Forced Air Cooled Heat Sink for Simple Manufacturing*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **S. D. Round, P. Karutz, M. L. Heldwein, J. W. Kolar**, *Towards a 30 kW/liter, Three-Phase Unity Power Factor Rectifier*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **L. A. Serpa, J. W. Kolar**, *Virtual-Flux Direct Power Control for Mains Connected Three-Level NPC Inverter Systems*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **U. Drofenik, D. Cottet, A. Müsing, J.-M. Meyer, J. W. Kolar**, *Computationally Efficient Integration of Complex Thermal Multi-Chip Power Module Models into Circuit Simulators*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **T. Nussbaumer, K. Raggl, P. Boesch, J. W. Kolar**, *Trends in Integration for Magnetically Levitated Pump Systems*, Proceedings of the 4th Power Conversion Conference (PCC 2007), Nagoya, Japan, CD-ROM, ISBN: 1-4244-0844-X, April 2-5, 2007.
- **Y. Nishida, J. Miniböck, S. D. Round, J. W. Kolar**, *A New 3-phase Buck-Boost Unity Power Factor Rectifier with Two Independently Controlled DC Outputs*, Proceedings of the 22nd IEEE Applied Power Electronics Conference (APEC 2007), Anaheim (California), USA, Vol. 1, pp. 172-178, February 25-March 1, 2007.
- **P. Imoberdorf, C. Zwyssig, S. D. Round, J. W. Kolar**, *Combined Radial-Axial Magnetic Bearing for a 1kW, 500,000 rpm Permanent Magnet Machine.*, Proceedings of the 22nd IEEE Applied Power Electronics Conference (APEC 2007), Anaheim (California), USA, Vol. 1, pp. 1434-1440, February 25-March 1, 2007.
- **H. Plesko, J. Biela, J. Luomi, J. W. Kolar**, *Novel Concepts for Integrating the Electric Drive and Auxiliary Dc-Dc Converter for Hybrid Vehicles*, Proceedings of the 22nd IEEE Applied Power Electronics Conference (APEC 2007), Anaheim (California), USA, Vol. 1, pp. 1025-1031, February 25-March 1, 2007.
- **D. Bortis, J. Biela, J. W. Kolar**, *Optimal Design of a DC Reset Circuit for Pulse Transformers*, Proceedings of the 22nd IEEE Applied Power Electronics Conference (APEC 2007), Anaheim (California), USA, Vol. 1, pp. 1171-1177, February 25-March 1, 2007.
- **P. Karutz, S. D. Round, M. L. Heldwein, J. W. Kolar**, *Ultra Compact Three-phase PWM Rectifier*, Proceedings of the 22nd IEEE Applied Power Electronics Conference (APEC 2007), Anaheim (California), USA, Vol. 1, pp. 816-822, February 25-March 1, 2007.
- **J. Meili, S. Ponnaluri, L. Serpa, P. K. Steimer, J. W. Kolar**, *Optimized Pulse Patterns for the 5-Level ANPC Converter for High Speed High Power Applications*, Proceedings of the 32nd Annual Conference of the IEEE Industry Electronics Society (IECON 2006), Paris, France, November 7-11, 2006.
- **C. Zwyssig, S. D. Round, J. W. Kolar**, *Analytical and Experimental Investigation of a Low Torque, Ultra-High Speed Drive System*, Conference Record of the IEEE Industry Applications Conference, 41th IAS Annual Meeting (IAS 2006), Tampa (Florida), USA, October 8-12, 2006.
- **M. Bartholet, T. Nussbaumer, P. Dirnberger, J. W. Kolar**, *Novel Converter Concept for Bearingless Slice Motor Systems*, Conference Record of the IEEE Industry Applications Conference, 41th IAS Annual Meeting (IAS 2006), Tampa (Florida), USA, October 8-12, 2006.

- **T. Schneeberger, J. W. Kolar**, *Novel Integrated Bearingless Hollow-Shaft Drive*, Conference Record of the IEEE Industry Applications Conference, 41th IAS Annual Meeting (IAS 2006), Tampa (Florida), USA, October 8-12, 2006.
- **T. Friedli, M. L. Heldwein, F. Giezendanner, J. W. Kolar**, *A High Efficiency Indirect Matrix Converter Utilizing RB-IGBTs*, Proceedings of the 37th Power Electronics Specialists Conference (PESC 2006), Jeju, Korea, June 18-22, CD ROM, ISBN: 1-4244-9717-7, 2006.
- **L. A. Serpa, S. D. Round, J. W. Kolar**, *A Virtual-Flux Decoupling Hysteresis Current Controller for Mains Connected Inverter Systems*, Proceedings of the 37th Power Electronics Specialists Conference (PESC 2006), Jeju, Korea, June 18-22, CD ROM, ISBN: 1-4244-9717-7, 2006.
- **F. Krismer, S. D. Round, J. W. Kolar**, *Performance Optimization of a High Current Dual Active Bridge with a Wide Operating Voltage Range*, Proceedings of the 37th Power Electronics Specialists Conference (PESC 2006), Jeju, Korea, June 18-22, CD ROM, ISBN: 1-4244-9717-7, 2006.
- **U. Drogenik, J. W. Kolar**, *Analyzing the Theoretical Limits of Forced Air-Cooling by Employing Advanced Composite Materials with Thermal Conductivities > 400W/mK*, Proceedings of the 4th International Conference on Integrated Power Systems (CIPS 2006), Naples, Italy, June 7-9, pp. 323-328, 2006.
- **H. Ertl, K. Edelmoser, F. C. Zach, J. W. Kolar**, *A Novel Method for On-Line Monitoring and Managing of Electrolytic Capacitors of DC Voltage Link PWM Converters*, Proceedings of the International PCIM Europe 2006 Conference, Nuremberg, Germany, May 30-June 1, 2006.
- **J. Biela, D. Bortis, J. W. Kolar**, *Analytical Modelling of Pulse Transformers for Power Modulators*, Proceedings of the 27th IEEE International Power Modulator Symposium, Washington D.C., USA, May 14-18, 2006.
- **G. Gong, H. Ertl, J. W. Kolar**, *A Multi-Cell Cascaded Power Amplifier*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 3, pp. 1550-1556, March 19-23, 2006.
- **L. Dalesandro, N. Karrer, J. W. Kolar**, *A Novel Isolated Current Sensor for High-Performance Power Electronics Applications*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 1, pp. 559-566, March 19-23, 2006.
- **T. Nussbaumer, M. L. Heldwein, J. W. Kolar**, *Common Mode EMC Input Filter Design for a Three-Phase Buck-Type PWM Rectifier System*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 3, pp. 1617-1623, March 19-23, 2006.
- **M. L. Heldwein, H. Ertl, J. Biela, J. W. Kolar**, *Implementation of a Transformer-Less Common Mode Active Filter for Off-Line Converter Systems*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 2, pp. 1230-1236, March 19-23, 2006.
- **J. Biela, A. Wirthmüller, R. Waespe, M. L. Heldwein, J. W. Kolar, E. Waffenschmidt**, *Passive and Active Hybrid Integrated EMI Filters*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 2, pp. 1174-1180, March 19-23, 2006.
- **C. Zwyssig, S. D. Round, J. W. Kolar**, *Power Electronics Interface for a 100 W, 500000 rpm Gas Turbine Portable Power Unit*, Proceedings of the 21st Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2006), Dallas (Texas), USA, Vol. 1, pp. 283-289, March 19-23, 2006.
- **C. Zwyssig, J. W. Kolar**, *Design Considerations and Experimental Results of a 100 W, 500000 rpm Electrical Generator*, Proceedings of the 5th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2005), Tokyo, Japan, pp. 169-172, November 28-30, 2005.
- **B. Schneider, M. Bruderer, D. Dyntar, C. Zwyssig, M. Diener, K. Boulouchos, R. S. Abhari, L. Guzzella, J. W. Kolar**, *Ultra-High-Energy-Density Converter for Portable Power*, Proceedings of the 5th International Workshop on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2005), Tokyo, Japan, pp. 81-84, November 28-30, 2005.
- **F. Krismer, J. Biela, J. W. Kolar**, *A Comparative Evaluation of Isolated Bi-directional DC/DC Converters with Wide Input and Output Voltage Range*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **L. A. Serpa, J. W. Kolar, S. Ponnaluri, P. M. Barbosa**, *A Modified Direct Power Control Strategy Allowing the Connection of Three-Phase Inverter to the Grid through LCL Filters*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **S. D. Round, M. L. Heldwein, J. W. Kolar, I. Hofsjager, P. Friedrichs**, *A SiC JFET Driver for a 5 kW, 150 kHz Three-Phase Sinusoidal-Input, Sinusoidal-Output PWM Converter*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **T. Nussbaumer, G. Gong, M. L. Heldwein, J. W. Kolar**, *Control-Oriented Modeling and Robust Control of a Three-Phase Buck+Boost PWM Rectifier (VRX-4)*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **C. Zwyssig, J. W. Kolar, W. Thaler, M. Vohrer**, *Design of a 100 W, 500000 rpm Permanent-Magnet Generator for Mesoscale Gas Turbines*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **T. Nussbaumer, M. L. Heldwein, G. Gong, J. W. Kolar**, *Prediction Techniques Compensating Delay Times Caused by Digital Control of a Three-Phase Buck-Type PWM Rectifier System*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **J. Biela, J. W. Kolar**, *Using Transformer Parasitics for Resonant Converters – A Review of the Calculation of the Stray Capacitance of Transformers*, Conference Record of the 2005 IEEE Industry Applications Conference, 40th IAS Annual Meeting (IAS 2005), Hong Kong, October 2-6, CD-ROM, ISBN: 0-7803-9209-4, 2005.
- **I. W. Hofsjager, A. Melkonyan, M. Mantel, S. D. Round, J. W. Kolar**, *A Simple, Low Cost Gate Drive Method for Practical Use of SiC JFETs in SMPS*, Proceedings of the 11th European Conference on Power Electronics and Applications (EPE 2005), Dresden, Germany, September 12-14, ISBN: 90-75815-08-5, pp. 1-6, 2005.

- **C. Zhao, S. D. Round, J. W. Kolar**, *Buck and Boost Start-up Operation of a Three-Port Power Supply for Hybrid Vehicle Applications*, Proceedings of the 36th Power Electronics Specialists Conference (PESC 2005), Recife, Brasil, June 12-16, 2005.
- **G. Gong, S. D. Round, J. W. Kolar**, *Design, Control and Performance of Tracking Power Supply for a Linear Power Amplifier*, Proceedings of the 36th Power Electronics Specialists Conference (PESC 2005), Recife, Brasil, June 12-16, 2005.
- **L. Dalessandro, W. G. Odendaal, J. W. Kolar**, *HF Characterization and Non-Linear Modeling of a Gapped Toroidal Magnetic Structure*, Proceedings of the 36th Power Electronics Specialists Conference (PESC 2005), Recife, Brasil, Vol. 2, pp. 1250-1257, June 12-16, 2005.
- **F. Cavalcante, J. W. Kolar**, *Small-Signal Model of a 5kW High-Output Voltage Capacitive-Loaded Series-Parallel Resonant DC-DC Converter*, Proceedings of the 36th Power Electronics Specialists Conference (PESC 2005), Recife, Brasil, June 12-16, 2005.
- **H. Ertl, F. C. Zach, J. W. Kolar**, *Dimensioning and Control of a Switch-Mode Power Amplifier Employing a Capacitive Coupled Linear-Mode Ripple Suppression Stage*, Proceedings of the International PCIM Europe Conference (PCIM 2005), Nuremberg, Germany, pp. 277-284, June 7-9, 2005.
- **S. D. Round, L. Dalessandro, J. W. Kolar**, *Novel Phase Decoupling and Coordinating Tolerance Band Current Control for Three-Phase Three-Level PWM Rectifiers*, Proceedings of the International PCIM Europe Conference (PCIM 2005), Nuremberg, Germany, pp. 285-291, June 7-9, 2005.
- **U. Drofenik, G. Laimer, J. W. Kolar**, *Theoretical Converter Power Density Limits for Forced Convection Cooling*, Proceedings of the International PCIM Europe Conference (PCIM 2005), Nuremberg, Germany, pp. 608-619, June 7-9, 2005.
- **K. Mino, Y. Nishida, J. W. Kolar**, *Novel Hybrid 12-Pulse Line Interphase Transformer Boost-Type Rectifier with Controlled Output Voltage and Sinusoidal Utility Currents*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **U. Drofenik, J. W. Kolar**, *A General Scheme for Calculating Switching- and Conduction-Losses of Power Semiconductors in Numerical Circuit Simulations of Power Electronic Systems*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **U. Drofenik, J. W. Kolar**, *A Thermal Model of a Forced-Cooled Heat Sink for Transient Temperature Calculations Employing a Circuit Simulator*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **J. Biela, J. W. Kolar**, *Analytic Design Method for (Integrated-) Transformers of Resonant Converters using Extended Fundamental Frequency Analysis*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **S. Round, F. Schafmeister, M. L. Heldwein, E. Pereira, L. Serpa, J. W. Kolar**, *Comparison of Performance and Realization Effort of a Very Sparse Matrix Converter to a Voltage DC Link PWM Inverter with Active Front End*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **Y. Mori, N. Aikawa, Y. Nishida, U. Drofenik, J. W. Kolar**, *Development of an Interactive Circuits and Systems Seminar (iCASS) and Its Effectiveness*, Proceedings of the International Power Electronics Conference (IPEC 2005), Niigata, Japan, April 4-8, CD-ROM, ISBN: 4-88686-065-6, 2005.
- **L. Dalessandro, U. Drofenik, S. D. Round, J. W. Kolar**, *A Novel Hysteresis Current Control for Three-Phase Three-Level PWM Rectifiers*, Proceedings of the 20th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2005), Austin (Texas), USA, Vol. 1, pp. 501-507, March 6-10, 2005.
- **F. Schafmeister, C. Rytz, J. W. Kolar**, *Analytical Calculation of the Conduction and Switching Losses of the Conventional Matrix Converter and the (Very) Sparse Matrix Converter*, Proceedings of the 20th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2005), Austin (Texas), USA, Vol. 2, pp. 875-881, March 6-10, 2005.
- **G. Laimer, J. W. Kolar**, *Design and Experimental Analysis of a DC to 1MHz Closed Loop Magnetoresistive Current Sensor*, Proceedings of the 20th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2005), Austin (Texas), USA, Vol. 2, pp. 1288-1292, March 6-10, 2005.
- **M. L. Heldwein, T. Nussbaumer, F. Beck, J. W. Kolar**, *Novel Three-Phase CM/DM Conducted Emissions Separator*, Proceedings of the 20th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2005), Austin (Texas), USA, Vol. 2, pp. 797-802, March 6-10, 2005.
- **K. Mino, M. L. Heldwein, J. W. Kolar**, *Ultra Compact Three-Phase Rectifier with Electronic Smoothing Inductor*, Proceedings of the 20th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2005), Austin (Texas), USA, Vol. 1, pp. 522-528, March 6-10, 2005.
- **F. Schafmeister, J. W. Kolar**, *Novel Hybrid Modulation Schemes Extending the Reactive Power Control Range of Conventional and Sparse Matrix Converters Operating at Maximum Output Voltage*, Proceedings of the 11th International Power Electronics and Motion Control Conference (EPE-PEMC 2004), Riga, Latvia, September 2-4, CD-ROM, ISBN: 9984-32-010-3, 2004.
- **R. Greul, U. Drofenik, J. W. Kolar**, *A Novel Concept for Balancing of the Phase Modules of a Three-Phase Unity Power Factor Y-Rectifier*, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
- **C. Zhao, J. W. Kolar**, *A Novel Three-Phase Three-Port UPS Employing a Single High-Frequency Isolation Transformer*, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
- **J. Biela, J. W. Kolar**, *Design of High Power Electromagnetic Integrated Transformers by Means of Reluctance Models and a Structured Survey of Leakage Paths*, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
- **M. L. Heldwein, T. Nussbaumer, J. W. Kolar**, *Differential Mode EMC Input Filter Design for Three-Phase AC-DC-AC Sparse Matrix PWM Converters*, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
- **F. Schafmeister, J. W. Kolar**, *Novel Modulation Schemes for Matrix- and Sparse Matrix Converters Facilitating Reactive Power Transfer through the Converter*

- System, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
- **U. Drofenik, G. Laimer, J. W. Kolar**, *Pump Characteristic Based Optimization of a Direct Water Cooling System for a 10kW/500kHz Vienna Rectifier*, Proceedings of the 35th IEEE Power Electronics Specialists Conference (PESC 2004), Aachen, Germany, June 20-25, CD-ROM, ISBN: 07803-8400-8, 2004.
 - **T. Nussbaumer, M. L. Heldwein, J. W. Kolar**, *Differential Mode EMC Input Filter Design for a Three-Phase Buck-Type Unity Power Factor PWM Rectifier*, Proceedings of the 4th International Power Electronics and Motion Control Conference (IPEMC 2004), Xian, China, Vol. 3, pp. 1521-1526, August 14-16, 2004.
 - **K. Mino, G. Gong, J. W. Kolar**, *Novel Hybrid 12-Pulse Line Interphase Transformer Boost-Type Rectifier with Controlled Output Voltage*, Proceedings of the 4th International Power Electronics and Motion Control Conference (IPEMC 2004), Xian, China, Vol. 2, pp. 924-931, August 14-16, 2004.
 - **T. Nussbaumer, K. Mino, J. W. Kolar**, *Design and Comparative Evaluation of Three-Phase Buck Boost and Boost Buck Unity Power Factor PWM Rectifier Systems for Supplying Variable DC Voltage Link Converters*, Proceedings of the 10th European Power Quality Conference (PCIM 2004), Nuremberg, Germany, Vol. 1, pp. 126-135, May 25-27, 2004.
 - **M. L. Heldwein, J. W. Kolar**, *A Novel SiC J-FET Gate Drive Circuit for Sparse Matrix Converter Applications*, Proceedings of the 19th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2004), Anaheim (California), USA, Vol. 1, pp. 116-121, February 22-26, 2004.
 - **G. Gong, M. L. Heldwein, U. Drofenik, K. Mino, J. W. Kolar**, *Comparative Evaluation of Three-Phase High Power Factor AC-DC Converter Concepts for Application in Future More Electric Aircraft*, Proceedings of the 19th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2004), Anaheim (California), USA, Vol. 2, pp. 1152-1159, February 22-26, 2004.
 - **G. Gong, U. Drofenik, J. W. Kolar**, *12-Pulse Rectifier for More Electric Aircraft Applications*, Proceedings of the 3rd International Conference on Industrial Technology (ICIT 2003), Maribor, Slovenia, December 10-12, CD-ROM, ISBN: 0-7803-7853-9, 2003.
 - **K. Mino, S. Herold, J. W. Kolar**, *A Gate Drive Circuit for Silicon Carbide JFET*, Proceedings of the 29th Annual Conference of the IEEE Industry Electronics Society (IECON 2003), Roanoke (VA), USA, pp. 1162-1166, November 2-6, 2003.
 - **J. W. Kolar, F. Schafmeister**, *Novel Modulation Schemes Minimizing the Switching Losses of Sparse Matrix Converters*, Proceedings of the 29th Annual Conference of the IEEE Industry Electronics Society (IECON 2003), Roanoke (VA), USA, pp. 2085-2090, November 2-6, 2003.
 - **G. Laimer, J. W. Kolar**, *'Zero'-Ripple EMI Input Filter Concepts for Application in a 1-U 500kHz Si/SiC Three-Phase PWM Rectifier*, Proceedings of the 25th IEEE International Telecommunications Energy Conference (INTELEC 2003), Yokohama, Japan, pp. 750 - 756, October 19-23, 2003.
 - **R. Greul, U. Drofenik, J. W. Kolar**, *Analysis and Comparative Evaluation of a Three-Phase Unity Power Factor Y-Rectifier*, Proceedings of the 25th IEEE International Telecommunications Energy Conference, Yokohama, Japan, Oct. 19 - 23, pp. 421 - 428 (2003).
 - **U. Drofenik, J. W. Kolar**, *Thermal Analysis of a Multi-Chip Si/SiC-Power Module for Realization of a Bridge Leg of a 10kW Vienna Rectifier*, Proceedings of the 25th IEEE International Telecommunications Energy Conference (INTELEC 2003), Yokohama, Japan, pp. 826-833, October 19-23, 2003.
 - **M. Baumann, J. W. Kolar**, *A Novel Control Concept for Reliable Operation of a Three-Phase Three-Switch Buck-Type Unity Power Factor Rectifier with Integrated Boost Output Stage under Heavily Unbalanced Mains Condition*, Proceedings of the 34th IEEE Power Electronics Specialists Conference (PESC 2003), Acapulco, Mexico, Vol. 1, pp. 3-10, June 15-19, 2003.
 - **T. Nussbaumer, J. W. Kolar**, *Advanced Modulation Scheme for Three-Phase Three-Switch Buck-Type PWM Rectifier Preventing Mains Current Distortion Originating from Sliding Input Filter Capacitor Voltage Intersections*, Proceedings of the 34th IEEE Power Electronics Specialists Conference (PESC 2003), Acapulco, Mexico, Vol. 3, pp. 1086-1091, June 15-19, 2003.
 - **F. Cavalcante, J. W. Kolar**, *Design of a 5kW High Output Voltage Series-Parallel Resonant DC-DC Converter*, Proceedings of the 34th IEEE Power Electronics Specialists Conference (PESC 2003), Acapulco, Mexico, Vol. 4, pp. 1807-1814, June 15-19, 2003.
 - **G. Gong, H. Ertl, J. W. Kolar**, *High-Frequency Isolated DC/DC Converter for Input Voltage Conditioning of a Linear Power Amplifier*, Proceedings of the 34th IEEE Power Electronics Specialists Conference (PESC 2003), Acapulco, Mexico, Vol. 4, pp. 1929-1934, June 15-19, 2003.
 - **M. Baumann, J. W. Kolar**, *A 5kW Three-Phase Buck Boost Telecommunications Power Supply Module Input Stage Maintaining Unity Power Factor Under Failure of a Mains Phase*, Proceedings of the 9th European Power Quality Conference (PCIM 2003), Nuremberg, Germany, pp. 291-298, May 20-22, 2003.
 - **U. Drofenik, G. Gong, J. W. Kolar**, *A Novel Bi-Directional Three-Phase Active Third-Harmonic Injection High Input Current Quality AC-DC Converter*, Proceedings of the 9th European Power Quality Conference (PCIM 2003), Nuremberg, Germany, pp. 243-254, May 20-22, 2003.
 - **H. Ertl, T. Wiesinger, J. W. Kolar, F. C. Zach**, *A Simple Active Method to Avoid the Balancing Losses of DC Link Capacitors*, Proceedings of the 47th European Power Electronics Conference (PCIM 2003), Nuremberg, Germany, pp. 459-464, May 20-22, 2003.
 - **R. Greul, J. W. Kolar**, *Experimental Analysis of a 10kW Wide Input Voltage Range Modular Three-Phase Unity Power Factor PWM Delta-Rectifier*, Proceedings of the 9th European Power Quality Conference (PCIM 2003), Nuremberg, Germany, May 20-22, 2003.
 - **J. W. Kolar, J. Miniböck, M. Baumann**, *Three-Phase PWM Power Conversion - The Route to Ultra High Power Density and Efficiency*, Proceedings of the 2003 CPES Annual Seminar/Industry Review, Blacksburg (VA), USA, April 27-29, 2003.
 - **F. Schafmeister, S. Herold, J. W. Kolar**, *Evaluation of 1200V-Si-IGBTs and 1300V-SiC-JFETs for Application in Three-Phase Very Sparse Matrix AC-AC Converter Systems*, Proceedings of the 18th Annual IEEE Applied Power Electronics Conference and Exposition, Miami Beach (Florida), USA, Vol. 1, pp. 241-255, February 9-13, 2003.
 - **U. Drofenik, J. W. Kolar**, *Teaching Thermal Design of Power Electronic Systems with Web-Based Interactive Educational Software*, Proceedings of the 18th Annual

IEEE Applied Power Electronics Conference and Exposition, Miami Beach (Florida), USA, Vol. 2, pp. 1029-1037, February 9-13, 2003.

- **M. Baumann, J. W. Kolar**, *Experimental Evaluation of Space Vector Orientated Active DC-Side Current Balancing of Two Parallel Connected Three-Phase Three-Switch Buck-Type Unity Power Factor Rectifier Systems*, Proceedings of the 24th IEEE International Telecommunications Energy Conference (INTELEC 2002), Montreal, Canada, pp. 317-324, September 29-October 3, 2002.
- **F. Schafmeister, J. W. Kolar**, *Analyse der Regelung einer permanenterregten Synchronmaschine bei Speisung durch einen dreiphasigen Sparse-Matrix-Konverter*, Ansoft's Inspiring Design Worldwide Workshop, Stuttgart, Germany, October 8, 2002.
- **A. Lindemann, M. Baumann, J. W. Kolar**, *Comparison of Different Bidirectional Bipolar Switches for Use in Sparse Matrix Converters*, Proceedings of the 10th International Power Electronics and Motion Control Conference (PEMC 2002), Dubrovnik, Croatia, September 9-11, 2002, CD-ROM, ISBN: 953-184-047-4.
- **F. Schafmeister, M. Baumann, J. W. Kolar**, *Analytically Closed Calculation of the Conduction and Switching Losses of Three-Phase AC-AC Sparse Matrix Converters*, Proceedings of the 10th International Power Electronics and Motion Control Conference (PEMC 2002), Dubrovnik, Croatia, September 9-11, 2002, CD-ROM, ISBN: 953-184-047-4.
- **U. Drofenik, J. W. Kolar**, *Teaching Basics of Inductive Power Components Using Interactive Java Applets Performing FEM-Based On-Line Calculation of the Magnetic Flux Distribution*, Proceedings of the 10th International Power Electronics and Motion Control Conference (PEMC 2002), Dubrovnik, Croatia, September 9-11, 2002, CD-ROM, ISBN: 953-184-047-4.
- **Y. Nishida, U. Drofenik, J. W. Kolar**, *Interactive Animation Program for Power Electronics Education and Self-Learning*, Proceedings of the Annual Conference IEE Japan (IEEJ 2002), Kagoshima, Japan, August 21-23, 2002, CD-ROM.
- **T. Nussbaumer, J. W. Kolar**, *Comparative Evaluation of Control Techniques for a Three-Phase Three-Switch Buck-Type AC-to-DC PWM Converter System*, Proceedings of the 3rd IEEE Nordic Workshop on Power and Industrial Electronics (NORPIE 2002), Stockholm, Sweden, Aug. 12-14, 2002, CD-ROM, ISSN: 1650 674x.
- **M. Baumann, J. W. Kolar**, *Analysis of the Effects of Non-Idealities of Power Components and Mains Voltage Unbalance on the Operating Behavior of a Three-Phase/Switch Buck-Type Unity Power Factor PWM Rectifier*, Proceedings of the 33rd IEEE Power Electronics Specialists Conference (PESC 2002), Cairns, Australia, Vol. 4, pp. 1607-1612, June 23-27, 2002.
- **U. Drofenik, J. W. Kolar**, *Interactive Power Electronics Seminar (iPES) - A Web-Based Introductory Power Electronics Course Employing Java-Applets*, Proceedings of the 33rd IEEE Power Electronics Specialists Conference (PESC 2002), Cairns, Australia, Vol. 2, pp. 443-448, June 23-27, 2002.
- **G. Laimer, J. W. Kolar**, *Wide Bandwidth Low Complexity Isolated Current Sensor to be Employed in a 10kW/500kHz Three-Phase Unity Power Factor PWM Rectifier System*, Proceedings of the 33rd IEEE Power Electronics Specialists Conference (PESC 2002), Cairns, Australia, Vol. 3, pp. 1065-1070, June 23-27, 2002.
- **J. Miniböck, J. W. Kolar**, *Wide Input Voltage Range High Power Density High Efficiency 10kW Three-Phase Three-Level Unity Power Factor PWM Rectifier*, Proceedings of the 33rd IEEE Power Electronics Specialists Conference (PESC 2002), Cairns, Australia, Vol. 4, pp.1642-1648, June 23-27, 2002.
- **J. Miniböck, J. W. Kolar**, *A Novel 10kW 2-U Three-Phase Unity Power Factor Rectifier Module*, Proceedings of the 2nd International Conference on Integrated Power Systems (CIPS 2002), Bremen, Germany, pp. 19-23, June 11-12, 2002.
- **J. Miniböck, J. W. Kolar**, *A Highly Versatile Laboratory Setup for Teaching Basics of Power Electronics in Industry Related Form*, Proceedings of the 8th European Power Quality Conference (PCIM 2002), Nuremberg, Germany, pp. 119-123, May 14-16, 2002.
- **G. Laimer, J. W. Kolar**, *Accurate Measurement of the Switching Losses of Ultra High Switching Speed CoolMOS Power Transistor / SiC Diode Combination Employed in Unity Power Factor PWM Rectifier Systems*, Proceedings of the 8th European Power Quality Conference (PCIM 2002), Nuremberg, Germany, pp. 71-78, May 14-16, 2002.
- **H. Ertl, J. W. Kolar, G. Morauf, F. C. Zach**, *Analysis of Active Ripple Current Compensators Employing Multi-Cell Switch-Mode Amplifier Topologies*, Proceedings of the 8th European Power Quality Conference (PCIM 2002), Nuremberg, Germany, pp. 125-131, May 14-16, 2002.
- **M. Baumann, J. W. Kolar**, *DC Side Current Balancing of Two Parallel Connected Interleaved Three-Phase Three-Switch Buck-Type Unity Power Factor PWM Rectifier Systems*, Proceedings of the 8th European Power Quality Conference (PCIM 2002), Nuremberg, Germany, pp. 63-70, May 14-16, 2002.
- **M. Baumann, J. W. Kolar**, *Minimization of the DC Current Ripple of a Three-Phase Buck Boost PWM Unity Power Factor Rectifier*, Proceedings of the 3rd IEEE Power Conversion Conference (PCC 2002), Osaka, Japan, Vol. 2, pp. 472-477, April 2-5, 2002.
- **U. Drofenik, J. W. Kolar**, *Modern and Intuitive Way of Teaching Space Vector Calculus and PWM in an Undergraduate Course*, Proceedings of the 3rd IEEE Power Conversion Conference (PCC 2002), Osaka, Japan, Vol. 1, pp. 305-310, April 2-5, 2002.
- **J. Miniböck, R. Greul, J. W. Kolar**, *A Novel Control Concept for Operating a Two-Stage Delta-Rectifier-Based Telecommunications Power Supply Module under Heavily Unbalanced Mains Voltage Conditions*, Proceedings of the 17th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2002), Dallas, USA, Vol. 2, pp. 716-721, March 10-14, 2002.
- **J. W. Kolar, M. Baumann, F. Schafmeister, H. Ertl**, *Novel Three-Phase AC-DC-AC Sparse Matrix Converter. Part I - Derivation, Basic Principle of Operation, Space Vector Modulation, Dimensioning*, Proceedings of the 17th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2002), Dallas, USA, Vol. 2, pp. 777-787, March 10-14, 2002.
- **M. Baumann, F. Stögerer, J. W. Kolar**, *Novel Three-Phase AC-DC-AC Sparse Matrix Converter. Part II - Experimental Analysis of the Very Sparse Matrix Converter*, Proceedings of the 17th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2002), Dallas, USA, Vol. 2, pp. 788-791, March 10-14, 2002.
- **U. Drofenik, J. W. Kolar**, *Survey of Modern Approaches of Education in Power Electronics*, Proceedings of the 17th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2002), Dallas, USA, Vol. 2, pp. 749-755, March 10-14, 2002.

- **J. Miniböck, J. W. Kolar**, , *A Novel 10kW 2-U Three-Phase Unity Power Factor Rectifier Module*, Proceedings of the International Symposium on Power Electronics (Ee2001), Novi Sad, Yugoslavia, October 31-November 02, 2001.
- **J. Miniböck, R. Greul, J. W. Kolar**, *Evaluation of a Delta-Connection of Three Single-Phase Unity Power Factor Rectifier Modules (Delta-Rectifier) in Comparison to a Direct Three-Phase Rectifier Realization. Part II - Components Stress Evaluation, Efficiency, Control*, Proceedings of the 23rd IEEE International Telecommunications Energy Conference (INTELEC 2001), Edinburgh, UK, pp. 446-454, October 14-18, 2001.
- **M. Baumann, J. W. Kolar**, *Experimental Analysis of a 5kW Wide Input Voltage Range Three-Phase Buck Boost Power Factor Corrector*, Proceedings of the 23rd IEEE International Telecommunications Energy Conference (INTELEC 2001), Edinburgh, UK, pp. 146-153, October 14-18, 2001.
- **U. Drogenik, J. W. Kolar, P. J. Van Duijsen, P. Bauer**, *New Web-Based Interactive E-Learning in Power Electronics and Electrical Machines*, Conference Record of the IEEE Industry Applications Conference 36th IAS Annual Meeting (IAS 2001), Chicago, USA, Vol. 3, pp. 1858-1865, September 30-October 4, 2001.
- **F. Stögerer, J. W. Kolar**, *Design and Experimental Analysis of a Three-Phase Single-Stage 8.5kW Buck-Derived PWM-Rectifier System (VIENNA Rectifier III)*, Proceedings of the 9th European Conference on Power Electronics and Applications (EPE 2001), Graz, Austria, August 27-29, 2001.
- **H. Ertl, J. W. Kolar, F. C. Zach**, *A Novel Multi-Cell DC-AC Converter for Applications in Renewable Energy Systems*, Proceedings of the 7th European Power Quality Conference (PCIM 2001), Nuremberg, Germany, pp. 579-586, June 19-21, 2001.
- **J. W. Kolar, F. Stögerer, Y. Nishida**, *Evaluation of a Delta-Connection of Three Single-Phase Unity Power Factor Rectifier Systems (Delta-Rectifier) in Comparison to a Direct Three-Phase Rectifier Realization. Part I - Modulation Schemes and Input Current Ripple*, Proceedings of the 7th European Power Quality Conference (PCIM 2001), Nuremberg, Germany, pp. 101-108, June 19-21, 2001.
- **J. Miniböck, J. W. Kolar**, *Experimental Analysis of the Application of Latest SiC Diode and CoolMOS Power Transistor Technology in a 10kW Three-Phase PWM (VIENNA) Rectifier*, Proceedings of the 7th European Power Quality Conference (PCIM 2001), Nuremberg, Germany, pp. 121-125, June 19-21, 2001.
- **M. Baumann, J. W. Kolar**, *Experimental Evaluation of a Three-Phase Three-Switch Buck-Type Unity Power Factor Corrector*, Proceedings of the 7th European Power Quality Conference (PCIM 2001), Nuremberg, Germany, pp. 69-75, June 19-21, 2001.
- **M. Baumann, J. W. Kolar**, *Comparative Evaluation of Modulation Methods for a Three-Phase / Switch Buck Power Factor Corrector Concerning the Input Capacitor Voltage Ripple*, Proceedings of the 32nd Power Electronics Specialists Conference (PESC 2001), Vancouver, Canada, Vol. 3, pp. 1327-1333, June 17-21, 2001.
- **J. Miniböck, J. W. Kolar**, *Comparative Theoretical and Experimental Evaluation of Bridge Leg Topologies of a Three-Phase Three-Level Unity Power Factor Rectifier*, Proceedings of the 32nd Power Electronics Specialists Conference (PESC 2001), Vancouver, Canada, Vol. 3, pp. 1641-1646, June 17-21, 2001.
- **F. Stögerer, J. Miniböck, J. W. Kolar**, *Design and Experimental Verification of a Novel 1.2kW 480Vdc / 24Vac Two-Switch Three-Phase DCM Flyback-Type Unity Power Factor Rectifier*, Proceedings of the 32nd Power Electronics Specialists Conference (PESC 2001), Vancouver, Canada, Vol. 2, pp. 914-919, June 17-21, 2001.
- **F. Stögerer, J. Miniböck, J. W. Kolar**, *Implementation of a Novel Control Concept for Reliable Operation of a VIENNA Rectifier under Heavily Unbalanced Mains Voltage Conditions*, Proceedings of the 32nd Power Electronics Specialists Conference (PESC 2001), Vancouver, Canada, Vol. 3, pp. 1333-1338, June 17-21, 2001.
- **J. Miniböck, F. Stögerer, J. W. Kolar**, *A Novel Concept for Mains Voltage Proportional Input Current Shaping of a VIENNA Rectifier Eliminating Controller Multipliers. Part I - Basic Theoretical Considerations and Experimental Verification*, Proceedings of the 16th IEEE Applied Power Electronics Conference, Anaheim, USA, Vol. 1, pp. 582-586, March 4-8, 2001.
- **F. Stögerer, J. Miniböck, J. W. Kolar**, *A Novel Concept for Mains Voltage Proportional Input Current Shaping of a VIENNA Rectifier Eliminating Controller Multipliers. Part II - Operation for Heavily Unbalanced Mains Phase Voltages and in Wide Input Voltage Range*, Proceedings of the 16th IEEE Applied Power Electronics Conference, Anaheim, USA, Vol. 1, pp. 587-591, March 4-8, 2001.
- **M. Baumann, F. Stögerer, J. W. Kolar, A. Lindemann**, *Design of a Novel Multi-Chip Power Module for a Three-Phase Buck Boost Unity Power Factor Utility Interface Supplying the Variable Voltage DC Link of a Square-Wave Inverter Drive*, Proceedings of the 16th IEEE Applied Power Electronics Conference, Anaheim, USA, Vol. 2, pp. 820-827, March 4-8, 2001.

Journal Papers

- **L. Schrittwieser, J. W. Kolar, T. B. Soeiro**, *99% Efficient Three-Phase Buck-Type SiC MOSFET PFC Rectifier Minimizing Life Cycle Cost in DC Data Centers*, CPSS Transactions on Power Electronics and Applications, Vol. 2, No. 1, pp. 47-58, March 2017.
- **A. Tüysüz, F. Meyer, M. Steichen, C. Zwyssig, J. W. Kolar**, *Advanced Cooling Methods for High-Speed Electrical Machines*, IEEE Transactions on Industry Applications - Early Access Version.
- **M. Mauerer, A. Tüysüz, J. W. Kolar**, *Low-Jitter GaN E-HEMT Gate Driver with High Common-Mode Voltage Transient Immunity*, IEEE Transactions on Industrial Electronics - Early Access Version.
- **F. Krismer, S. Schroth, H. Ertl, K. S. Kostov, H. P. Nee, J. W. Kolar**, *Analysis and Practical Relevance of CM/DM EMI Noise Separator Characteristics*, IEEE Transactions on Power Electronics, Vol. 32, No. 4, pp. 3112-3127, April 2017.
- **D. O. Boillat, F. Krismer, J. W. Kolar**, *EMI Filter Volume Minimization of a Three-Phase/Level T-Type PWM Converter System*, IEEE Transactions on Power Electronics, Vol. 32, No. 4, pp. 2473-2480, April 2017.
- **A. Looser, A. Tüysüz, C. Zwyssig, J. W. Kolar**, *Active Magnetic Damper for Ultra-High-Speed Permanent-Magnet Machines with Gas Bearings*, IEEE Transactions on Industrial Electronics, Vol. 64, No. 4, pp. 2982-2991, April 2017.
- **R. Burkart, J. W. Kolar**, *Comparative Life Cycle Costs Analysis of Si and SiC PV Converter Systems Based on Advanced η - p - σ Multi-Objective Optimization Techniques*, IEEE Transactions on Power Electronics, Vol. 32, No. 6, pp. 4344-4358, June 2017.

- **L. Schrittwieser, J. W. Kolar, T. B. Soeiro**, , *Novel SWISS Rectifier Modulation Scheme Preventing Input Current Distortions at Sector Boundaries*, IEEE Transactions on Power Electronics, Vol. 32, No. 7, pp. 5771-5785, July 2017.
- **R. Bosshard, J. W. Kolar**, *All-SiC 9.5 kW/dm³ On-Board Power Electronics for 50 kW/85 kHz Automotive IPT System*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 5, No. 1, pp. 419-431, March 2017.
- **M. Leibl, G. Ortiz, J. W. Kolar**, *Design and Experimental Analysis of a Medium Frequency Transformer for Solid-State Transformer Applications*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 5, No. 1, pp. 110-123, March 2017.
- **J. Huber, J. W. Kolar**, *Optimum Number of Cascaded Cells for High-Power Medium-Voltage AC-DC Converters*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 5, No. 1, pp. 213-232, March 2017.
- **T. Guillod, F. Krismer, J. W. Kolar**, *Protection of MV Converters in the Grid: The Case of MV/LV Solid-State Transformers*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 5, No. 1, pp. 393-408, March 2017.
- **M. Leibl, J. W. Kolar, J. Deuringer**, *Sinusoidal Input Current Discontinuous Conduction Mode Control of the VIENNA Rectifier*, IEEE Transactions on Power Electronics - Early Access Version.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. A. Francese**, *A 10 W On-Chip Switched Capacitor Voltage Regulator With Feedforward Regulation Capability for Granular Microprocessor Power Delivery*, IEEE Transaction on Power Electronics, vol. 32, no. 1, pp. 378-393, January 2017.
- **G. Ortiz, M. Leibl, J. Huber, J. W. Kolar**, *Design and Experimental Testing of a Resonant DC-DC Converter for Solid-State Transformers*, IEEE Transactions on Power Electronics - Early Access Version.
- **M. Kasper, D. Bortis, G. Deboy, J. W. Kolar**, *Design of a Highly Efficient (97.7%) and Very Compact (2.2kW/dm³) Isolated AC-DC Telecom Power Supply Module based on the Multi-Cell ISOP Converter Approach*, IEEE Transactions on Power Electronics - Early Access Version.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl, C. Menolfi, L. Kull, T. Morf, M. Kossel, M. Brändli, P. A. Francese**, *Modeling and Pareto Optimization of On-Chip Switched Capacitor Converters*, IEEE Transaction on Power Electronics, vol. 32, no. 1, pp. 363-377, January 2017.
- **R. Bosshard, U. Iruretagoyena, J. W. Kolar**, *Comprehensive Evaluation of Rectangular and Double-D Coil Geometry for 50 kW/85 kHz IPT System*, IEEE Journal of Emerging and Selected Topics on Power Electronics (JESTPE), Vol. 4, No. 4, pp. 1406-1415, December 2016.
- **R. Bosshard, J. W. Kolar**, *Multi-Objective Optimization of 50 kW/85 kHz IPT System for Public Transport*, IEEE Journal of Emerging and Selected Topics on Power Electronics (JESTPE), Vol. 4, No. 4, pp. 1370-1382, December 2016 .
- **R. Bosshard, T. Guillod, J. W. Kolar**, *Electromagnetic Field Patterns and Energy Flux of Efficiency Optimal Inductive Power Transfer Systems*, Electrical Engineering - Archiv für Elektrotechnik, Springer Link (<http://link.springer.com/article/10.1007/s00202-016-0461-7>), October 2016.
- **J. Huber, J. W. Kolar**, *Solid-State Transformers - On the Origins and Evolution of Key Concepts*, IEEE Industrial Electronics Magazine, pp. 19-28, September 2016.
- **M. Schuck, T. Nussbaumer, J. W. Kolar**, *Characterization of Electromagnetic Rotor Material Properties and Their Impact on an Ultra-High Speed Spinning Ball Motor*, IEEE Transactions on Magnetics, Vol. 52, No. 7, July 2016.
- **M. Kasper, R. Burkart, G. Deboy, J. W. Kolar**, *ZVS of Power MOSFETs Revisited*, IEEE Transactions on Power Electronics, Vol. 31, No. 12, pp. 8063-8067, December 2016.
- **R. Bosshard, J. W. Kolar**, *Inductive Power Transfer for Electric Vehicle Charging – Technical Challenges and Tradeoffs*, IEEE Power Electronics Magazine, pp. 22-30, September 2016.
- **D. Boillat, F. Krismer, J. W. Kolar**, *Optimization and Comparative Evaluation of Multi-Loop Control Schemes for Controllable AC Sources with Two-Stage Output LC Filters*, IEEE Transactions on Power Electronics, Vol. 31, No. 10, pp. 7353-7368, October 2016.
- **F. Krismer, D. O. Boillat, J. W. Kolar**, *Modeling the Output Impedance of a T-Type Power Converter*, IEEE Transactions on Power Electronics, Vol. 31, No. 12, pp. 8052-8057, December 2016.
- **D. Steinert, T. Nussbaumer, J. W. Kolar**, *Evaluation of One- and Two-Pole-Pair Slotless Bearingless Motors with Toroidal Windings*, IEEE Transactions on Industry Applications, Vol. 52, No. 1, pp. 172-180, January/February 2016.
- **T. Wellerdieck, T. Nussbaumer, J. W. Kolar**, *Angle-Sensorless Zero- and Low-Speed Control of Bearingless Machines*, IEEE Transactions on Magnetics, Vol. 52, No. 7, July 2016.
- **O. Knecht, R. Bosshard, J. W. Kolar**, *High Efficiency Transcutaneous Energy Transfer for Implantable Mechanical Heart Support Systems*, IEEE Transactions on Power Electronics, Vol. 30, No. 11, pp. 6221-6236, November 2015.
- **L. Schrittwieser, M. Mauerer, G. Ortiz, D. Bortis, J. W. Kolar**, *Novel Principle for Flux Sensing in the Application of a DC + AC Current Sensor*, IEEE Transactions on Industry Applications, Vol. 51, No. 5, pp. 4100-4110, September/October 2015.
- **D. O. Boillat, F. Krismer, J. W. Kolar**, *Design Space Analysis and p- η Pareto Optimization of LC Output Filters for Switch-Mode AC Power Sources*, IEEE Transactions on Power Electronics, Vol. 30, No. 12, pp. 6906-6923, December 2015.
- **A. Tüysüz, J. W. Kolar**, *New Position-Sensing Concept for Miniature Lateral-Stator Machines*, IEEE Transactions on Industrial Electronics, Vol. 63, NO. 6, pp. 3489-3498, June 2016 .
- **C. Gammeter, F. Krismer, J. W. Kolar**, *Comprehensive Conceptualization, Design, and Experimental Verification of a Weight-Optimized All-SiC 2kV/700V DAB for an Airborne Wind Turbine*, IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE), Vol. 4, No. 2, pp. 638-656, June 2016.
- **C. M. Zingerli, T. Nussbaumer, J. W. Kolar**, *Optimizing Repulsive Lorentz Forces for a Levitating Induction Cooker*, IEEE Transactions on Industry Applications, Vol. 4, No. 4, pp. 439-444, June 2015..
- **T. Baumgartner, J. W. Kolar**, *Multivariable State Feedback Control of a 500 000-r/min Self-Bearing Permanent-Magnet Motor*, IEEE/ASME Transactions on Mechatronics, Vol. 20, No. 3, pp. 1149-1159, June 2015.
- **Y. Lobsiger, J. W. Kolar**, *Closed-Loop di/dt and dv/dt IGBT Gate Driver*, IEEE Transactions on Power Electronics, Vol. 30, No. 6, pp. 3402-3417, June 2015.

- **K. Kostov, S. Schroth, F. Krismer, M. Priedinsky, H. P. Nee, J. W. Kolar**, *The Input Impedance of Common-Mode and Differential-Mode Noise Separators*, IEEE Transactions on Industry Applications, Vol. 51, No. 3, pp. 2352-2360, May/June 2015.
- **R. Bosshard, J. W. Kolar, J. Mühlethaler, I. Stevanovic, B. Wunsch, F. Canales**, *Modeling and η - α -Pareto Optimization of Inductive Power Transfer Coils for Electric Vehicles*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 3, No. 1, pp. 50-64, March 2015.
- **B. Wrzecionko, J. W. Kolar, A. Looser, M. Casey**, *High-Temperature (250 °C/500 °F) 19 000 min⁻¹ BLDC Fan for Forced Air-Cooling of Advanced Automotive Power Electronics*, IEEE/ASME Transactions on Mechatronics, Vol. 20, Issue 1, pp. 37-49, February 2015.
- **C. Gammeter, F. Krismer, J. W. Kolar**, *Weight Optimization of a Cooling System Composed of Fan and Extruded Fin Heat Sink*, IEEE Transactions on Industry Applications, Vol. 51, No. 1, pp. 509-520, January/February 2015.
- **J. Everts, F. Krismer, J. Van den Keybus, J. Driesen, J. W. Kolar**, *Optimal ZVS Modulation of Single-Phase Single-Stage Bidirectional DAB AC-DC Converters*, IEEE Transactions on Power Electronics, Vol. 29, No. 8, pp. 3954-3970, August 2014.
- **A. Tüysüz, C. Zwyssig, J. W. Kolar**, *A Novel Motor Topology for High-Speed Micro-Machining Applications*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 6, pp. 2960-2968, June 2014.
- **F. Giezendanner, J. Biela, J. W. Kolar**, *Optimization and Performance Evaluation of an AC-Chopper Ballast for HPS Lamps*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 5, pp. 2236-2243, May 2014.
- **B. Wrzecionko, D. Bortis, J. W. Kolar**, *A 120°C Ambient Temperature Forced Air-Cooled Normally-off SiC JFET Automotive Inverter System*, IEEE Transactions on Power Electronics, Vol. 29, No. 5, pp. 2345-2358, May 2014.
- **M. Kasper, D. Bortis, J. W. Kolar**, *Classification and Comparative Evaluation of PV Panel-Integrated DC-DC Converter Concepts*, IEEE Transactions on Power Electronics, Vol. 29, No. 5, pp. 2511-2526, May 2014.
- **G. Ortiz, L. Fässler, J. W. Kolar, O. Appeldoorn**, *Flux Balancing of Isolation Transformers and Application of "The Magnetic Ear" for Closed-Loop Volt-Second Compensation*, IEEE Transactions on Power Electronics: Special Issue on High-Frequency-Link Power-Conversion Systems, Vol. 29, No. 8, pp. 4078-4090, August 2014.
- **L. Schwager, A. Tüysüz, C. Zwyssig, J. W. Kolar**, *Modeling and Comparison of Machine and Converter Losses for PWM and PAM in High-Speed Drives*, IEEE Transactions on Industry Applications, Vol. 50, No. 2, pp. 995-1006, March/April 2014.
- **A. Looser, J. W. Kolar**, *An Active Magnetic Damper Concept for Stabilization of Gas Bearings in High-Speed Permanent-Magnet Machines*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 6, pp. 3089-3098, June 2014.
- **I. Kovacevic, J. W. Kolar, S. D. Round, M. Vasic**, *Mission Profile Based Optimization of a Wearable Power System*, EPE Journal, Vol. 23, No. 3, pp. 36-47, September 2014.
- **D. Steinert, T. Nussbaumer, J. W. Kolar**, *Slotless Bearingless Disk Drive for High-Speed and High-Purity Applications*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 11, pp. 5974-5986, November 2014.
- **T. Baumgartner, R. Burkart, J. W. Kolar**, *Analysis and Design of a 300-W 500 000-r/min Slotless Self-Bearing Permanent-Magnet Motor*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 8, pp. 4326-4336, August 2014.
- **T. Friedli, M. Hartmann, J. W. Kolar**, *The Essence of Three-Phase PFC Rectifier Systems - Part II*, IEEE Transactions on Power Electronics, Vol. 29, No. 2, February 2014.
- **C. Marxgut, F. Krismer, D. Bortis, J. W. Kolar**, *Ultraflat Interleaved Triangular Current Mode (TCM) Single-Phase PFC Rectifier*, IEEE Transactions on Power Electronics, Vol. 29, No. 2, pp. 873-882, February 2014.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *3-D Electromagnetic Modeling of EMI Input Filters*, IEEE Transactions on Industrial Electronics, Vol. 61, No. 1, pp. 231-242, January 2014.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *3-D Electromagnetic Modeling of Parasitics and Mutual Coupling in EMI Filters*, IEEE Transactions on Power Electronics, Vol. 29, No. 1, pp. 135-149, January 2014.
- **P. Pejovic, J. W. Kolar**, *Single-Phase Full-Wave Rectifier as an Effective Example to Teach Normalization, Conduction Modes, and Circuit Analysis Methods*, Electronic Journal "Special Issue on: Education in Electronics", Vol. 17, No. 2, January 2014.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *Full PEEC Modeling of EMI Filter Inductors in the Frequency Domain*, IEEE Transactions on Magnetics, Vol. 49, No. 10, pp. 5248-5256, October 2013.
- **T. Soeiro, J. W. Kolar**, *The New High Efficiency Hybrid Neutral Point Clamped Converter*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 5, pp. 1919-1935, May 2013.
- **L. Empringham, J. W. Kolar, J. Rodriguez, P. W. Wheeler, J. C. Clare**, *Technological Issues and Industrial Application on Matrix Converters: A Review*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 10, pp. 4260-4271, October 2013.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Split Ratio Optimization for High-Torque PM Motors Considering Global and Local Thermal Limitations*, IEEE Transactions on Energy Conversion, Vol. 28, No. 3, pp. 493-501, September 2013.
- **M. Hartmann, H. Ertl, J. W. Kolar**, *Current Control of Three-Phase Rectifier Systems using Three Independent Current Controllers*, IEEE Transactions on Power Electronics, Vol. 28, No. 8, pp. 4074-4082, August 2013.
- **D. Aggeler, F. Canales, J. Biela, J. W. Kolar**, *Dv/Dt Control Methods for the SiC JFET/Si MOSFET Cascode*, IEEE Transactions on Power Electronics, Vol. 28, No. 8, pp. 4074-4082, August 2013.
- **T. Reichert, J. W. Kolar, T. Nussbaumer**, *Stator Tooth Design Study for Bearingless Exterior Rotor PMSM*, IEEE Transactions on Industry Applications, Vol. 49, No. 4, pp. 1515-1522, July/August 2013.
- **J. W. Kolar, T. Friedli, F. Krismer, A. Looser, M. Schweizer, R. Friedemann, P. Steimer, J. Bevirt**, *Conceptualization and Multiobjective Optimization of the Electric System of an Airborne Wind Turbine*, IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 1, No. 2, pp. 73-103, June 2013.
- **B. Wrzecionko, L. Steinmann, J. W. Kolar**, *High-Bandwidth High-Temperature (250 °C / 500 °F) Isolated DC and AC Current Measurement: Bidirectionally*

Saturated Current Transformer, IEEE Transactions on Power Electronics, Vol. 28, No. 11, pp. 5404-5413, November 2013.

- **T. Soeiro, J. W. Kolar**, *Analysis of High-Efficiency Three-Phase Two- and Three-Level Unidirectional Hybrid Rectifiers*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 9, pp. 3589-3601, September 2013.
- **T. Soeiro, J. Mühlethaler, J. Linnér, P. Ranstad, J. W. Kolar**, *Automated Design of a High-Power High-Frequency LCC Resonant Converter for Electrostatic Precipitators*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 11, pp. 4805-4819, November 2013.
- **C. Marxgut, J. Mühlethaler, F. Krismer, J. W. Kolar**, *Multiobjective Optimization of Ultraflat Magnetic Components With PCB-Integrated Core*, IEEE Transactions on Power Electronics, Vol. 28, No. 7, pp. 3591-3602, July 2013.
- **J. Mühlethaler, M. Schweizer, R. Blattmann, J. W. Kolar, A. Ecklebe**, *Optimal Design of LCL Harmonic Filters for Three-Phase PFC Rectifiers*, IEEE Transactions on Power Electronics, Vol. 28, No. 7, pp. 3114-3125, July 2013.
- **M. Schweizer, T. Friedli, J. W. Kolar**, *Comparative Evaluation of Advanced 3-Phase Three-Level Inverter/Converter Topologies Against Two-Level Systems*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 12, pp. 5515-5527, December 2013.
- **T. Soeiro, J. W. Kolar**, *The New High-Efficiency Hybrid Neutral-Point-Clamped Converter*, IEEE Transactions on Industrial Electronics, Vol. 60, No. 5, pp. 1919-1935, May 2013.
- **T. Soeiro, T. Friedli, J. W. Kolar**, *Design and Implementation of a Three-Phase Buck-Type Third Harmonic Current Injection PFC Rectifier SR*, IEEE Transactions on Power Electronics, Vol. 28, No. 4, pp. 1608-1621, April 2013.
- **J. W. Kolar, G. Ortiz**, *Aktive Verteiltransformatoren - Funktion und Einsatzbereiche in künftigen Smart Grids*, Bulletin SEV/VSE, Jg. 104, Nr. 4, S. 34-40, April 2013.
- **T. Andersen, C. Zingerli, F. Krismer, J. W. Kolar, N. Wang, S. O. Mathuna**, *Modeling and Pareto Optimization of Microfabricated Inductors for Power Supply on Chip*, IEEE Transactions on Power Electronics, Vol. 28, No. 9, pp. 4422-4430, September 2013.
- **G. Ortiz, D. Bortis, J. W. Kolar, O. Apeldoorn**, *Modeling of Soft-Switching Losses of IGBTs in High-Power High-Efficiency Dual-Active-Bridge DC/DC Converters*, IEEE Transactions on Electron Devices, Vol. 60, No. 2, pp. 587-597, February 2013.
- **M. Schweizer, J. W. Kolar**, *Design and Implementation of a Highly Efficient Three-Level T-Type Converter for Low-Voltage Applications*, IEEE Transactions on Power Electronics, Vol. 28, No. 52, pp. 899-907, February 2013.
- **T. Soeiro, F. Vancu, J. W. Kolar**, *Hybrid Active Third-Harmonic Current Injection Mains Interface Concept for DC Distribution Systems*, IEEE Transactions on Power Electronics, Vol. 28, No. 1, pp. 7-13, January 2013.
- **M. Darijevic, M. Jankovic, P. Pejovic, J. W. Kolar, Y. Nishida**, *Three-Phase Rectifiers with Suboptimal Current Injection and Improved Efficiency*, Transactions on IET Power Electronics, Vol. 7, Issue 4, February 2013.
- **J. W. Kolar, T. Friedli**, *The Essence of Three-Phase PFC Rectifier Systems - Part I*, IEEE Transactions on Power Electronics, Vol. 28, No. 1, pp. 176-198, January 2013.
- **M. Hartmann, H. Ertl, J. W. Kolar**, *On the Tradeoff Between Input Current Quality and Efficiency of High Switching Frequency PWM Rectifiers*, IEEE Transactions on Power Electronics, Vol. 27, No. 7, pp. 3137-3149, July 2012.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Investigation of Exterior Rotor Bearingless Motor Topologies for High-Quality Mixing Applications*, IEEE Transactions on Industry Applications, Vol. 48, No. 6, pp. 2206-2216, November/December 2012.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Complete Analytical Solution of Electromagnetic Field Problem of High-Speed Spinning Ball*, AIP Journal of Applied Physics, Vol. 112, No. 10, pp. 104901-104901-9, November 2012.
- **T. Friedli, J. W. Kolar, J. Rodriguez, P. W. Wheeler**, *Comparative Evaluation of Three-Phase AC-AC Matrix Converter and Voltage DC-Link Back-to-Back Converter Systems*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 12, pp. 4487-4510, December 2012.
- **J. Biela, D. Aggeler, D. Bortis, J. W. Kolar**, *Balancing Circuit for a 5-kV/50-ns Pulsed-Power Switch Based on SiC-JFET Super Cascode*, IEEE Transactions on Plasma Science, Vol. 40, No. 10, pp. 2554-2560, October 2012.
- **M. Hartmann, J. Miniböck, H. Ertl, J. W. Kolar**, *A Three-Phase Delta Switch Rectifier for Use in Modern Aircraft*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 9, pp. 3536-3647, September 2012.
- **M. Rivera, J. Rodriguez, J. R. Espinoza, T. Friedli, J. W. Kolar, A. Wilson, C. A. Rojas**, *Imposed Sinusoidal Source and Load Currents for an Indirect Matrix Converter*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 11, pp. 4986-4987, September 2012.
- **F. Zürcher, T. Nussbaumer, J. W. Kolar**, *Motor Torque and Magnetic Levitation Force Generation in Bearingless Brushless Multipole Motors*, IEEE/ASME Transactions on Mechatronics, Vol. 17, No. 6, pp. 1088-1097, December 2012.
- **A. Looser, T. Baumgartner, J. W. Kolar, C. Zwyssig**, *Analysis and Measurement of Three-Dimensional Torque and Forces for Slotless Permanent-Magnet Motors*, IEEE Transactions on Industry Applications, Vol. 48, No. 4, pp. 1258-1266, July/August 2012.
- **P. Pejovic, J. W. Kolar, Y. Nishida**, *Bidirectional AC-DC Converter for Regenerative Braking*, Special Issue on the 16th International Symposium on Power Electronics (Ee2011), Electronics, Vol. 16, No. 1, June 2012.
- **T. Friedli, J. W. Kolar**, *Milestones in Matrix Converter Research*, IEEE Journal of Industry Applications, Vol. 1, No. 1, pp. 2-14, July 2012.
- **B. Wrzecionko, D. Bortis, J. Biela, J. W. Kolar**, *Novel AC-Coupled Gate Driver for Ultrafast Switching of Normally Off SiC JFETs*, IEEE Transactions on Power Electronics, Vol. 27, No. 7, pp. 3452-3463, July 2012.
- **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Bearingless 300-W PMSM for Bioreactor Mixing*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 3, pp. 1376-1388, March 2012.
- **A. Stupar, T. Friedli, J. Miniböck, J. W. Kolar**, *Towards a 99% Efficient Three-Phase Buck-Type PFC Rectifier for 400-V DC Distribution Systems*, IEEE Transactions on Power Electronics, Vol. 27, No. 4, pp. 1732-1744, April 2012.
- **B. Warberger, R. Kaelin, T. Nussbaumer, J. W. Kolar**, *50-N · m/2500-W Bearingless Motor for High-Purity Pharmaceutical Mixing*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 5, pp. 2236-2247, May 2012.
- **F. Krismer, J. W. Kolar**, *Closed Form Solution for Minimum Conduction Loss Modulation of DAB Converters*, IEEE Transactions on Power Electronics, Vol. 27, No.

1, January 2012.

- **F. Krismer, J. W. Kolar**, *Efficiency-Optimized High Current Dual Active Bridge Converter for Automotive Applications*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 7, July 2012.
- **A. Stupar, U. Drogenik, J. W. Kolar**, *Optimization of Phase Change Material Heat Sinks for Low Duty Cycle High Peak Load Power Supplies*, IEEE Transactions on Components, Packaging and Manufacturing Technology, Vol. 2, No. 1, pp. 102-115, January 2012.
- **J. Mühlethaler, J. Biela, J. W. Kolar, A. Ecklebe**, *Core Losses Under the DC Bias Condition Based on Steinmetz Parameters*, IEEE Transactions on Power Electronics, Vol. 27, No. 2, February 2012.
- **J. Mühlethaler, J. Biela, J. W. Kolar, A. Ecklebe**, *Improved Core-Loss Calculation for Magnetic Components Employed in Power Electronic Systems*, IEEE Transactions on Power Electronics, Vol. 27, No. 2, February 2012.
- **F. Schafmeister, J. W. Kolar**, *Novel Hybrid Modulation Schemes Significantly Extending the Reactive Power Control Range of All Matrix Converter Topologies With Low Computational Effort*, IEEE Transactions on Industrial Electronics, Vol. 59, No. 1, pp. 194-210, January 2012.
- **J. Rodriguez, M. Rivera, J. W. Kolar, P. W. Wheeler**, *A Review of Control and Modulation Methods for Matrix Converters*, IEEE Transactions on Industrial Electronics Vol. 59, No. 1, pp. 58-70, January 2012.
- **R. Rodriguez, J. W. Kolar, P. W. Wheeler**, *Guest Editorial: Special Section on Matrix Converters*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 11, pp. 4986-4987, November 2011.
- **D. Krähenbühl, C. Zwyssig, J. W. Kolar**, *Half Controlled Boost Rectifier for Low Power, High-Speed, Permanent-Magnet Generators*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 11, pp. 5066-5075, November 2011.
- **J. W. Kolar, T. Friedli, J. Rodriguez, P. W. Wheeler**, *Review of Three-Phase PWM AC-AC Converter Topologies*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 11, pp. 4988-5006, November 2011.
- **B. Warberger, J. Feller, C. Guntermann, T. Nussbaumer, J. W. Kolar**, *High-Dynamics Low-Cost Flow Control With Solenoid Actuator for Ultrahigh Purity Applications*, IEEE Transactions on Industry Applications, Vol. 47, No. 5, pp. 2268-2273, September/October 2011.
- **D. Bortis, G. Ortiz, J. W. Kolar, J. Biela**, *Design Procedure for Compact Pulse Transformers with Rectangular Pulse Shape and Fast Rise Times*, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 18, No. 4, pp. 1171-1180, August 2011.
- **M. L. Heldwein, L. Dalessandro, J. W. Kolar**, *The Three-Phase Common-Mode Inductor: Modeling and Design Issues*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 8, pp. 3264-3274, August 2011.
- **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *Full PEEC Modeling of EMI Filter Inductors in Frequency Domain*, IEEE Transactions on Magnetics, Vol. 49, No. 10, pp. 5248-5256, October 2013.
- **J. Biela, M. Schweizer, S. Waffler, J. W. Kolar**, *SiC versus Si - Evaluation of Potentials for Performance Improvement of Inverter and DC-DC Converter Systems by SiC Power Semiconductors*, IEEE Transactions on Industrial Electronics, Vol. 58, No. 7, pp. 2872-2882, July 2011.
- **T. Reichert, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Bearingless Permanent-Magnet Motor with 4/12 Slot-Pole Ratio for Bioreactor Stirring Applications*, IEEE/ASME Transactions on Mechatronics, Vol. 16, No. 3, pp. 431-439, June 2011.
- **I. Kovacevic, A. Müsing, J. W. Kolar**, *An Extension of PEEC Method for Magnetic Materials Modeling in Frequency Domain*, IEEE Transactions on Magnetics, Vol. 47, No. 5, pp. 910-913, May 2011.
- **U. Drogenik, A. Stupar, J. W. Kolar**, *Analysis of Theoretical Limits of Forced-Air Cooling Using Advanced Composite Materials With High Thermal Conductivities*, IEEE Transactions on Components, Packaging, and Manufacturing Technology, Vol. 1, No. 4, pp. 528-535, April 2011.
- **M. Hartmann, H. Ertl, J. W. Kolar**, *EMI Filter Design for a 1 MHz, 10 kW Three-Phase/Level PWM Rectifier*, IEEE Transactions on Power Electronics, Vol. 26, No. 4, pp. 1192-1204, April 2011.
- **T. Nussbaumer, P. Karutz, F. Zürcher, J. W. Kolar**, *Magnetically Levitated Slice Motors - An Overview*, IEEE Transactions on Industry Applications, Vol. 47, No. 2, pp. 754-766, March/April 2011.
- **G. Gong, D. Hassler, J. W. Kolar**, *A Comparative Study of Multicell Amplifiers for AC-Power-Source Applications*, IEEE Transactions on Power Electronics, Vol. 26, No. 11, January 2011.
- **J. Biela, D. Hassler, J. Schönberger, J. W. Kolar**, *Closed-Loop Sinusoidal Input-Current Shaping of 12-Pulse Autotransformer Rectifier Unit With Impressed Output Voltage*, IEEE Transactions on Power Electronics, Vol. 26, No. 1, pp. 249-259, January 2011.
- **D. Krähenbühl, C. Zwyssig, H. Weser, J. W. Kolar**, *A Miniature 500 000-r/min Electrically Driven Turbocompressor*, IEEE Transactions on Industry Applications, Vol. 46, No. 6, pp. 2459-2466, November/December 2010.
- **G. Ortiz, D. Bortis, J. Biela, J. W. Kolar**, *Optimal Design of a 3.5-kV/11-kW DC-DC Converter for Charging Capacitor Banks of Power Modulators*, IEEE Transactions on Plasma Science, Vol. 38, No. 10, pp. 2565-2573, October 2010.
- **D. Bortis, J. Biela, J. W. Kolar**, *Transient Behaviour of Solid-State Modulators with Matrix Transformers*, IEEE Transactions on Plasma Science, Vol. 38, No. 10, pp. 2785-2792, October 2010.
- **D. Bortis, J. Biela, J. W. Kolar**, *Optimal Design of a Two-Winding Inductor Bouncer Circuit*, IEEE Transactions on Plasma Science, Vol. 38, No. 10, pp. 2716-2724, October 2010.
- **F. Giezendanner, J. Biela, J. W. Kolar, S. Zudrell-Koch**, *EMI Noise Prediction for Electronic Ballasts*, IEEE Transactions on Power Electronics, Vol. 25, No. 8, pp. 2133-2141, August 2010.
- **D. Cucak P. Pejovic J. W. Kolar**, *Experimental Analysis of the Line-Side Interphase Transformer Magnetizing Currents in Three-Phase Output Voltage Type Rectifiers*, Electronics Journal, Vol. 14, Issue 1, pp. 30-35, June 2010.
- **M. L. Heldwein, H. Ertl, J. Biela, J. W. Kolar**, *Implementation of a Transformerless Common-Mode Active Filter for Offline Converter Systems*, IEEE Transactions on Industrial Electronics, Vol. 57, No. 5, pp. 1772-1786, May 2010.
- **M. L. Heldwein, H. Ertl, J. Biela, J. W. Kolar**, *Implementation of a Transformer-Less Common Mode Active Filter for Off-Line Converter Systems*, IEEE Transaction on Industrial Electronics, Vol. 57, No. 5, pp. 1772-1786, May 2010.

- **M. Bartholet, T. Nussbaumer, D. Krähenbühl, F. Zürcher, J. W. Kolar**, *Modulation Concepts for the Control of a Two-Phase Bearingless Slice Motor Utilizing Three-Phase Power Modules*, IEEE Transactions on Industry Applications, Vol. 46, No. 2, pp. 831-840, March/April 2010.
- **P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Acceleration-Performance Optimization for Motors With Large Air Gaps*, IEEE Transactions on Industrial Electronics, Vol. 57, No. 1, pp. 52-60, April 2010.
- **C. Zhao, S. D. Round, J. W. Kolar**, *Full-order averaging modelling of zero-voltage-switching phase-shift bidirectional DC-DC converters*, IET Power Electronics, Vol. 3, Iss. 3, pp. 400-410, 2010.
- **M. L. Heldwein, T. Nussbaumer, J. W. Kolar**, *Common Mode Modelling and Filter Design for a Three-Phase Buck-Type Pulse Width Modulated Rectifier System*, IET Power Electronics, Vol. 3, No. 2, pp. 209-218, March 2010.
- **K. Raggl, T. Nussbaumer, J. W. Kolar**, *Guideline for a Simplified Differential-Mode EMI Filter Design*, IEEE Transactions on Industrial Electronics, Vol. 57, No. 3, pp. 1031-1040, March 2010.
- **F. Krismer, J. W. Kolar**, *Accurate Power Loss Model Derivation of a High-Current Dual Active Bridge Converter for an Automotive Application*, IEEE Transactions on Industrial Electronics, Vol. 57, No. 3, pp. 881-891, March 2010.
- **T. Schneeberger, T. Nussbaumer, J. W. Kolar**, *Magnetically Levitated Homopolar Hollow-Shaft Motor*, IEEE/ASME Transactions on Mechatronics, Vol. 15, No. 1, pp. 97-107, February 2010.
- **F. Krismer, J. W. Kolar**, *Accurate Small-Signal Model for the Digital Control of an Automotive Bidirectional Dual Active Bridge*, IEEE Transactions on Power Electronics, Vol. 24, No. 12, pp. 2756-2768, December 2009.
- **M. Hartmann, S. Round, H. Ertl, J. W. Kolar**, *Digital Current Controller for a 1 MHz, 10 kW Three-Phase VIENNA Rectifier*, IEEE Transactions on Power Electronics, Vol. 24, No. 11, pp. 2496-2508, November 2009.
- **C. Zwyssig, S. Round, J. W. Kolar**, *Megaspeed Drive Systems: Pushing Beyond 1 Million r/min*, IEEE/ASME Transactions on Mechatronics, Vol. 14, No. 5, pp. 564-574, October 2009.
- **F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Design and Development of a 26-Pole and 24-Slot Bearingless Motor*, IEEE Transactions on Magnetics Vol. 45, No. 10, pp. 4594-4597, October 2009.
- **T. Friedli, S. Round, D. Hassler, J. W. Kolar**, *Design and Performance of a 200-kHz All-SiC JFET Current DC-Link Back-to-Back Converter*, IEEE Transactions on Industry Applications Vol. 45, No. 5, pp. 1868-1878, September/October 2009.
- **M. Bartholet, T. Nussbaumer, S. Silber, J. W. Kolar**, *Comparative Evaluation of Polyphase Bearingless Slice Motors for Fluid-Handling Applications*, IEEE Transactions on Industry Applications, Vol. 45, No. 5, pp. 1821-1830, September/October 2009.
- **M. L. Heldwein, J. Biela, H. Ertl, T. Nussbaumer, J. W. Kolar**, *Novel Three-Phase CM/DM Conducted Emissions Separator*, IEEE Transactions on Industrial Electronics, Vol. 56, No. 9, pp. 3696-3703, September 2009 .
- **D. Krähenbühl, C. Zwyssig, H. Weser, J. W. Kolar**, *Theoretical and Experimental Results of a Mesoscale Electric Power Generation System from Pressurized Gas Flow*, Journal of Micromechanics and Microengineering, Vol. 19, No. 9, pp. 094009, August 2009 .
- **D. Bortis, J. Biela, J. W. Kolar**, *Design and Control of an Active Reset Circuit for Pulse Transformers*, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 16, No. 4, pp. 940-947, August 2009.
- **D. Bortis, J. Biela, J. W. Kolar**, *Double-Stage Gate Drive Circuit for Parallel Connected IGBT Modules*, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 16, No. 4, pp. 1020-1027, August 2009.
- **J. Biela, C. Marxgut, D. Bortis, J. W. Kolar**, *Solid State Modulator for Plasma Channel Drilling*, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 16, No. 3, pp. 1093-1098, August 2009.
- **F. Zürcher, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Comparison of 2- and 3-Phase Bearingless Slice Motor Concepts*, Journal of System Design and Dynamics, Vol. 3, No. 3, July 2009 .
- **J. Luomi, C. Zwyssig, A. Looser, J. W. Kolar**, *Efficiency Optimization of a 100-W 500000-r/min Permanent-Magnet Machine Including Air-Friction Losses*, IEEE Transactions on Industry Applications, Vol. 45, No. 4, pp. 1368-1377, July/August 2009.
- **T. Nussbaumer, K. Raggl, J. W. Kolar**, *Design Guidelines for Interleaved Single-Phase Boost PFC Circuits*, IEEE Transactions on Industrial Electronics, Vol. 56, No. 7, pp. 2559-2573, July 2009.
- **M. Hartmann, J. Miniböck, J. W. Kolar**, *Switching Transient Shaping by Application of a Magnetically Coupled PCB Damping Layer*, Korean Journal of Power Electronics, Vol. 9, No. 2, pp. 308-319, July 2009.
- **K. Raggl, T. Nussbaumer, R. Doerig, J. Biela, J. W. Kolar**, *Comprehensive Design and Optimization of a High Power Density Single-Phase Boost PFC*, IEEE Transactions on Industrial Electronics, Vol. 56, No. 7, pp. 2574-2587, July 2009.
- **J. Biela, U. Badstübner, J. W. Kolar**, *Design of a 5kW, 1U, 10kW/ltr. Resonant DC-DC Converter for Telecom Applications*, IEEE Transactions on Power Electronics, Vol. 24, No. 7, pp. 1701-1710, July 2009.
- **M. Hartmann, J. Biela, H. Ertl, J. W. Kolar**, *Wideband Current Transducer for Measuring AC Signals With Limited DC Offset*, IEEE Transactions on Power Electronics, Vol. 24, No. 7, pp. 1776-1787, July 2009.
- **S. Waffler, J. W. Kolar**, *A Novel Low-Loss Modulation Strategy for High-Power Bi-directional Buck+Boost Converters*, IEEE Transactions on Power Electronics, Vol. 24, No. 6, pp. 1589-1599, June 2009 .
- **P. Correa, J. Rodriguez, M. Rivera, J. Espinoza, J. W. Kolar**, *Predictive Control of an Indirect Matrix Converter*, IEEE Transactions on Industrial Electronics, Vol. 56, No. 6, June 2009.
- **K. Raggl, B. Warberger, T. Nussbaumer, S. Burger, J. W. Kolar**, *Robust Angle-Sensorless Control of a PMSM Bearingless Pump*, IEEE Transactions on Industrial Electronics, Vol. 56, No. 6, pp. 2076-2085, June 2009.
- **J. Biela, A. Wirthmüller, R. Waespe, M. L. Heldwein, K. Raggl, J. W. Kolar**, *Passive and Active Integrated Hybrid Filters*, IEEE Transactions on Power Electronics, Vol. 24, No. 5, pp. 1340-1349, May 2009.
- **A. Müsing, J. Ekman, J. W. Kolar**, *Efficient Calculation of Non-Orthogonal Partial Elements for the PEEC Method*, IEEE Transactions on Magnetics, Vol. 45, No. 3, pp. 1140-1143, March 2009.

- **T. Friedli, S. D. Round, J. W. Kolar**, *Modeling the Space Elevator - A Project Oriented Approach for Teaching Experimental Power Electronics*, EPE Journal, Vol. 19, No. 1, March 2009.
- **K. Raggl, T. Nussbaumer, J. W. Kolar**, *Comparison of Separated and Combined Winding Concepts for Bearingless Centrifugal Pumps*, IEEE Transactions on Power Electronics, Vol. 9, No. 2, pp. 243-258, February 2009.
- **J. Biela, U. Badstübner, J. W. Kolar**, *Impact of Power Density Maximization on Efficiency of DC-DC Converter Systems*, IEEE Transactions on Power Electronics, Vol. 24, No. 1, pp. 288-300, January 2009.
- **J. Biela, U. Drofenik, F. Krenn, J. Miniböck, J. W. Kolar**, *Three-Phase Y-Rectifier Cyclic 2 out of 3 DC Output Voltage Balancing Control Method*, IEEE Transactions on Power Electronics, Vol. 24, No. 1, pp. 34-44, January 2009.
- **J. Biela, D. Aggeler, S. Inoue, H. Akagi, J. W. Kolar**, *Bi-Directional Isolated DC-DC Converter for Next-Generation Power Distribution — Comparison of Converters Using Si and SiC Devices*, IEEE Transactions on Industry Applications, Vol. 128, No. 7, pp. 901-909, December 2008.
- **P. Karutz, T. Nussbaumer, W. Gruber, J. W. Kolar**, *Novel Magnetically Levitated Two-Level Motor*, Transactions on Mechatronics IEEE/ASME, Vol. 13, No. 6, pp. 658-668, December 2008.
- **H. Plesko, J. Biela, J. Luomi, J. W. Kolar**, *Novel Concepts for Integrating the Electric Drive and Auxiliary DC-DC Converter for Hybrid Vehicles*, IEEE Transactions on Power Electronics, Vol. 23, No. 6, pp. 3025-3034, November 2008.
- **D. Bortis, S. Waffler, J. Biela, J. W. Kolar**, *25-kW Three-Phase Unity Power Factor Buck-Boost Rectifier With Wide Input and Output Range for Pulse Load Applications*, IEEE Transactions on Plasma Science, Vol. 36, No. 5, Part 3, pp. 2747-2752, October 2008.
- **D. Bortis, J. Biela, J. W. Kolar**, *Active Gate Control for Current Balancing of Parallel-Connected IGBT Modules in Solid-State Modulators*, IEEE Transactions on Plasma Science, Vol. 36, No. 5, Part 3, pp. 2632-2637, October 2008.
- **H. Ertl, T. Wiesinger, J. W. Kolar**, *Active Voltage Balancing of DC-Link Electrolytic Capacitors*, IET Power Electronics, Vol. 1, No. 4, pp. 488-496, 2008.
- **J. Biela, D. Bortis, J. W. Kolar**, *Reset Circuits With Energy Recovery for Solid-State Modulators*, IEEE Transactions on Plasma Science, Vol. 36, No. 5, Part 3, pp. 2626-2631, October 2008.
- **C. Zhao, S. D. Round, J. W. Kolar**, *An Isolated Three-Port Bidirectional DC-DC Converter With Decoupled Power Flow Management*, IEEE Transactions on Power Electronics, Vol. 23, No. 5, pp. 2443-2453, September 2008.
- **L. Dalessandro, S. Round, J. W. Kolar**, *Center-Point Voltage Balancing of Hysteresis Current Controlled Three-Level PWM Rectifiers*, IEEE Transactions on Power Electronics, Vol. 23, No. 5, pp. 2477-2488, September 2008.
- **D. Bortis, S. Waffler, J. Biela, J. W. Kolar**, *25kW 3-Phase Unity Power Factor Buck Boost Rectifier with Wide Input and Output Range for Pulse Load Applications*, IEEE Transactions on Plasma Science, Vol. 36, No. 5, pp. 2747-2752, October 2008.
- **P. Pejovic, J. W. Kolar**, *Exact Analysis of Three-Phase Rectifiers With Constant Voltage Loads*, IEEE Transactions on Circuits and Systems II: Express Briefs, Vol. 55, No. 8, pp. 743-747, August 2008.
- **M. L. Heldwein, J. W. Kolar**, *Winding Capacitance Cancellation for Three-Phase EMC Input Filters*, IEEE Transactions on Power Electronics, Vol. 23, No. 4, pp. 2062-2074, July 2008.
- **J. W. Kolar, U. Drofenik, J. Biela, M. L. Heldwein, H. Ertl, T. Friedli, S. D. Round**, *PWM Converter Power Density Barriers*, IEEE Transactions on Industry Applications, Vol. 128, No. 4, pp. 468-480, 2008.
- **S. D. Round, P. Karutz, M. L. Heldwein, J. W. Kolar**, *Towards a 30 kW/liter, Three-Phase Unity Power Factor Rectifier*, IEEE Transaction on Industry Applications, Vol. 128, No. 4, pp. 481-490, 2008.
- **T. Nussbaumer, G. Gong, M. L. Heldwein, J. W. Kolar**, *Modeling and Robust Control of a Three-Phase Buck+Boost PWM Rectifier (VRX-4)*, IEEE Transaction on Industry Applications, Vol. 44, No. 2, pp. 650-662, March/April 2008.
- **J. Biela, J. W. Kolar**, *Cooling Concepts for High Power Density Magnetic Devices*, IEEE Transactions on Industry Applications (Section D), Vol. 128-D, No. 4, 2008.
- **L. Dalessandro, S. D. Round, U. Drofenik, J. W. Kolar**, *Discontinuous Space-Vector Modulation for Three-Level PWM Rectifiers*, IEEE Transactions on Power Electronics, Vol. 23, No. 2, pp. 530-542, March 2008.
- **C. Zwyssig, S. D. Round, J. W. Kolar**, *An Ultra-High-Speed, Low Power Electrical Drive System*, IEEE Transactions on Industrial Electronics, Vol. 55, No. 2, February 2008.
- **G. Gong, H. Ertl, J. W. Kolar**, *Novel Tracking Power Supply for Linear Power Amplifiers*, IEEE Transactions on Industrial Electronics, Vol. 55, No. 2, pp. 684-698, February 2008.
- **J. Biela, J. W. Kolar**, *Using Transformer Parasitics for Resonant Converters—A Review of the Calculation of the Stray Capacitance of Transformers*, IEEE Transactions on Industry Applications, Vol. 44, No. 1, pp. 223-233, January/February 2008.
- **T. Nussbaumer, M. L. Heldwein, G. Gong, S. D. Round, J. W. Kolar**, *Comparison of Prediction Techniques to Compensate Time Delays Caused by Digital Control of a Three-Phase Buck-Type PWM Rectifier System*, IEEE Transactions on Industrial Electronics, Vol. 55, No. 2, pp. 791-799, February 2008.
- **M. Baumann, J. W. Kolar**, *Parallel Connection of Two Three-Phase Three-Switch Buck-Type Unity-Power-Factor Rectifier Systems With DC-Link Current Balancing*, IEEE Transactions on Industrial Electronics, Vol. 54, No. 6, pp. 3042-3053, December 2007.
- **U. Drofenik, D. Cottet, A. Müsing, J. W. Kolar**, *Design Tools for Power Electronics: Trends and Innovations*, Ingenieurs de l'automobile, No. 791, pp. 55-62, December 2007.
- **T. Nussbaumer, J. W. Kolar**, *Comparison of 3-Phase Wide Output Voltage Range PWM Rectifiers*, IEEE Transactions on Industrial Electronics, Letters to the Editor, Vol. 54, No. 6, pp. 3422-3425, December 2007.
- **L. Serpa, S. Ponnaluri, P. M. Barbosa, J. W. Kolar**, *A Modified Direct Power Control Strategy Allowing the Connection of Three-Phase Inverters to the Grid Through LCL Filters*, IEEE Transactions on Industry Applications, Vol. 43, No. 5, pp. 1388-1400, September/October 2007.
- **L. A. Serpa, S. D. Round, J. W. Kolar**, *A Virtual-Flux Decoupling Hysteresis Current Controller for Mains Connected Inverter Systems*, IEEE Transactions on Power Electronics, Vol. 22, No. 5, pp. 1766-1777, September 2007.

- **R. Greul, S. D. Round, J. W. Kolar**, *Analysis and Control of a Three-Phase, Unity Power Factor Y Rectifier*, IEEE Transactions on Power Electronics, Vol. 22, No. 5, pp. 1900-1911, September 2007.
- **J. W. Kolar, F. Schafmeister, S. D. Round, H. Ertl**, *Novel Three-Phase AC-AC Sparse Matrix Converters*, IEEE Transactions on Power Electronics, Vol. 22, No. 5, pp. 1649-1661, September 2007.
- **L. Dalessandro, F. Cavalcante, J. W. Kolar**, *Self-Capacitance of High-Voltage Transformers*, IEEE Transactions on Power Electronics, Vol. 22, No. 5, pp. 2081-2092, September 2007.
- **L. Dalessandro, N. Karrer, J. W. Kolar**, *High-Performance Planar Isolated Current Sensor for Power Electronics Applications*, IEEE Transactions on Power Electronics, Vol. 22, No. 5, September 2007.
- **J. Biela, D. Bortis, J. W. Kolar**, *Modeling of Pulse Transformers with Parallel- and Non-Parallel-Plate Windings for Power Modulators*, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 14, No. 4, pp. 1016-1024, 2007 .
- **J. Biela, D. Bortis, J.W. Kolar**, *Active Reset Circuit with Energy Recovery for Solid State Modulators*, Records of the 34th International Pulsed Power Plasma Science Conference (PPPS 2007).
- **T. Nussbaumer, M. Baumann, J. W. Kolar**, *Comprehensive Design of a Three-Phase Three-Switch Buck-Type PWM Rectifier*, IEEE Transactions on Power Electronics, Vol. 22, No. 2, pp. 551-562, March 2007.
- **M. Kasuaki, Y. Nishida, J. W. Kolar**, *Novel Hybrid 12-Pulse Line-Interphase-Transformer Boost-Type Rectifier with Controlled Output Voltage and Sinusoidal Utility Currents*, IEEE Transactions on Industry Applications, Vol. 127, No. 4, pp. 382-390, 2007.
- **R. Greul, S. D. Round, J. W. Kolar**, *The Delta-Rectifier: Analysis, Control and Operation*, IEEE Transactions on Power Electronics, Vol. 21, No. 6, pp. 1637-1648, November 2006.
- **T. Nussbaumer, M. L. Heldwein, J. W. Kolar**, *Differential Mode Input Filter Design for a Three-Phase Buck-Type PWM Rectifier Based on Modeling of the EMC Test Receiver*, IEEE Transactions on Industrial Electronics, Vol. 53, No. 5, pp. 1649-1661, October 2006.
- **C. Zwyssig, J. W. Kolar**, *Design Considerations and Experimental Results of a 100 W, 500 000 rpm Electrical Generator*, Journal of Micromechanics and Microengineering. No. 9, pp. 297-302, September 2006.
- **T. Nussbaumer, J. W. Kolar**, *Improving Mains Current Quality for Three-Phase Three-Switch Buck-Type PWM Rectifiers*, IEEE Transactions on Power Electronics, Vol. 21, No. 4, pp. 967-973, July 2006 .
- **U. Drogenik, J. W. Kolar**, *A Thermal Model of a Forced-Cooled Heat Sink for Transient Temperature Calculations Employing a Circuit Simulator*, IEEJ Transactions of the Institute of Electrical Engineers of Japan, Vol. 126-D, No. 7, pp. 841-851, July 2006 .
- **J. Biela, J. W. Kolar**, *Analytic Model inclusive Transformer for Resonant Converters based on Extended Fundamental Frequency Analysis for Resonant Converter-Design and Optimization*, IEEJ Transactions of the Institute of Electrical Engineers of Japan, Vol. 126-D, No. 5, pp. 568-577, May 2006 .
- **S. Round, F. Schafmeister, M. L. Heldwein, E. Pereira, L. Serpa, J. W. Kolar**, *Comparison of Performance and Realization Effort of a Very Sparse Matrix Converter to a Voltage DC Link PWM Inverter with Active Front End*, IEEJ Transactions of the Institute of Electrical Engineers of Japan, Vol. 126-D, No. 5, pp. 578-588, May 2006 .
- **J. W. Kolar, S. D. Round**, *Analytical Calculation of the RMS Current Stress on the DC Link Capacitor of Voltage PWM Converter Systems*, IEE Proceedings Electric Power Applications, Vol. 153, No. 4, pp. 535-543, July 2006 .
- **L. Dalessandro, W. G. Odendaal, J. W. Kolar**, *HF Characterization and Non-Linear Modeling of a Gapped Toroidal Magnetic Structure*, IEEE Transactions on Power Electronics, Vol. 21, No. 5, pp. 1167-1175, September 2006.
- **J. Biela, J. W. Kolar** , *Analytic Design Method for (Integrated-) Transformers of Resonant Converters using Extended Fundamental Frequency Analysis*, IEEJ Transactions of Institute of Electrical Engineers of Japan, Vol. 126, No. 5, 2006.
- **J. W. Kolar, J. Miniböck, T. Nussbaumer**, *Three-Phase PWM Power Conversion - The Route to Ultra High Power Density and Efficiency*, Power Electronics (Xian Power Electronics - Research Institute/MMI - Power Electronics Society/CES), Vol. 39, No. 6, pp. 2-9, December 2005.
- **A. Vezzini, J. W. Kolar, J. Goette**, *Massen in Bewegung setzen*, Bulletin SEV/VSE 05/15, pp. 18-24, July 2005.
- **M. Kasuaki, G. Gong, J. W. Kolar**, *Novel Hybrid 12-Pulse Boost-Type Rectifier with Controlled Output Voltage*, IEEE Transactions on Aerospace and Electronic Systems, Vol. 41, No. 3, pp. 1008-1018, July 2005.
- **G. Gong, M. L. Heldwein, U. Drogenik, K. Mino, J. W. Kolar**, *Comparative Evaluation of Three-Phase High-Power-Factor AC-DC Converter Concepts for Application in Future More Electric Aircraft*, IEEE Transactions on Industrial Electronics, Vol. 52, No. 3, pp. 727-737, June 2005.
- **U. Drogenik, G. Laimer, J. W. Kolar**, *Pump Characteristic Based Optimization of a Direct Water Cooling System for a 10kW/500kHz Vienna Rectifier*, IEEE Transactions on Power Electronics, Vol. 20, No. 3, pp. 704-714, May 2005.
- **M. Baumann, J. W. Kolar**, *A Novel Control Concept for Reliable Operation of a Three-Phase Three-Switch Buck-Type Unity Power Factor Rectifier with Integrated Boost Output Stage under Heavily Unbalanced Mains Condition*, IEEE Transactions on Industrial Electronics, Vol. 52, No. 2, pp. 399-409, April 2005.
- **H. Ertl, J. W. Kolar, F. C. Zach**, *A Constant Output Current Three-Phase Diode Bridge Employing a Novel "Electronic Smoothing Inductor"*, IEEE Transactions on Industrial Electronics, Vol. 52, No. 2, pp. 454-461, April 2005 .
- **J. Miniböck, F. Stögerer, J. W. Kolar**, *A Novel Concept for Mains Voltage Proportional Input Current Shaping of a VIENNA Rectifier Eliminating Controller Multipliers*, IEEE Transactions on Industrial Electronics, Vol. 52, No. 1, pp. 162-170, February 2005.
- **P. Bauer, J. W. Kolar**, *Teaching Power Electronics in the 21st Century*, EPE Journal, Vol. 13, No. 4, pp. 43-50, November 2003.
- **F. Schafmeister, M. Baumann, J. W. Kolar**, *Analytically Closed Calculation of the Conduction Losses of Three-Phase AC-AC Sparse Matrix Converters*, EPE Journal, Vol. 13, No. 1, pp. 5-14, February 2003.
- **U. Drogenik, J. W. Kolar**, *A Novel Interactive Power Electronics Seminar (iPES) Developed at the Swiss Federal Institute of Technology (ETH) Zurich*, Journal of

Power Electronics (The Korean Institute of Power Electronics), Vol. 2, No. 4, pp. 250-257, October 2002.

- **H. Ertl, J. W. Kolar, F. C. Zach**, *A Novel Multicell DC-AC Converter for Applications in Renewable Energy Systems*, IEEE Transactions on Industrial Electronics, Vol. 49, No. 5, pp. 1048-1053, 2002.
- **H. Ertl, J. W. Kolar, F. C. Zach**, *Analysis of a Multilevel Multicell Switch-Mode Power Amplifier Employing the 'Flying-Battery' Concept*, IEEE Transactions on Industrial Electronics, Vol. 49, No. 4, pp. 816-823, 2002.

Patents

- **J. Schäfer, D. Bortis, J. W. Kolar**, *Konverter zum Steuern von Leistungsflüssen zwischen Gleichstromquellen*, 19.04.2017.
- **J.W. Kolar, D. Neumayr, et al.**, *Power Converter Circuit with a Main Converter and an Auxiliary Converter*, 24.03.2017.
- **J.W. Kolar, J. E. Huber, F. Krismer, D. Neumayr, P. Papamanolis**, *Wechselrichter*, 22.03.2017.
- **L. Schrittwieser, M. Leibl, M. Haider, F. Thöny, J. W. Kolar**, *Magnetische Drossel, Umrichterabschnitt und Umrichter*, 15.03.2017.
- **J. Miniböck, J. W. Kolar**, *Netzrückwirkungsarmes Dreiphasen-Pulsleichrichtersystem mit Hoch- und Tiefsetzstellerfunktion und gleichtaktfreier Ausgangsspannung*, 05.01.2017.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Speed detection apparatus*, 09.12.2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Speed detection apparatus*, 09.12.2016.
- **M. Kasper, J. W. Kolar, et al.**, *Switching Frequency Modulation in a Switched Mode Power Supply*, 14.10.2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Control Apparatus*, 16.09.2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating Electrical Machine and Non-Contact Generator*, 12.09.2016.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating Electrical Machine and Non-Contact Generator*, 20.07.2016.
- **J. W. Kolar, D. Neumayr, D. Bortis, M. Guacci, M. Leibl, et al.**, *Power Converter Including an Autotransformer and Power Conversion Method*, 24.06.2016.
- **M. Kasper, J. W. Kolar**, *Power Converter with a Snubber Circuit*, 22.02.2016.
- **J. W. Kolar, J. Huber**, *Konverter zur potentialgetrennten Übertragung elektrischer Energie*, 12.01.2016.
- **M. Mauerer, J. W. Kolar**, *Schaltungsanordnung zur Ansteuerung von Leistungstransistoren eines Umrichters*, 19.11.2015.
- **J. W. Kolar, D. Bortis, O. Knecht, F. Krismer, D. Neumayr**, *Inverter zum Austausch elektrischer Energie zwischen einem DC-System und einem AC-System*, 24.09.2015.
- **D. Bortis, O. Knecht, J. W. Kolar**, *Vorrichtung zur pulsdauerunabhängigen sicheren Ansteuerung von Leistungstransistoren*, 28.08.2015.
- **J. W. Kolar, D. Bortis, A. Tüysüz, M. Kaufmann, D. Neumayr**, *Steuerverfahren zur Minimierung der EM-Störaussendung und Verluste mehrphasiger AC/DC-Konverter mit TCM-Betrieb der Brückenzeile*, 27.08.2015.
- **D. Bortis, J. W. Kolar, F. Krismer, Y. Lobsiger, D. Neumayr**, *Verfahren und Vorrichtung zur Steuerung eines Einphasen DC/AC-Konverters*, 06.08.2015.
- **J. W. Kolar, P. Cortes, F. Vancu**, *Elektronischer Leistungswandler*, 11.06.2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Non-contact generator*, 10.06.2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating electrical machine*, 10.06.2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating electrical machine and non-contact generator (1)*, 10.06.2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating electrical machine and non-contact generator (2)*, 10.06.2015.
- **M. Flankl, A. Tüysüz, J. W. Kolar, et al.**, *Rotating electrical machine and non-contact generator (3)*, 10.06.2015.
- **J. W. Kolar, M. Kasper, et al.**, *Multi-Cell Power Conversion Method with Failure Detection and Multi-Cell Power Converter*, 04.03.2015.
- **D. Bortis, J. W. Kolar**, *Regelverfahren und -vorrichtung zur aktiven Kompensation von netz- oder lastbedingten Schwankungen des Leistungsflusses eines leistungselektronischen Konvertersystems*, 04.02.2015.
- **D. Bortis, J. W. Kolar**, *DC/DC Konverter und Verfahren zur Steuerung eines weich schaltenden bidirektionalen DC/DC Konverters*, 29.01.2015.
- **J. W. Kolar, M. Kasper, et al.**, *Multi-Cell Power Conversion Method and Multi-Cell Power Converter (1)*, 08.09.2014.
- **J. W. Kolar, M. Kasper, et al.**, *Multi-Cell Power Conversion Method and Multi-Cell Power Converter (2)*, 08.09.2014.
- **J. W. Kolar, M. Kasper, et al.**, *Multi-Cell Power Conversion Method and Multi-Cell Power Converter (3)*, 08.09.2014.
- **J. W. Kolar, M. Kasper, et al.**, *Multi-Cell Power Conversion Method and Multi-Cell Power Converter (4)*, 08.09.2014.
- **R. Bosshard, J. W. Kolar, et al.**, *Inductive Power Transfer System and Method for Operating an Inductive Power Transfer System*, 31.03.2014.
- **J. W. Kolar, F. Krismer**, *Verfahren zur Regelung eines Gleichrichters*, 25.03.2014.
- **J. W. Kolar, P. Cortes**, *Elektronischer Leistungswandler*, 09.09.2013.
- **J. W. Kolar, P. Cortes, J. Huber**, *Verfahren zur Regelung einer Sternpunktspannung eines elektronischen Leistungswandlers*, 09.09.2013.
- **D. O. Boillat, J. W. Kolar**, *Vorrichtung und Verfahren zur galvanischen Trennung und Spannungssymmetrierung in einem bidirektionalen DC-DC Wandler mit hochfrequentem AC-AC Übertrager*, 28.08.2013.
- **Y. Lobsiger, J. W. Kolar, et al.**, *Active Gate Drive Circuit (2)*, 20.06.2013.
- **J. W. Kolar, P. Cortes**, *Method for Operating an Electronic Power Converter*, 14.06.2013.
- **J. W. Kolar, P. Cortes, D. O. Boillat**, *A Multiphase AC Power Converter and Method for Controlling a Multiphase AC Power Converter*, 12.06.2013.
- **G. Ortiz, J. W. Kolar**, *Method for Operating a Converter Bridge*, 12.06.2013.
- **J. W. Kolar, P. Cortes**, *Elektronischer Leistungswandler und Verfahren zu dessen Ansteuerung*, 07.05.2013.
- **J. Everts, J. W. Kolar**, *Elektrischer Leistungswandler zur DC/DC-Wandlung mit dualen aktiven Brücken*, 04.02.2013.

- **D. Bortis, M. Kasper, J. W. Kolar**, *Vorrichtung zur Gleichspannungswandlung für hohe Übersetzungsverhältnisse*, 15.01.2013.
- **G. Ortiz, L. Fässler, J. W. Kolar**, *Messverfahren und Messvorrichtung zur Induktivitätsmessung bei der Messung einer Magnetischen Flussdichte (1)*, 13.11.2012.
- **G. Ortiz, L. Fässler, J. W. Kolar**, *Messverfahren und Messvorrichtung zur Induktivitätsmessung bei der Messung einer Magnetischen Flussdichte (2)*, 13.11.2012.
- **J. W. Kolar, B. Wrzecionko, L. Steinmann, H. Ertl et al.**, *A Method for Measurement of Electric Current*, 30.03.2012.
- **Y. Lobsiger, J. W. Kolar, et al.**, *Active Gate Drive Circuit (1)*, 13.01.2012.
- **D. Bortis, J. W. Kolar**, *Vorrichtung zur transformatorischen Energieübertragung auf eine rotierende Welle*, 01.12.2011.
- **T. Soeiro, J. W. Kolar, et al.**, *Method for Determination of a Control Scheme for a NPC VSC, in particular as in Active Power Filter*, 27.11.2011.
- **J. W. Kolar, G. Ortiz, F. Krismer**, *Electrical Converter and Method for its Operation*, 16.11.2011.
- **T. Soeiro, J. W. Kolar, et al.**, *Hybrid Rectifier and Method for Operating such Hybrid Rectifier*, 04.11.2011.
- **T. Soeiro, J. W. Kolar, et al.**, *Voltage Source Converter (VSC) with Neutral-Point-Clamped (NPC) Topology and Method for Operating such Voltage Source Converter*, 04.11.2011.
- **T. Soeiro, J. W. Kolar, et al.**, *Method and Device for Determining a Control Scheme for an Active Power Filter*, 27.05.2011.
- **D. O. Boillat, T. Friedli, J. W. Kolar, et al.**, *Verfahren und Vorrichtung zur Beeinflussung elektrischer Schaltungen, insbesondere zur Einstellung der Güte schwingfähiger elektrischer Systeme*, 21.04.2011.
- **T. Friedli, J. W. Kolar, T. Soeiro**, *Modularer bidirektionaler AC/AC-Konverter ohne Energiezwischenspeicher*, 04.03.2011.
- **J. W. Kolar, M. Hartmann, T. Friedli**, *Hybrider Dreiphasiger AC/DC-Konverter und Verfahren zu dessen Steuerung*, 21.02.2011.
- **U. Badstübner, J. W. Kolar, J. Miniböck**, *Verfahren zur Begrenzung von Überspannungen an den Ausgangs-Dioden eines potentialgetrennten DC/DC-Konverters*, 11.02.2011.
- **J. W. Kolar, J. Mühlethaler, G. Ortiz**, *Vorrichtung zur Messung der Flussdichte im Magnetkreis von Mittelfrequenz-Hochleistungstransformatoren*, 23.12.2010.
- **Y. Lobsiger, D. Bortis, J. W. Kolar, et al.**, *Gate driver Unit for Electrical Switching Device*, 22.10.2010.
- **J. W. Kolar, J. Biela**, *Bridgeless Flyback PFC Rectifier mit hohem Wirkungsgrad*, 16.07.2010.
- **J. W. Kolar, T. Soeiro, J. Biela, et al.**, *Method to Minimize Input Current Harmonics such as ESP Power Systems*, 18.06.2010.
- **D. Aggeler, J. Biela, J. W. Kolar**, *Schalteinrichtung mit JFET-Serienschaltung*, 04.04.2010.
- **J. W. Kolar, J. Biela, D. Hassler**, *Bidirektionaler, verlustarm schaltender Konverter*, 01.04.2010.
- **J. W. Kolar, J. Miniböck, J. Biela, C. Marxgut**, *Bidirektionaler, verlustarm schaltender AC-DC-Konverter*, 17.09.2009.
- **J. Biela, C. Marxgut, J. W. Kolar**, *Träger für eine elektronische Schaltung*, 11.09.2009.
- **J. Biela, F. Giezendanner, J. W. Kolar**, *Operating Device for e.g. LED, of Lighting System for Lighting e.g. Rooms, Has Power Factor Correction Circuit Comprising Storage Throttle that Comprises Secondary Winding, where Winding Is Switched in Series with Coupling Capacitor*, 24.04.2009.
- **J. Biela, J. W. Kolar, D. Aggeler**, *Verfahren zur Steuerung des du/dt Verhaltens einer MOSFET / JFET Kaskode*, 27.03.2009.
- **J. Biela, J. W. Kolar, D. Aggeler**, *JFET-Serienschaltung*, 05.02.2009.
- **S. Waffler, J. W. Kolar**, *Ansteuerschaltung für leistungselektronische Schalter*, 07.11.2008.
- **J. W. Kolar, J. Schönberger, J. Biela**, *Vorrichtung zur Eingangsstromregelung hybrider Zwölfpuls-Gleichrichtersysteme*, 24.06.2008.
- **J. W. Kolar, J. Biela, F. Giezendanner**, *Betriebsgerät für Leuchtmittel*, 23.06.2008.
- **J. W. Kolar, J. Biela, F. Giezendanner**, *Control Input Driving Method for e.g. Zener Diode, Involves Galvanically Decoupling Input by Transformer, and Switching on and off of Input by Transformer Transmission of Bipolar Voltage Impulses from Control Unit as Clock Signal Source*, 23.06.2008.
- **J. Biela, D. Bortis, J. W. Kolar, C. Marxgut**, *Vorrichtung zur Bearbeitung von Gestein mit Hochenergieimpulsen*, 29.05.2008.
- **F. Schafmeister, J. W. Kolar**, *Unidirektionaler AC-AC Matrixkonverter mit Dreipunkt-Ein und -Ausgangsstufe*, 13.05.2008.
- **F. Schafmeister, J. W. Kolar**, *Verfahren zum spannungslosen Schalten der Pulswechselrichter-Ausgangsstufe eines indirekten Dreiphasen-AC-AC Matrixkonverters*, 13.05.2008.
- **J. W. Kolar, J. Biela, F. Giezendanner, et al.**, *Ballast for a Gas Discharge Lamp, for Example an HID Lamp*, WIPO05.11.2007.
- **D. Bortis, S. Waffler, J. Biela, J. W. Kolar**, *Verfahren zur Konstantstromspeisung von Pulsed Power Systemen bei hoher pulsfrequenter Schwankung der Eingangskondensatorspannung*, 22.06.2007.
- **D. Bortis, J. Biela, J. W. Kolar**, *Vorrichtung und Verfahren zur verlustarmen negativen Vormagnetisierung von Hochleistungs-Pulstransformatoren*, 21.06.2007.
- **J. Biela, F. Giezendanner, J. W. Kolar, et al.**, *Ballast for a Gas Discharge Lamp*, 02.04.2007.
- **J. W. Kolar**, *Vorrichtung zur Regelung der Phasenzwischenkreisspannungen einer Sternschaltung einphasiger Pulsleichrichtersysteme in Analogie zu Dreiphasen-Dreipunkt-Pulsleichrichtersystemen*, 24.11.2006.
- **T. Friedli, J. W. Kolar**, *Verfahren zur Dreipunktmodulation eines quasi-direkten Dreiphasen-AC/AC-Pulsumrichters*, 07.11.2006.
- **F. Krismer, J. W. Kolar**, *Verfahren zur schaltverlustminimalen Steuerung eines bidirektionalen nicht potentialgetrennten Gleichspannungswandlers mit überlappendem Ein- und Ausgangsspannungsbereich*, 06.11.2006.
- **H. Plesko, J. Biela, J. W. Kolar**, *Drehstromantriebssystem mit hochfrequent potentialgetrennter bidirektionaler Kopplung der Versorgungsspannungen*,

27.07.2006.

- **J. Biela, H. Plesko, J. W. Kolar**, *Drehstromantriebssystem mit motorintegriertem Hochfrequenztrafo zur bidirektionalen Kopplung der Versorgungsspannungen*, 27.07.2006.
- **H. Ertl, J. W. Kolar**, *Vorrichtung zur Bestimmung des Verlustwiderstandes von Elektrolytkondensatoren*, 09.05.2006.
- **J. Miniböck, J. W. Kolar**, *Vorrichtung zur Messung gleichanteilbehafteter Wechselströme mittels eines einfachen Wechselstromwandlers*, 28.02.2006.
- **J. W. Kolar**, *Vorrichtung zur Minimierung der Leitverluste integrierter Dreiphasen-Tief-Hochsetzsteller-Pulsleichrichtersysteme*, 20.02.2006.
- **J. W. Kolar**, *Regelung eines Tiefsetzsteller-gespeisten Dreipunkt-Hochsetzstellers mit frei vorgegebbarer Unsymmetrie der Ausgangsteilspannungen*, 18.01.2006.
- **J. W. Kolar, et al.**, *Aktive Erdung eines schwebenden Bezugssystems von beweglich gelagerten Teilen*, 12.01.2006.
- **L. Serpa, S. Round, J. W. Kolar**, *Virtual-Flux Decoupling Hysteresis Control for Mains Connected Inverter Systems*, 21.11.2005.
- **J. Biela, J. W. Kolar**, *Vorrichtung zur aktiven Unterdrückung leitungsgebundener Gleichtakt- und Gegentaktstöraussendung leistungselektronischer Konverter*, 14.09.2005.
- **J. W. Kolar, H. Ertl**, *Multizellen Hybrid-Leistungsverstärker zur Realisierung einer verlustarmen Testspannungsquelle geringen Innenwiderstandes und hoher Bandbreite*, 10.05.2005.
- **S. Round, J. W. Kolar**, *Vorrichtung zur Koordination der Taktung und Sicherstellung konstanter Schaltfrequenz der Brückenzeile von Drehstrom-Pulsleichrichtersystemen mit Toleranzbandregelung der Eingangsströme*, 04.03.2005.
- **Y. Nishida, J. W. Kolar, et al.**, *Hybride Zwölfpulsleichrichtung mit geregelter modulierter Ausgangsspannung und rein sinusförmiger Stromaufnahme*, 31.01.2005.
- **J. W. Kolar**, *Vorrichtung zur Entkopplung der Phasen-Toleranzbandregelungen dreiphasiger Dreipunkt-Pulsleichrichtersysteme bei voller Nutzung des linearen Aussteuerbereiches und aktiver Symmetrierung der Ausgangsteilspannungen*, 14.01.2005.
- **F. Schafmeister, J. W. Kolar**, *Verfahren zur Nutzung des ausgangsseitigen Blindstromes eines indirekten Dreiphasen-Matrixkonverters zur Erzeugung von Eingangsblindstrom*, 21.06.2004.
- **J. W. Kolar, R. Greul**, *Vorrichtung zur Regelung der Zwischenkreisspannungen einer Sternschaltung einphasiger Stromversorgungsmodule mit Pulsleichrichtereingangsstufe und offenem Sternpunkt*, 21.06.2004.
- **J. Biela, J. W. Kolar**, *Transformator mit integrierter Serieninduktivität (Special Design of a Transformer with Integrated Series Inductance)*, 07.06.2004.
- **J. Biela, J. W. Kolar**, *Verlustarmer Hochfrequenztransformator mit ausgeprägter Streuung und geringer elektromagnetischer Störaussendung für den Einsatz in Serien-Parallel-Resonanzkonvertern*, 07.06.2004.
- **T. Nussbaumer, J. W. Kolar**, *Modulationsverfahren zur Minimierung der Netzstromverzerrungen dreiphasiger Dreischalter-Tiefsetzsteller-Pulsleichrichtersysteme*, 30.03.2004.
- **J. W. Kolar, J. Miniböck**, *Vorrichtung zur pulsförmigen bipolaren Ansteuerung eines Piezo-Aktors hoher Leistung*, 25.03.2004.
- **J. W. Kolar, H. Ertl**, *Vorrichtung zur Trennung der Funkstörspannungen dreiphasiger Stromrichtersysteme in eine Gleichtakt- und Gegentaktkomponente*, 16.03.2004.
- **J. W. Kolar, J. Miniböck**, *Vorrichtung hoher Gleichtaktstörfestigkeit zur Ansteuerung abschaltbarer Leistungshalbleiter*, 25.04.2003.
- **J. W. Kolar, G. Gong**, *Vorrichtung zur Potentialtrennung und ausgangssignalabhängigen Führung der Versorgungsspannungen eines Linear-Leistungsverstärkers*, 01.04.2003.
- **J. W. Kolar, F. Schafmeister**, *Verfahren zur Minimierung der Schaltverluste eines quasi-direkten Dreiphasen-AC/AC-Pulsumrichters bei geringer Amplitude der Ausgangsspannungsgrundschiwingung*, 05.02.2003.
- **J. W. Kolar, et al.**, *Modulationsverfahren zur Minimierung und gleichmässigen Verteilung von Schaltverlusten in quasi-direkten Dreiphasen-AC/AC-Pulsumrichtern*, 24.01.2003.
- **J. W. Kolar, M. Baumann**, *Vorrichtung zur Sicherstellung sinusförmiger Stromaufnahme eines dreiphasigen Tief-Hochsetzsteller-Pulsleichrichtersystems bei unsymmetrischer Netzspannung und Phasenausfall*, 02.01.2003.
- **J. W. Kolar, M. Baumann**, *Verfahren zur Unterdrückung von Kreisströmen zwischen parallelgeschalteten Dreiphasenpulsleichrichtersystemen mit eingepprägtem Ausgangsstrom*, 03.06.2002.
- **H. Ertl, J. W. Kolar**, *Vorrichtung zur Erzeugung eines vorgebbaren Spannungsverlaufes mit hoher Pulsleistung und Grenzfrequenz*, 27.05.2002.
- **J. W. Kolar**, *Dreiphasiger Hybrid-Wechselspannungs-Wechselspannungs-Direktumrichter minimaler Komplexität und hoher Kommutierungssicherheit*, 31.08.2001.
- **J. W. Kolar, H. Ertl**, *Vorrichtung zur quasi-direkten pulsbreitengesteuerten Energieumformung zwischen Dreiphasensystemen*, 27.07.2001.

Workshops

- **J. W. Kolar, et al.**, *Impact of Magnetics on Power Electronics Converter Performance - State-of-the-Art and Future Prospects*, Keynote Presentation at the PSMA Workshop on "Power Magnetics @ High Frequency – Transforming the Black Magic to Engineering", Tampa, USA, March 25, 2017.
- **J. W. Kolar**, *Multi-Objective Optimization in Power Electronics*, Keynote Presentation at the Infineon Winter School, Villach, Austria, February 27-March 3, 2017. [Video](#)
- **T. Guillod, J. W. Kolar**, *Medium-Frequency Transformers for Smart Grid Applications: Challenges and Opportunities*, Presentation at the SCCER-FURIES 3rd Annual Conference, Lausanne, Switzerland, 2 December 2016.
- **J. W. Kolar**, *Multi-Objective Optimization of Power Electronics Converter Systems*, Presentation at the NSF Workshop on Directions in Power Electronics Research, Washington, DC, USA, Nov. 3 - 4, 2016.
- **R. Burkart, J. W. Kolar**, *Cost-Aware η - p - σ Multi-Objective Optimization of SiC Power Electronic Converter Systems*, Keynote Presentation at the International SiC Power

Electronics Application Workshop (ISICPEAW 2016), Stockholm, Sweden, May 18-19, 2016.

- **A. Tüysüz, J. W. Kolar**, *Research Vectors in Power Electronics and Motion Control*, Presentation at the Turkish Chamber of Electrical Engineers, 4th Academic Camp, Izmir, Turkey, May 12-15, 2016.
- **J. Huber, J. W. Kolar**, *Derivation and Comparative Analysis of Multi-Cell Isolated Front End and Isolated Back End SSTs*, ECPE Workshop "Smart Transformers for Traction and Future Grid Application", Zurich, Switzerland, February 4-5, 2016.
- **J. W. Kolar, J. Huber**, *Solid-State Transformers (SST) Concepts, Challenges and Opportunities*, ECPE Workshop "Smart Transformers for Traction and Future Grid Application", Zurich, Switzerland, February 4-5, 2016.
- **T. Guillod, R. Färber, C. M. Franck, J. W. Kolar**, *Effects of Mixed-Frequency Voltage Stress on Dry-Type Insulation Systems*, SCCER-FURIES 2nd Annual Conference, Lausanne, Switzerland, Nov. 25, 2015.
- **J. W. Kolar**, *Introduction to TCS Power Electronics Integration*, 8th International IEEE Workshop on Future Electronic Power Processing and Conversion (FEPPCON 2015), Verbania, Italy, Sept. 3-7, 2015.
- **J. W. Kolar**, *Future Power Electronics: Wireless EV Charging and Solid-State Transformers*, Distinguished Lecture organized by the IEEE Greece Chapter of the Power and Energy Society, National Technical University of Athens, Athens, Greece, June 26, 2015.
- **P. A. M. Bezerra, T. Andersen, F. Krismer, J. W. Kolar**, *Multi-objective Optimization of Fully Integrated Voltage Regulators: Switched Capacitor and Inductor-Based Converters*, ECPE PowerSoC Workshop "µPE: Powering Low-Power Systems", Ismaning/Munich, Germany, June 16-17, 2015.
- **J. W. Kolar**, *Power Electronics 2.0*, Presentation at the IKERLAN Workshop on the Big Challenges of Power Electronics, Mondragon, Spain, June 13, 2015.
- **R. Burkart, J. W. Kolar**, *Bidirectional Isolated DC/DC Converter with Wide Input Voltage Range for Residential Energy Management Applications*, ECPE Workshop "ECPE SiC & GaN User Forum - Potential of Wide Bandgap Semiconductors in Power Electronic Applications", Warwick/UK, April 20-21, 2015.
- **J. W. Kolar, E. Hoene, T. Harder**, *ECPE Roadmap Power Electronics 2025 – Power Supplies*, ECPE Roadmap Workshop, Ismaning/Munich, Germany, March 26, 2015.
- **R. Bosshard, J. W. Kolar**, *Fundamentals and Multi-Objective Design of Inductive Power Transfer Systems*, Tutorial at the 30th Applied Power Electronics Conference and Exposition (APEC 2015), Charlotte, NC, USA, March 15-19, 2015.
- **J. W. Kolar**, *Future Challenges in Power Electronics*, Distinguished Lecture at Queens University, Kingston, Canada, January 27, 2015.
- **J. W. Kolar, E. Hoene**, *ECPE Roadmap Power Electronics 2025*, ECPE Roadmap Workshop, Berlin, Germany, January 14, 2015.
- **J. W. Kolar**, *Zukünftige Herausforderungen in der Leistungselektronik*, Keynote Presentation at the Opening of the JOANNEUM Power Electronics Center, Graz, Austria, Nov. 17, 2014.
- **O. Knecht, J. W. Kolar**, *Transcutaneous Energy Transfer*, Zurich Heart Workshop, Zurich, Switzerland, 21 August 2014.
- **M. Kasper, J. W. Kolar, G. Deboy**, *98.5% / 1.5kW/dm³ Multi-Cell Telecom Rectifier Module (230VAC/48VDC) - Breaking the Pareto Limit of Conventional Converter Approaches*, ECPE Workshop "Advanced Multi-Cell / Multi-Level Power Converters", Toulouse, France, July 1-2, 2014.
- **J. W. Kolar**, *Benefits of Multi-Cell Converters for Energy Efficiency Targets*, ECPE Workshop "Advanced Multi-Cell / Multi-Level Power Converters", Toulouse, France, July 1-2, 2014.
- **J. W. Kolar**, *Future Challenges for Research and Teaching in Power Electronics*, 1st Conference Power Electronics UK, Nottingham, UK, June 30 - July 1, 2014.
- **A. Tüysüz, J. W. Kolar**, *The Use of FEM Tools for the Design, Control and Optimization of High-Speed Electrical Drives*, Ansys Conference & 32. Cadfem Users' Meeting, Nuremberg, Germany, June 4-6, 2014.
- **Y. Lobsiger, G. Ortiz, D. Bortis, J. W. Kolar**, *Concept and Experimental Evaluation of a Novel DC - 100 MHz Wireless Oscilloscope*, ECPE Double Workshop "Quality Inspection in Power Electronics Manufacturing and Electrical Testing of Power Electronic Systems", Ismaning-Munich, Germany, March 26-27, 2014.
- **D. O. Boillat, D. F. Rieke, J. W. Kolar**, *Evaluation of Control Performance of Model Predictive Control against Standard PI-Control for a Highly Dynamic AC Source*, Presentation at the "MPC Kolloquium", Saarbrücken, Germany, 5-6 February 2014.
- **J. W. Kolar**, *Power Electronics 2025*, ECPE Roadmap Workshop, Munich, Germany, January 15-16, 2014.
- **J. W. Kolar**, *Envision on Future Power Electronics*, Joint Annual Meeting of Italian Researchers of the Groups of Electrical Systems, Converters, Drives and Machines, Padova, Italia, July 4-5, 2013.
- **I. Kovacevic, A. Stupar, J. W. Kolar**, *Lifetime Model for Solder Layers*, ECPE Workshop "Lifetime Modelling and Simulation", Dusseldorf, Germany, July 3-4, 2013.
- **J. W. Kolar**, *Power Electronics 2.0*, CNRS Workshop "Intégration en Electronique de Puissance", Campus Gérard Mégie, Paris, France, June 24, 2013.
- **Y. Lobsiger, J. W. Kolar**, *Closed-Loop di/dt and dv/dt IGBT Gate Drive Concepts*, ECPE Presentation "Power Semiconductor Devices & Technologies", Zurich, Switzerland, June 6-7, 2013.
- **J. W. Kolar**, *Next Generation Power Electronics Infrastructure System*, Proceedings of the 3rd NPERC-J Workshop, Tokyo, Japan, April 23, 2013.
- **J. W. Kolar**, *A Competence Centers View on the ECPE Network*, 10 Years ECPE Anniversary, Nuremberg, Germany, April 17-18, 2013.
- **J. W. Kolar**, *Power Density vs. Efficiency of Power Electronics*, 10 Years ECPE Anniversary, Nuremberg, Germany, April 17-18, 2013.
- **T. Andersen, F. Krismer, J. W. Kolar, T. Toifl**, *High Power Density On-Chip Switched Capacitor Converters for Microprocessor Power Delivery*, 3rd International Workshop on Power Supply on Chip (PowerSoC2012), San Francisco, USA, November 16-18, 2012.
- **G. Ortiz, J. Huber, J. W. Kolar**, *Intelligent Solid State Transformers (SSTs)- MEGA Cube & MEGA Link*, ECPE Workshop "Power Electronics in the Electrical Network (Renewables, Energy Storage, Grid Stability)", Kassel, Germany, 12-13 March 2013.
- **J. W. Kolar, B. Wrzecionko**, *Advanced DC-AC Power Conversion for Automotive Applications*, Workshop in Memoriam of Prof. Alfio Consoli, Aula Magna - Ingegneria, Italia, January 28, 2013.

- **J. W. Kolar, T. Friedli, F. Krismer, A. Looser, M. Schweizer, P. Steimer, J. Bevirt**, *Conceptualization and Multi-Objective Optimization of the Electric System of an Airborne Wind Turbine*, IEEE Power Electronics Society (PELS) Distinguished Lecture at the Joint IEEE ENCS/PELS Meeting at the North Carolina State University, Raleigh, USA, September 20, 2012.
- **J. W. Kolar, T. Friedli, F. Krismer, A. Looser, M. Schweizer, P. Steimer, J. Bevirt**, *Conceptualization and Multi-Objective Optimization of the Electric System of an Airborne Wind Turbine*, Invited Lecture, TIA Summer School for Power Electronics 2012, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Science City, Japan, August 27-30, 2012.
- **B. Wrzecionko, D. Bortis, J. W. Kolar**, *Novel Gate Driver for Normally-off SiC JFET and General High Temperature SiC Converter Technology*, International SiC Power Electronics Application Workshop (ISICPEAW 2012), Kista/Stockholm, Sweden, May 29-30, 2012.
- **J. W. Kolar, T. Friedli, F. Krismer, A. Looser, M. Schweizer, P. Steimer, J. Bevirt**, *Conceptualization and Multi-Objective Optimization of the Electric System of an Airborne Wind Turbine*, IEEE Power Electronics Society (PELS) Distinguished Lecture, Dept. of Electr. and Comp. Eng., Nat. Univ. of Singapore, Singapore, June 6, 2012.
- **J. Mühlethaler, J. W. Kolar**, *Core Loss Modeling of Inductive Components - Effects with Considerable Impact on Core Losses*, Industry Sessions at the Applied Power Electronics Conference and Exposition (APEC), Orlando, Florida, February 5-9, 2012.
- **J. Mühlethaler, J. W. Kolar**, *Modellierung von Kern- und Wicklungsverlusten*, ECPE Cluster Seminar "Induktivitäten in der Leistungselektronik", Nuremberg, Germany, October 5-6, 2011.
- **J. Mühlethaler, J. W. Kolar**, *Vernachlässigte Effekte mit erheblichem Einfluss auf die Verluste von Induktivitäten*, ECPE Cluster Seminar "Induktivitäten in der Leistungselektronik", Nuremberg, Germany, October 5-6, 2011.
- **F. Krismer, J. W. Kolar**, *Medium-Voltage High-Frequency DC-DC Converter*, ECPE Workshop "SiC & GaN User Forum" Potential of Wide Bandgap Semiconductors in Power Electronic Applications, Birmingham, UK, September 1-2, 2011.
- **Y. Lobsiger, D. Bortis, J. W. Kolar**, *Case Study: Wireless Voltage Probe for Accurate Voltage Measurement on High and Transient Reference Voltages*, ECPE Workshop "Electronics around the Power Switch: Gate Drivers, Sensors and Control", Munich, Germany, June 29-30, 2011.
- **Y. Lobsiger, J. W. Kolar**, *Current and Temperature Measurement Concepts Enabling Intelligent Gate Drives*, ECPE Workshop "Electronics around the Power Switch: Gate Drivers, Sensors and Control", Munich, Germany, June 29-30, 2011.
- **M. Hartmann, T. Friedli, J. W. Kolar**, *Three-Phase Unity Power Factor Mains Interfaces of High Power EV Battery Charging Systems*, ECPE Workshop "Power Electronics for Charging Electric Vehicles", Valencia, Spain, March 21-22, 2011.
- **G. Ortiz, J. Mühlethaler, J. W. Kolar**, *Magnetic Saturation of High Power Medium Frequency Transformers due to Semiconductor On-State Voltage Drop and Switching Time Tolerances*, ECPE Workshop "Parasitic Effects in Power Electronics", 23-24 February 2011, Berlin, Germany.
- **I. Kovacevic, T. Friedli, J. W. Kolar**, *PEEC-Based Modeling of EMI Filters Including Parasitics and Geometrical Arrangement of Filter-Elements*, ECPE Workshop "Parasitic Effects in Power Electronics", Berlin, Germany, February 23-24, 2011.
- **M. Schweizer, T. Friedli, J. W. Kolar**, *Comparative Evaluation of Advanced 3-level Inverter/Converter Topologies against 2-level Systems*, ECPE Workshop "Advanced Multilevel Converter Systems", Västerås, Sweden, September 28-29, 2010.
- **J. W. Kolar**, *Performance Trends and Limitations of Electronic Energy Processing Systems*, Invited Distinguished Lecture, University of Padova, Department of Information Engineering, September 10, 2010.
- **G. Ortiz, J. Biela, J. W. Kolar**, *"MegaCube" – 1MW Ultra Compact/Efficient Isolated 20kHz Bidirectional 12kV/1.2kV DC/DC Converter*, ECPE Workshop "Power Electronics for Energy Efficiency Buildings, Lighting and Home Appliances", Aachen, Germany, April 15-16, 2010.

Further Publications

-
- **J. W. Kolar**, *Power Electronic Topologies – Do We Need More or Any Benefit to New Ones?*, Presentation in Rap Session "Power Electronics Topologies – Do We Need More or Any Benefit to New Ones?", 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
 - **J. W. Kolar, et al.**, *Power Magnetism @ High Frequency - State-of-the-Art and Future Prospects*, Keynote Presentation in Industry Session "High Frequency Magnetism – Transforming the Black Magic to Engineering", 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
 - **D. Rothmund, D. Bortis, J. W. Kolar**, *Solid-State Transformator mit moderner SiC-Halbleitertechnologie*, Swiss Engineering, Schweizerische Technische Zeitschrift STZ, Nr. 01/02, p. 14, February 2017.
 - **J. Huber, D. Rothmund, J. W. Kolar**, *Smart All-SiC Solid-State Transformers*, Published in the Weekly Spotlight on Energy Research by the Energy Science Center of ETH Zurich, Oct. 26, 2016.
 - **E. Wolfgang, D. Silber, J. W. Kolar**, *CIPS 2016 - Power Electronics in Challenging Little Boxes and More*, Bodo's Power Systems, May 2016.
 - **I. Kovacevic-Badstübner, J. W. Kolar, U. Schillig**, *Modelling for the Lifetime Prediction of Power Semiconductor Modules*, Reliability of Power Electronic Converter Systems, IET Research Book, Chapter 5 (expected publication date: Q4, 2015).
 - **T. Andersen, F. Krismer, J. W. Kolar**, *Record 10 Watt On-Chip Power Converter*, IBM Research Blog, March 4, 2015.
 - **J. W. Kolar**, *Preface to the Special Issue on "Power Electronics"*, Fuji Electric Journal, Vol. 88, No. 1, 2015.
 - **S. K. Mazumder, J. W. Kolar, H. Akagi, D. Xu**, *Editorial: Special Issue on High-Frequency-Link Power-Conversion Systems*, 2014, IEEE Transactions on Power Electronics, Vol. 29, No. 8, August 2014.
 - **H. P. Nee, J. W. Kolar, P. Friedrichs, J. Rabkowski**, *Editorial: Special Issue on Wide Bandgap Power Devices and Their Applications*, 2014, IEEE Transactions on Power Electronics, Vol. 29, No. 5, May 2014.
 - **J. W. Kolar, T. Friedli**, *Dreiphasige Pulsleichrichtersysteme (in German)*, D. Schröder, Leistungselektronische Schaltungen, Chapter 7.8, pp. 532-599, 3rd Ed., Springer 2012.

- **J. W. Kolar, J. Miniböck**, *Hocheffizienz-Gleichrichtersystem mit 99,2% Wirkungsgrad*, Elektronikpraxis, March 2012.
- **J. W. Kolar, J. Miniböck**, *High-Performance Rectifier System with 99.2% Efficiency*, Elektronikpraxis, March 2012.
- **J.W. Kolar**, *Preface to the Special Issue on "Simulation Technologies and Computational Design"*, Fuji Electric Review, Vol. 82, No. 3, 2009.
- **J.W. Kolar**, *Nur eine engagierte und zeitgemäße Ausbildung kann der Leistungselektronik die dringend nötigen Ingenieure liefern*, Elektronikpraxis, February 2010.
- **J. W. Kolar, F. Schafmeister**, *Matrixkonverter (in German)*, D. Schröder, Leistungselektronische Schaltungen, Chapter 3.8, pp. 188-289, 2nd Ed., Springer 2008.
- **J. W. Kolar**, *Power Supplies with Ultra-High Power Density*, Bodo's Power Systems, June 2007.

Tutorials

- **J. W. Kolar, D. Neumayr, D. Bortis**, *How to Achieve 200W/in³ & Beyond? Concepts - Evaluation - Barriers - Future*, Tutorial at the 32nd Applied Power Electronics Conference and Exposition (APEC 2017), Tampa, FL, USA, March 26-30, 2017.
- **J. W. Kolar, J. Huber**, *Fundamentals and Application-Oriented Evaluation of Solid-State Transformer Concepts*, Tutorial at the Southern Power Electronics Conference (SPEC 2016), Auckland, New Zealand, December 5-8, 2016.
- **J. W. Kolar, J. E. Huber**, *Solid-State Transformers - Key Design Challenges, Applicability, and Future Concepts*, Tutorial at the Internal Conference on Power Electronics and Motion Control (PEMC 2016), Varna, Bulgaria, September 25-30, 2016.
- **J. W. Kolar, J. Huber**, *Solid-State Transformers - Key Design Challenges, Applicability, and Future Concepts*, Tutorial at the 8th International Power Electronics and Motion Control Conference (IPEMC 2016-ECCE Asia), Hefei, China, May 22-25, 2016.
- **R. Burkart, J. W. Kolar**, *Advanced Modeling and Multi-Objective Optimization / Evaluation of SiC Converter Systems*, Tutorial at the 3rd IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA 2015), Blacksburg, USA, Nov. 2-5, 2015.
- **R. Bosshard, J. W. Kolar**, *Fundamentals and Multi-Objective Design of Inductive Power Transfer Systems*, Tutorial at the 17th European Conference on Power Electronics and Applications (ECCE Europe 2015), Geneva, Switzerland, September 8-10, 2015.
- **R. Bosshard, J. W. Kolar**, *Fundamentals and Multi-Objective Design of Inductive Power Transfer Systems*, Tutorial at the 9th International Conference on Power Electronics (ICPE 2015-ECCE Asia), Seoul, Korea, June 1-5, 2015.
- **R. Bosshard, J. W. Kolar**, *Fundamentals and Multi-Objective Design of Inductive Power Transfer Systems*, Tutorial at the Conference for Power Conversion and Intelligent Motion (PCIM Europe 2015), Nuremberg, Germany, May 19-21, 2015.
- **J. W. Kolar, J. Huber**, *Solid-State Transformers in Future Traction and Smart Grids*, Tutorial at the Conference for Power Conversion and Intelligent Motion (PCIM Europe 2015), Nuremberg, Germany, May 19-21, 2015.
- **G. Ortiz, J. W. Kolar**, *Solid-State Transformers in Future Traction and Smart Grids*, Seminar at the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM South America 2014), São Paulo, Brazil, October 14-15, 2014.
- **G. Ortiz, J. W. Kolar**, *Solid State Transformer Concepts in Traction and Smart Grid Applications*, Seminar at the Conference for Power Electronics, Intelligent Motion, Power Quality (PCIM South America 2014), São Paulo, Brazil, October 14-15, 2014..
- **J. W. Kolar, R. Bosshard**, *Mains Interfaces for Future 400 Vdc Distribution Systems and Electric Vehicle Battery Charging*, Tutorial at the 5th International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2014), Galway, Ireland, June 24-27, 2014.
- **J. W. Kolar**, *X-treme Efficiency Power Electronics*, Tutorial at the 15th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2014), Santander, Spain, June 22-25, 2014.
- **J. W. Kolar, G. Ortiz**, *Solid-State Transformer Concepts in Traction and Smart Grid Applications*, Tutorial at the 39th Annual Conference of the IEEE Industrial Electronics Society (IECON 2013), Vienna, November 10 -13, 2013.
- **J. W. Kolar, G. Ortiz**, *Solid State Transformer Concepts in Traction and Smart Grid Applications*, Tutorial at the 4th International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2013), Rogers, Arkansas, USA, July 8-11, 2013.
- **J. W. Kolar, G. Ortiz**, *Solid State Transformer Concepts in Traction and Smart Grid Applications*, Tutorial at the Applied Power Electronics Conference and Exposition (APEC 2013), Long Beach, California, USA, March 17-21, 2013.
- **J. W. Kolar**, *The Essence of Three-Phase PFC Rectifier Systems*, Tutorial at the 38th Annual Conference of the IEEE Industrial Electronics Society (IECON 2012), Montreal, Canada, October 25-28, 2012.
- **J. W. Kolar, G. Ortiz**, *Solid State Transformer Concepts in Traction and Smart Grid Applications*, Tutorial at the 15th International Power Electronics and Motion Control Conference (ECCE Europe 2012), Novi Sad, Serbia, September 4-6, 2012.
- **J. W. Kolar, J. Mühlethaler**, *The Essence of Three-Phase PFC Rectifier Systems*, Tutorial at the 7th IEEE International Power Electronics and Motion Control Conference (ECCE Asia 2012), Harbin, China, June 2-5, 2012.
- **J. Mühlethaler, J. W. Kolar**, *Optimal Design of Inductive Components Based on Accurate Loss and Thermal Models*, Tutorial at the Applied Power Electronics Conference and Exposition (APEC), Orlando, Florida, February 5-9, 2012.
- **J. W. Kolar, G. Ortiz**, *Intelligent Solid State Transformers (SSTs) - A Key Building Block of Future Smart Grid Systems*, Tutorial at the 19th China Power Supply Society Conference (CPSSC 2011), Shanghai, China, November 18-21, 2011.
- **J. W. Kolar, M. Hartmann, T. Friedli**, *Three-Phase PFC Rectifier and AC-AC Converter Systems*, Tutorial at the 26th Annual IEEE Applied Power Electronics Conference and Exposition (APEC 2011), Ft. Worth, TX, USA, March 6-10, 2011.
- **J. W. Kolar, T. Friedli**, *Comprehensive Evaluation of Three-Phase AC-AC PWM Converter Systems*, Tutorial at the 36th Annual Conference of the IEEE Industrial Electronics Society (IECON 2010), Phoenix, USA, November 7-11, 2010.

- **J. W. Kolar, T. Friedli**, *Comparative Evaluation of Three-Phase AC-AC PWM Converter Systems Tutorial*, Tutorial EPE 2009.

Awards

-
- **J. W. Kolar**, for *Contributions to the Advancement of Three-Phase Pulse-Width Modulation (PWM) Converter Systems and Power Electronics Education*, IEEE William E. Newell Power Electronics Award 2016.
 - **J. W. Kolar**, for his extraordinary world-wide known pioneering contributions and leadership in research and education in power electronics and for his long international support of the PEMC conferences, Istvan Nagy Award 2016.
 - **O. Knecht, R. Bosshard, J. W. Kolar**, *High Efficiency Transcutaneous Energy Transfer for Implantable Mechanical Heart Support Systems*, 2016 IEEE Power Electronics Transactions First Prize Paper Award.
 - **O. Knecht, D. Bortis, J. W. Kolar**, *Comparative Evaluation of a Triangular Current Mode (TCM) and Clamp-Switch TCM DC-DC Boost Converter*, Best Paper Award.
 - **D. Bortis, D. Neumayr, J. W. Kolar**, *η -Pareto Optimization and Comparative Evaluation of Inverter Concepts considered for the GOOGLE Little Box Challenge*, Best Paper Award.
 - **J. Huber, D. Rothmund, J. W. Kolar**, *Comparative Evaluation of Isolated Front End and Isolated Back End Multi-Cell SSTs*, Best Paper Award (Second Prize).
 - **PES Team**, *Outstanding converter concept for the GOOGLE Little Box Challenge*, GOOGLE Little Box Challenge Academic Award.
 - **P. A. M. Bezerra**, *Bidirectional Isolated Non-Resonant DAB DC-DC Converter for Ultra-Wide Input Voltage Range Applications*, Award for Excellent Paper.
 - **J. W. Kolar**, for *Circuit Innovation, Modeling, Control, and Multi-Objective Optimization of Power Electronic Converters*, IEEE PELS R. David Middlebrook Achievement Award.
 - **J. W. Kolar, T. Friedli**, *The Essence of Three-Phase PFC Rectifier Systems - Part I*, IEEE Transactions First Prize Award.
 - **J. W. Kolar, J. Miniböck**, in *Recognition of and with Thanks for their Outstanding Innovation in the Field of Power Electronics*, SEMIKRON Innovation Award 2014.
 - **J. Everts, J. W. Kolar**, *Charged-Based ZVS Soft Switching Analysis of a Single-Stage Dual Active Bridge AC-DC Converter*, Student Industry Session Poster Winner Award.
 - **F. Krismer, J. W. Kolar**, *Closed Form Solution for Minimum Conduction Loss Modulation of DAB Converters*, IEEE Transactions Second Prize Paper Award.
 - **A. Stupar, T. Friedli, J. Miniböck, J. W. Kolar**, *Towards a 99% Efficient Three-Phase Buck-Type PFC Rectifier for 400-V DC Distribution Systems*, IEEE Transactions First Prize Award.
 - **C. Gammeter, F. Krismer, J. W. Kolar**, *Weight Optimization of a Cooling System Composed of Fan and Extruded Fin Heat Sink*, William M. Portnoy Award.
 - **G. Ortiz, C. Gammeter, J. W. Kolar, O. Apeldoorn**, *Mixed MOSFET/IGBT Bridge for High-Efficient Medium-Frequency Dual-Active-Bridge Converter in Solid State Transformers*, Best Paper Award.
 - **G. Ortiz, M. Leibl, J. W. Kolar, O. Apeldoorn**, *Medium Frequency Transformers for Solid-State-Transformer*, Best Paper Award.
 - **E. Hoene, A. Ostmann, B. The Lai, C. Marczok, A. Müsing, J. W. Kolar**, *Ultra-Low-Inductance Power Module for Fast Switching Semiconductors*, Best Paper Award.
 - **P. Cortes, D. O. Boillat, H. Ertl, J. W. Kolar**, *Comparative Evaluation of Multi-Loop Control Schemes for a High-Bandwidth AC Power Source with a Two-Stage LC Output Filter*, Student Excellent Presentation Award.
 - **T. Reichert, T. Nussbaumer, J. W. Kolar**, *Design Study for Exterior Rotor Bearingless Permanent Magnet Machines*, Best Paper Award 2nd Prize.
 - **J. W. Kolar**, VSETH Golden Owl Award for Excellence in Teaching, VSETH Golden Owl Award 2011.
 - **I. Kovacevic, T. Friedli, A. Müsing, J. W. Kolar**, *A Full PEEC Modeling of EMI Filter Inductors in Frequency Domain*, Rita Trowbridge Prize.
 - **T. Soeiro, M. Schweizer, J. Linner, P. Ranstad, J. W. Kolar**, *Comparison of 2- and 3-level Active Filters with Enhanced Bridge-Leg Loss Distribution*, Best Paper Award 1st Prize.
 - **M. Hartmann, H. Ertl, J. W. Kolar**, *EMI Filter Design for a 1 MHz, 10 kW Three-Phase/Level PWM Rectifier*, IEEE Transactions Prize Paper Award.
 - **F. Giezendanner, J. Biela, J. W. Kolar, S. Zudrell-Koch**, *EMI Noise Prediction for Electronic Ballasts*, IEEE Transactions Prize Paper Award.
 - **D. Kraehenbuehl, C. Zwyssig, H. Weser, J. W. Kolar**, *A Miniature 500 000-r/min Electrically Driven Turbocompressor*, IEEE Transactions Prize Paper Award.
 - **G. Ortiz, J. Biela, D. Bortis, J. W. Kolar**, *1 Megawatt, 20 kHz Isolated, Bidirectional 12kV to 1.2 DC-DC Converter for Renewable Energy Applications*, Best Paper 3rd Prize Award.
 - **S. Waffler, J. W. Kolar**, *Comparative Evaluation of Soft-Switching Concepts for Bi-directional Buck+Boost Dc-Dc Converters*, Best Paper 3rd Prize Award.
 - **C. Zwyssig, J. W. Kolar, S. Round**, *Megaspeed Drive Systems: Pushing Beyond 1 Million r/min*, IEEE/ASME Transactions Best Paper Award.
 - **M. Hartmann**, *EMI Filter Design for High Switching Frequency Three-Phase/Level PWM Rectifier Systems*, Best Presentation Award.
 - **J. W. Kolar**, *Contributions to Three-Phase PWM Converter Systems*, Elevation to Fellow Grade.
 - **T. Friedli, S. Round, D. Hassler, J. W. Kolar**, *Design and Performance of a 200-kHz All-SiC JFET Current DC-Link Back-to-Back Converter*, IEEE Transactions 2nd Prize Paper Award.
 - **D. Krähenbühl, C. Zwyssig, K. Bitterli, M. Imhof, J. W. Kolar**, *Evaluation of Ultra-Compact Rectifiers for Low Power, High-Speed, Permanent-Magnet Generators*, Best Paper Award.
 - **F. Krismer, J. W. Kolar**, *Accurate Small-Signal Model for the Digital Control of an Automotive Bidirectional Dual Active Bridge*, IEEE Transactions Prize Paper Award.
 - **T. Friedli, S. Round, D. Hassler, J. W. Kolar**, *Design and Performance of a 200 kHz All-SiC JFET Current Source Converter*, 1st Prize Paper Award.
 - **S. Waffler, J. W. Kolar**, *A Novel Low-Loss Modulation Strategy for High-Power Bi-directional Buck+Boost Converters*, Best Paper Award.

- **M. Baumann, J. W. Kolar**, *A Novel Control Concept for Reliable Operation of a Three-Phase Three-Switch Buck-Type Unity-Power-Factor Rectifier with Integrated Boost Output Stage Under Heavily Unbalanced Mains Condition*, IEEE Transactions Best Paper Award.

[Back to list](#)



Departement Informationstechnologie
und Elektrotechnik

ETH zürich

© 2017 ETH Zurich | Imprint | 23. Jun 2015