



General

Date of Birth : 13th June, 1964

Professor

Department of Electrical Engineering,
Indian Institute of Technology Bombay, India

Academic Qualifications

Ph.D. (Electrical Engg.) 1990 - 1994: University of Victoria, British Columbia, Canada.

Specialization : Power Electronics

M.E. (Electrical. Engg.) 1986 - 1990: Indian Institute of Science, Bangalore, India,

B.Sc. Physics (Hons.) 1982 - 1985: St. Stephen's college, Delhi University,
New Delhi, India

Field of Interest

1. **Power conversion:** New converter topologies, High frequency link power conversion, ZCS-ZVS configurations, Switched Capacitor DC-DC converters
2. **Power quality issues:** Power factor correction techniques, Static VAR compensation, Active filters
3. **Non-conventional energy (solar PV, wind, fuel cell) :** Power conditioning, maximum power point tracking, stand-alone and grid connected systems, Microgrid
4. **Intelligent control of power electronic systems (including electric drives):** Advanced control schemes, DSP and FPGA based control
5. **Design of electronic systems :** Design and fabrication of hardware for a range of applications such as biomedical applications, navigation systems and intelligent transportation systems etc., Radiation effects on electronic and power electronic systems and components.
6. **ElectroMagnetic Interference (EMI):** EMI analysis and mitigation techniques for electronic and power electronic circuits.

Professional Experience

Professor : Feb-2005 onwards, Indian Institute of Technology - Bombay.

Associate Professor: Feb-2001 to Feb 2005, Indian Institute of Technology - Bombay.

Assistant Professor: 1995 to Feb 2001, Indian Institute of Technology - Bombay.

Research Engineer: 1994 - 1995, Statpower Technologies Corp., Burnaby, British Columbia, Canada.

Research and Teaching Assistant: 1990-1994, Univ. of Victoria, British Columbia, Canada.

Teaching Experience

For nearly 14 years, I have taught a variety of courses at graduate and undergraduate levels at the Indian Institute of Technology-Bombay. These courses are listed below :

Courses

- Electronic Design Lab (EE413, EE318) - for under graduate students during the years 1995, 1996, 1999, 2009.
- Work Visits* (EE396) - for undergraduate students during the years 1996 and 2001.
- Microprocessors and Microcomputers (EE637) - for graduate students during the years 1995 and 1996.
- Microprocessor Lab (EE639) - for graduate students during the years 1995 and 1996.
- Inverters (EE644) - for graduate students during the years 1995, 1996 and 1999.
- Power Electronics Lab (EE642) - for graduate students during the year 1997.
- Electrical Machines (EE-303) - for undergraduate students during the year 1997.
- Electrical Machines Lab (EE-311) - for undergraduate students during the years 1997 and 1998.
- Electrical Machines Lab(EE-003, 220 etc.) - for under graduate students during the years 1999 and 2000.

- Power Electronics (EE-321) - for undergraduate students during the year 1998.
- Special Topics in Power Electronics (EE-698) - for graduate students during the year 1998.
- Electric Drives (EE-643) - for graduate students during the year 1998.
- Electronic Circuit Lab(EE-261, EE-005) - for under graduate students during the years 2000, 2001, 2002 and 2008.
- Digital Circuits Lab (EE-214) - for undergraduate students during the year 2001.
- Microprocessor Applications in Power Electronics (EE-675)- for graduate students during the years 1999, 2000 and 2002.
- Power Electronics I (EE-653) - for graduate students during the years 2003, 2004, 2005, and 2009.
- Power Electronics II (EE-654)- for graduate students during the years 2000, 2004, 2005, 2006, 2007, 2008, 2009.
- Basic Principles of Electrical Engineering (EE-002) - for undergraduate students during the years 2001, 2002, 2003, 2006, 2007 and 2008.
- Basic Principles of Elec. Engg. Lab (EE-003) - for undergraduate students during the years 2003, 2004, 2005 and 2006.
- Power Electronics and Power Systems Lab (EE-673) - for graduate students during the years 2006, 2007, 2008 and 2009.
- Practical Training Coordinator - for undergraduate students from the year 1999 to 2008.

* This involves visiting various local industries with the students

Affiliations with Professional Bodies

Senior Member, IEEE, USA ; Fellow, IETE, India and Life Member, ISTE, India.


Ph.D Thesis Supervision

S.No	Name of Student	Title of Thesis/Dissertation	Year of Completion
1.	Shashank Wekhande	New static VAR compensator for applications in active line current conditioning and induction generator control.	2001
2.	Madhuwanti Joshi	EMI/EMC issues in Power Electronic Systems	2001
3.	Sincy George	Active Filter based Power Factor Correction and harmonic elimination under non-sinusoidal conditions	2005
4.	R.D.Kulkarni	Performance evaluation and improvement of safety-related instruments and equipment in nuclear power plants	2007
5.	A. Alamayehu*	Multirate output feedback based digital redesign of sliding mode control algorithms and their applications	2007
6.	Sachin Jain	Single-stage, Grid Connected PV Systems with Maximum Power Point Tracking	2008
7.	C. Sreekumar	Investigations into the Hybrid Modeling and Control of DC-DC power converters	2008
8.	Hiren Patel	Investigations into the performance of PV systems operating under partially shaded conditions	2008
9.	S. Padma Kumar	Fault Diagnosis in Induction Motors	Ongoing
10.	Rajesh Thakur	Advanced control schemes for Wind Energy Systems	Ongoing
11.	Shekhar Dimble*	Nanotechnology based fabrication and testing of fuel cell stack for power electronic applications	Ongoing
12.	Gopal Joshi*	RF Control of Linear Accelerator	Ongoing
13.	Boddu Somaiah*	Related to Fuel Cells (tentative)	Ongoing
14.	Pooja Sharma*	Related to Flexible Photovoltaics	Ongoing

15.	Pradeep Peter	PV fed Switched Capacitor DC-DC Converters with Ground Isolation	Ongoing
16.	Sushil Thale	Issues with Microgrid	Ongoing
17.	Vishal Jain	High Voltage Power Supply for Plasma Arc Applications	Ongoing

*Either supervisor or co-supervisor for these students

M.Tech Thesis Supervision

M.Tech Thesis List in the pdf document 

Major Sponsored Projects

1. Reliability up-gradation of electronic equipment, Sponsoring Agency: BRNS, Amount of Grant: Rs.42.5 Lakhs (US\$ 85,000 approx.), Duration and year: 4 years(2000-2004).
2. Solar Power Conditioning unit for residential applications, Sponsoring Agency : MNES, Amount of Grant: Rs.17.5 Lakhs (US\$ 35,000 approx.), Duration and year: 2 years(2002-2004).
3. Modernisation of an EMI/EMC Lab, Sponsoring Agency : MHRD, Amount of Grant: Rs.9.00 Lakhs (US\$ 18,000 approx.),Duration and year: 1 year(2002-2003).
4. Performance of semi-conductor devices under temperature, humidity & radiation environments, Sponsoring Agency : MHRD, Amount of Grant:Rs.16 Lakhs (US\$ 33,000 approx.), Duration and year: 3.5 years (2003-2006).
5. Study of Electric Arcs, their Detection, Characterization and Mitigation, Sponsoring Agency : BRNS, Amount of Grant:Rs.23.5 Lakhs (US\$ 47,000 approx.), Duration and year: 3 years (2005-2008).
6. DSP based hardware for GPS-INS integration, Sponsoring Agency : ARDE, Pune, Amount of Grant:Rs.10 Lakhs (US\$ 20,000 approx.) , Duration and year: 1.0 years (2005-2006).
7. Expansion of EMI/EMC Research and Measurement Facilities, Sponsoring Agency : MHRD(under MODROBS scheme), Amount of Grant: Rs.11 Lakhs (US\$ 22,000 approx.), Duration and year: 2 years (2005-2007).
8. Linux Based, Cost Effective Embedded Web-server for Bio-medical applications, Sponsoring Agency : MHRD(under MODROBS scheme), Amount of Grant: Rs.13 Lakhs (US\$ 26,000 approx.), Duration and year: 2 years (2005-2007).
9. A fully compensated, hybrid, distributed generation system based on renewable energy sources Feasibility study and implementation, Sponsoring Agency : MHRD(R&D scheme), Amount of Grant: Rs.16 Lakhs (US\$ 32,000 approx.) , Duration and year: 3 years (2005-2008)
10. Design and Development of Power Electronics and Non-Conventional Energy Course Module (lectures on CD) - Sponsoring Agency : MNRE, Amount of Grant: Rs.10 Lakhs (US\$ 20,000 approx.), Duration and year: 8 months (2008- 2009)
11. Design and Development of a High Frequency, High Voltage Supply for High-Field Asymmetric Waveform Ion Mobility Spectrometer (FA-IMS) application - Sponsoring Agency : Defense Research and Development Establishment, Amount of Grant: Rs.10 Lakhs (US\$ 20,000 approx.), Duration and year: 18 months (2009-2010)
12. Design, development and analysis of high power switched capacitor- Inductorless DC-DC converters - Sponsoring Agency : Board of Research in Nuclear Sciences , Amount of Grant: Rs.15.25 Lakhs (US\$ 30,500 approx.), Duration and year: 2 years (2009-2011)
13. Analysis of transient loading, inverter current loading propagation to fuel cells and design of bi-directional active power network - Sponsoring Agency : Defense Research and Development Establishment , Amount of Grant: Rs.10 Lakhs (US\$ 20,000 approx.), Duration and year:18 months (2009-2011)
14. Development of a Wireless Remote Controlled Vehicle for Nuclear Radiation Sensing and Intensity Mapping in Nuclear Power Plants and Surrounding Facilities - Sponsoring Agency : BARC, Amount of Grant: Rs.15.5 Lakhs (US\$ 31,000 approx.), Duration and year: 18 months (Aug 2009- Jan 2011) - (Project finalized, yet to be started)
15. Development of a Remote Whole Body Radioactivity Detector and a Centralised Continuous Monitoring Data Display System for In-patient Nuclear Medicine Therapy Procedures - Sponsoring Agency : BARC, Amount of Grant: Rs.12.8 Lakhs (US\$ 25,600 approx.), Duration and year: 18 months (Aug 2009- Jan 2011) - (Project finalized, yet to be started)

* A conversion rate of 1 US\$ = 50 Rs. (Indian Rupees) is assumed

Major Consultancy Projects

1. Power Factor Corrected Battery Charger , Sponsoring Agency: Statpower Corporation, Canada, Amount of Grant: C\$ 22,000 (approx), Duration and year: 2 years (1997-1998).
2. EMI/EMC investigations into Microcontroller PCBs , Sponsoring Agency:General Electric Co., USA, Amount of Grant: US\$ 12,000 (approx), Duration and year: 1 year (1999-2000).
3. EMI/EMC investigations into furniture partitions , Sponsoring Agency:Godrej and Boyce, Mumbai, India , Amount of Grant: US\$ 3,750 (approx), Duration and year: 1 year (2002-2003).
4. PSPICE Modeling of Devices , Sponsoring Agency: IXYS Corporation, USA, Amount of Grant: US\$ 4,000 (approx), Duration and year: 1 year (2003-2004).

5. Consultancy on misc, power electronics projects, Sponsoring Agency: Precision Power Products, India, Amount of Grant: Rs.1.5 Lakhs (US\$ 3,000 approx.), Duration and year: 1 year (2004-2005).

* A conversion rate of 1 US\$ = 50 Rs. (Indian Ruppees) is assumed

Patents

1. US Patent Application - Attorney's docket no. 1138.102 PCT/US 03/33419
Title: POWER CONVERTER METHOD AND APPARATUS HAVING HIGH INPUT POWER FACTOR AND LOW HARMONIC DISTORTION
Inventors: Vivek Agarwal, V.P. Sundarsingh, Serge Bontemps and Alain Calmels
Provisional Application (No. 60/420,193) filed on 21st Oct. 2002:
Regular Application (No. 10/689,863) filed on 21st Oct 2003
Patent issued on Jan. 2, 2007 as U.S. Patent No. 7,157,886 B2
2. US Patent Application (Provisional) Appl. No. 60/569,343 Confirmation No.: 1288
Title: ALGORITHM FOR RAPID TRACKING OF APPROXIMATE MAXIMUM POWER POINT IN PHOTOVOLTAIC SYSTEMS
Inventors: Vivek Agarwal, Sachin Jain
Could not file regular application due to lack of funds
3. Indian Patent (Application No. 2286/MUM/2008 filed on 23rd Oct. 2008)
Title: METHOD FOR CALCULATING CAPACITANCE VALUE AND MAGNETIZING INDUCTANCE VALUE FOR SMOOTH SUSTAINED VOLTAGE BUILD UP IN AN INDUCTION GENERATOR
Inventors: Vivek Agarwal, P.S.V. Nataraj and Rajesh Thakur

Book(s) and Book Chapters

1. Agarwal, V. and Patel, Hiren (expected in print Oct/Nov 2009): Photovoltaic Systems Under Partially Shaded Conditions: Springer Verlag, Germany
2. Contributed/Co-authored two Chapters for the book entitled: Solar Photovoltaics: Fundamentals, Technologies and Applications, published by Prentice Hall of India. This book was released in January 2009.

Journal Papers (in reverse chronological order)

1. Agarwal, V., Murali N. and Chandramouli, C.: A Cost Effective Ultrasonic Sensor Based Driver Assistance System for Congested Traffic Conditions,(Accepted Paper) - to appear in IEEE Tran. on Intelligent Transportation Systems.
2. Agarwal V., Ranganadh T.S. and Chandramouli C.: Design and Development of a Wireless Internet based ECG Monitoring System for Ambulatory Applications,(Accepted Paper) - to appear in International Journal of Biomedical Engineering and Technology.
3. Patel, H. and Agarwal V.: Investigations into the Performance of PV based Active Filter Configurations and their Control Schemes under Uniform and Non-Uniform Insolation Conditions,(Accepted Paper) - to appear in IET Proc. on Renewable Power Generation.
4. Agarwal V., Aggarwal R., Patidar P., and Patki C.: A Novel Scheme for Rapid Tracking of Maximum Power point in Wind Energy Generation Systems, (Accepted Paper) - to appear in IEEE Tran. On Energy Conversion.
5. Satav, S. and Agarwal, V.(2009): Design and Development of a Low-Cost Digital Magnetic Field Meter With Wide Dynamic Range for EMC Precompliance Measurements and Other Applications, IEEE Tran. on Instrumentation and Measurements, 58, 2837 - 2846.
6. Agarwal, V., Arya, H. and Bhaktavatsala, S. (2009): Design and Design and Development of a Real-Time DSP and FPGA-Based Integrated GPS-INS System for Compact and Low Power Applications, IEEE Tran. on Aerospace and Electronic Systems, 45, 443-454.
7. Agarwal, V. and Krishna, D. (2009): Statistical Approach to Robust Design of Control Schemes for Series or Parallel Connected Power Devices, European Power Electronics (EPE) Journal, 19.
8. Patel, H. and Agarwal, V. (2009): MPPT Scheme for a PV fed Single-Phase Single-Stage Grid-Connected Inverter Operating in CCM with Only One Current Sensor, IEEE Tran. on Energy Conversion, 24, 256-263.
9. Sheta M., Agarwal V. and Nataraj P.S.V. (2009): A New Energy Optimal Control Scheme for a Separately Excited DC Motor Based Incremental Motion Drive, International Journal of Automation and Computing (A Springer Verlag Publication), 6, 277-286.
10. Patel, H. and Agarwal, V. (2009): Single-Stage Single-Phase Transformer-Less Doubly-Grounded Grid-Connected PV Interface, IEEE Tran. on Energy Conversion, 24, 93-101.
11. Sreekumar, C. and Agarwal, V. (2008): A Hybrid Control Algorithm for Voltage Regulation in DC-DC Boost Converter. IEEE Tran. on Industrial Electronics, 55, 2530-2538.
12. Satav, S. and Agarwal, V. (2008): Cost-effective In-house Fabrication of an Open TEM Cell For EMC Precompliance: Do it Yourself!. IEEE EMC Society Newsletter, 66-71.

13. Agarwal, V., Arya, H., Nayak, B. and Saptarshi, L. (2008): Extended Kalman Filter Based Loosely Coupled INS/GPS Integration Scheme Using FPGA and DSP, *International Journal of Intelligent Defence Support Systems*, 1, 5-26.
14. Kulkarni, R. and Agarwal, V. (2008): Taguchi Based Performance and Reliability Improvement of an Ion Chamber Amplifier for Enhanced Nuclear Reactor Safety, *IEEE Tran. on Nuclear Science*, 55, 2303-2314.
15. Agarwal, V. and Ramachandran, N.C.S. (2008): Design and Development of a Low Cost Spirometer with an Embedded Web Server, *International Journal of Biomedical Engineering and Technology*, 1, 439-452.
16. Jain, S. and Agarwal, V. (2008): An Integrated Hybrid Power Supply for Distributed Generation Applications Fed by Non-Conventional Energy Sources, *IEEE Tran. on Energy Conversion*, 23, 622-631.
17. Patel, H. and Agarwal, V. (2008): Maximum Power Point Tracking Scheme for PV Systems Operating Under Partially Shaded Conditions. *IEEE Tran. on Industrial Electronics*, 55, 1689-1698.
18. Patel, H. and Agarwal, V. (2008): Control of a Stand-alone Inverter Based Distributed Generation Source for Voltage Regulation and Harmonic Compensation. *IEEE Tran. on Power Delivery*, 23, 1113-1120.
19. George, S. and Agarwal, V. (2008): Optimum Control of Selective and Total Harmonic Distortion in Current and Voltage under Non-sinusoidal Conditions. *IEEE Tran. on Power Delivery*, 23, 937-944.
20. Patel, H. and Agarwal, V. (2008): MATLAB Based Modeling to Study the Effects of Partial Shading on PV Array Characteristics. *IEEE Tran. on Energy Conversion*, 23, 302-310.
21. Balaji, E., Jain, S. and Agarwal, V. (2008): Universal Single-Stage Grid-Connected Inverter. *IEEE Trans. on Energy Conversion*, 23, 128-137.
22. Sreekumar, C. and Agarwal, V. (2007): Voltage Regulation of a Buck Boost Converter- A Hybrid Control Approach, *Asian Journal of Control*, 9, 484-490.
23. Sreekumar, C. and Agarwal, V. (2007): Hybrid Control Approach for the Output Voltage Regulation in Buck Type DC-DC Converter. *IET Electric Power Applications*, 1, 897-906.
24. Jain, S. and Agarwal, V. (2007): Comparison of the Performance of Maximum Power Point Tracking Schemes Applied to Single Stage Grid Connected PV Systems. *IET Electrical Power Applications*, 1, 753-762.
25. Jain, S. and Agarwal, V. (2007): A Single-Stage Grid Connected Inverter Topology for Solar PV Systems. *IEEE Tran. on Power Electronics*, 22, 1928-1940.
26. Reddy, N. and Agarwal, V. (2007): Utility Interactive Hybrid Distributed Generation Scheme with Compensation Feature. *IEEE Tran. on Energy Conversion*, 22, 666-673.
27. George, S. and Agarwal, V. (2007): A DSP Based Optimal Algorithm for Shunt Active Filter under non-sinusoidal supply and unbalanced load conditions. *IEEE Tran. on Power Electronics*, 22, 593-601.
28. Jain, S. and Agarwal, V. (2007): A New, Current Control Based, MPPT Technique for Single-Stage Grid Connected PV Systems. *Elsevier Science Journal of Energy Conversion and Management*, 48, 625-644.
29. George, S. and Agarwal, V. (2007): A DSP Based Control Algorithm for Series Active Filter for Optimized Compensation under Non-Sinusoidal and Unbalanced Voltage Conditions. *IEEE Tran. on Power Delivery*, 22, 302-310.
30. Kulkarni, R. and Agarwal, V. (2006): Safety of Electronic Pressure Transmitters in a Nuclear Environment. *Special issue of the International Journal: Communications in Dependability and Quality Management*, Cacak, 9, 22-32.
31. Kulkarni, R. and Agarwal, V. (2006): Performance Evaluation and Qualification of Differential Pressure Switches for Nuclear Environment including LOCA. *Special issue of the International Journal: Communications in Dependability and Quality Management*, Cacak, 9, 121-131.
32. Abera, A., Bandyopadhyay, B. and Agarwal, V. (2006): Robust Multirate Output Feedback Sliding Mode Controller for Sensorless Induction Motor. *System Science and Control Journal*, 32, 57-70.
33. Agarwal, V., Sundarsingh, V. and Ramachandran, V. (2006): A Comparative Study of Gamma Radiation Effects on a Logarithmic Amplifier-Based Multiplier Circuit Using Common and Precision Devices. *Australian Journal of Electrical and Electronics Engineering*, 3, 7-15.
34. Kumar, M. and Agarwal, V. (2006): Power Line Filter Design for Conducted Electromagnetic Interference using Time Domain Measurements. *IEEE Tran. on Electromagnetic Compatibility*, 48, 178-186.
35. Wekhande, S. and Agarwal, V. (2006): High Resolution Absolute Position Vernier Shaft Encoder Suitable for High Performance PMSM Servo Drives. *IEEE Tran. on Instrumentation and Measurements*, 55, 357-364.
36. Agarwal, V. and Birkar, S. (2005): Comparison of Gamma Radiation Performance of a Range of Analog to Digital Converters under Biased Conditions. *IEEE Tran. on Nuclear Science*, 52, 3059-3067.
37. George, S. and Agarwal, V. (2005): A Novel, DSP Based Algorithm for Optimizing the Harmonics and Reactive Power Under Non-Sinusoidal Supply Voltage Conditions. *IEEE Tran. on Power Delivery*, 20, 2526-2534.
38. Agarwal, V., Sundarsingh, V. and Ramachandran, V. (2005): Prediction of the Performance of an Ion Chamber Amplifier under Gamma Radiation, *Elsevier Science Journal of Nuclear Engineering and Design*, 235, 1373-1387.
39. Krishna, D. and Agarwal, V. (2005): Active Gate Control of Series Connected IGBTs using Positive Current Feedback Technique. *IEEE Tran. on Circuits and Systems II*, 52, 261-265.
40. Agarwal, V., Sundarsingh, V. and Ramachandran, V. (2005): A Comparative Study of Gamma Radiation Effects on Ultra Low Input Bias Current Linear Circuits under Biased Conditions. *IEEE Tran. on Nuclear Science*, 52, 510-518.
41. Jain, S. and Agarwal, V. (2004): A New Algorithm for Rapid Tracking of Approximate Maximum Power Point in Photovoltaic Systems. *IEEE Power Electronics Letters*, 2, 16-19.
42. Wekhande, S. and Agarwal, V. (2001): A New Variable Speed Constant Voltage Controller for Self-Excited Induction Generator. *Elsevier Science Journal of Electric Power Systems Research (EPSR)*, 59, 157-164.

43. Wekhande, S. and Agarwal, V. (2001): Simple Control for a Wind-Driven Induction Generator, IEEE Industry Applications magazine, 7, 44-53.
44. Agarwal, V., Bhat, A. and Belaguli, V. (1997): Dynamic Analysis of LCC-Type Parallel Resonant Converter operating in Discontinuous Current Mode. Canadian Journal of Electrical and Computer Engineering, 22, 119 - 129.
45. Jain, A. and Agarwal, V. (1997): Design and Fabrication of Quasi-Resonant Converter. Journal of the Indian Institute of Science, 457-468.
46. Agarwal, V. and Bhat, A. (1995): Large Signal Analysis of the LCC-Type Parallel Resonant Converter using Discrete Time Domain Modeling. IEEE Tran. on Power Electronics, 10, 222-238.
47. Agarwal, V. and Bhat, A. (1995): Small-Signal Analysis of the LCC-Type Parallel Resonant Converter using Discrete Time Domain Modeling, IEEE Tran. on Industrial Electronics, 42, 604-614.

Selected (Refereed) Conference Papers (in reverse chronological order)

1. Patel, R., Patki, C. and Agarwal, V. (2009): Armature and Field Controlled DC Motor Based Wind Turbine Emulation for Wind Energy Conversion System Operating Over a Wide Range of Wind Velocity, International conference on sustainability in Energy and Buildings, Brighton, United Kingdom during 29th & 30th April and 1st May 2009.
2. Sharma, A. and Agarwal, V. (2009): Selecting Optimum Heat Sink for EMI Mitigation in Aircraft Power Supplies, IEEE conference- EMC 2009, St. Petersburg, Russia, June 2009.
3. Satav, S. and Agarwal, V. (2009): Design, Development and "Do-It-Yourself" Fabrication of an E-field Probe for Isotropic EMI Measurement, IEEE conference- EMC 2009, St. Petersburg, Russia, June 2009.
4. Joshi, G., Singh, P., Kumar, G. and Agarwal, V. (2009): Resonant Frequency Tracking System, Indian Particle Accelerator Conference -InPAC 2009, being held at RRCAT, Indore, India, from February 10 to 13, 2009.
5. Sharma, A. and Agarwal, V. (2009) Investigating the Conducted EMI Issues in Fighter Aircrafts Power Supplies, Proceedings of SPIE Defense, Security and Sensing Symposium, Florida, USA during April 13-17, 2009.
6. Sharma, P., Duttagupta, S.P. and Agarwal, V., Characterization and modeling of flexible photovoltaic modules for portable power applications, SUPERGEN, Nanjing, China during 6-7 April, 2009.
7. Sharma, P., Duttagupta, S.P. and Agarwal, V., Parameter extraction for Flexible Photovoltaic (FPV) modules to determine the impact of FPV technology on high insolation module performance, Proc. of SPIE Defense, Security and Sensing Symposium, Florida, USA during April 13-17, 2009.
8. Joshi, G., Vretenar, M., Kumar, G. and Agarwal, V. (2009): Development of RF System Model for one Resonator fed with two Amplifiers, Particle Accelerator Conference (PAC) 2009, Vancouver, Canada during May 4-8, 2009.
9. Joshi, G., Kumar, G. R. G. Pillay. and Agarwal, V. (2009): Development of the Model of a Self-Excited Loop, Particle Accelerator Conference (PAC) 2009, Vancouver, Canada during May 4-8, 2009.
10. Surya Prabha J. and Agarwal V. (2009): Experimental Investigations into the Performance of Forward and Flyback Based S4 Topologies for Lithium-Ion Battery Charging Applications, International Conference on Electrical Energy Systems and Power Electronics in Emerging Economies, Chennai, India, April 16-17, 2009.
11. B.V.K. Chaitanya. and Agarwal V. (2009): Fuzzy Logic based Sensorless Control of a BLDC motor, International Conference on Electrical Energy Systems and Power Electronics in Emerging Economies, Chennai, India, April 16-17, 2009.
12. Patki, C. and Agarwal V. (2009): Matrix Converter based Grid Connected System with Reactive and Harmonic Compensation Features. 2nd Global Conference on Power Control and Optimization PCO 2009, Bali, Indonesia during June 1-3, 2009.
13. Patki, C. and Agarwal, V. (2009) :Matrix Converter Interface for a Wind Energy Conversion System: Issues and Limitations. 2nd Global Conference on Power Control and Optimization PCO 2009, Bali, Indonesia during June 1-3, 2009.
14. Rajkiran, A. and Agarwal, V. (2009): Hybrid Control of Permanent Magnet DC Motor Drive, 2nd Global Conference on Power Control and Optimization (PCO), Bali, Indonesia during June 1-3, 2009.
15. Padmakumar, S., Roy, K. and Agarwal, V. (2009): Shaft Currents in Medium Voltage Motors and their Effect on Motor Bearings, International Conference on Electrical Energy Systems and Power Electronics in Emerging Economies, Chennai, India, April 16-17, 2009.
16. Padmakumar S., Agarwal, V. and Roy, K. (2009): An Investigative Study into Observer based Non-Invasive Fault Detection and Diagnosis in Induction Motors: Part-II, WASET sponsored International Conference on Electric Machines and Drive Systems (ICEMDS) Hongkong, China, March 23 - 25, 2009.
17. Padmakumar, S., Agarwal, V. and Roy, K. (2009): A Comparative Study into Observer based Fault Detection and Diagnosis in DC Motors: Part - I, WASET sponsored International Conference on Electric Machines and Drive Systems (ICEMDS) Hongkong, China, March 23 - 25, 2009.
18. Padmakumar, S., Agarwal, V. and Roy, K. (2009): A Tutorial on Dynamic Simulation of DC Motor and Implementation of Kalman Filter on a Floating Point DSP, WASET sponsored International Conference on Modeling and Simulation (ICMS), Tokyo, Japan, May 2009.
19. Padmakumar, S., Agarwal, V. and Roy K. (2009): Single phasing in induction machines: Neutral connection and the advantages" IEEE SDEMPED 09, France during 31/08-3/09.
20. Chandramouli, C. and Agarwal, V. (2009): Speech Recognition based Computer Keyboard Replacement for the Quadriplegics, Paraplegics, Paralytics and Amputees, IEEE International Workshop on Medical Measurements and Applications (MeMeA), Cetraro, Italy, May 2009.

21. Chandramouli, C. and Agarwal, V. (2009): Alternative Emergency Communication Channel through Television Cable, IEEE International Workshop on Medical Measurements and Applications (MeMeA), Cetraro, Italy, May 2009.
22. Thakur R.K. and Agarwal, V. (2008): Application of Interval Computation Technique to Fixed Speed Wind Energy Conversion System, IEEE International Conference on Sustainable Energy Technologies, Singapore, November 2008.
23. Talwalker, A., Chandramouli, C., Praveen, C. and Agarwal, V. (2008): Susceptibility Studies on 8051 Microcontroller Mounted on Single- and Multi-Layer Printed Circuit Boards, 10th International Conference on Electromagnetic Interference and Compatibility INCEMIC, Bangalore India, November 2008.
24. Padmakumar, S., Roy, K. and Agarwal, V. (2008): Induction machines: a Novel, Model Based, Non-Invasive Fault Detection and Diagnosis Technique, IEEE conference, POWERCON, New Delhi.
25. Chaitanya, K. and Agarwal, V. (2008): Fuzzy logic based speed control of sensorless BLDC motor. Proceedings of the 18th International Conference on Electrical Machines, Vilamoura, Portugal, September 2008.
26. Jayakrishna, B. and Agarwal, V. (2008): FPGA Implementation of QFT based Controller for a Buck type DC-DC Power Converter and Comparison with Fractional and Integral Order PID Controllers, Proceedings of the IEEE Control and Modelling for Power Electronics, Zurich, Switzerland, August 2008.
27. Deodhar, S. and Agarwal, V. (2007): Islanding Effects on the Line Frequency in Distributed Generation Systems. Proceedings of the National Power Electronics Conference at Bangalore, India, December 2007.
28. Jain, S. and Agarwal, V. (2007): A Grid Connected Multi-Operating-Mode PV Configuration Suitable for a Wide Range of Input Voltage. Proceedings of the National Power Electronics Conference at Bangalore, India, December 2007.
29. Thakur, R. and Agarwal, V. (2007): Effect of Excitation Capacitance Value On The Transient Behavior Of Induction Generator In Wind Energy Conversion Systems. Proceedings of the National Power Electronics Conference at Bangalore, India, December 2007.
30. Sreekumar, C. and Agarwal, V. (2007): A Simple Hybrid Mode Switching Control Law for a Buck Converter and its Stability Analysis, Proceedings of the International Conference on Advances in Control and Optimization of Dynamical Systems at Bangalore, India. February 2007.
31. Sreekumar, C. and Agarwal, V. (2006): Hybrid Control of Tri-State Boost Converter, Proceedings of the International Conference on Industrial Technology at Mumbai, India. December 2006.
32. Sreekumar, C. and Agarwal, V. (2006): A Circuit Theoretical Approach to the Hybrid Control of PCCM Boost Converter, Proceedings of the International Conference on Industrial Technology at Mumbai, India. December 2006.
33. Patel, H. and Agarwal, V. (2006): PV Based Distributed Generation with Compensation Feature Under Unbalanced and Non-linear Load Conditions for a 3-phase, 4 Wire System, Proceedings of the International Conference on Industrial Technology at Mumbai, India. December 2006.
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64. Wekhande, S. and Agarwal, V. (1999): A simple Wind driven self excited induction generator controller. Proceedings of the IEEE International Telecommunications Energy Conference at Denmark, June 1999.
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66. Wekhande, S. and Agarwal, V. (1998): Static VAR compensator with supply side current sensors and improved transient response using feed-forward control, Proceedings of the IEEE Power Electronics Drives and Energy Systems conference at Australia, December 1998, 757-761.
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76. Agarwal, V. and Bhat, A. (1993): Large Signal Analysis of the Series- Parallel Resonant Converter using Discrete Time Domain Modeling. Proceedings of the IEEE Industrial Electronics, Control, and Instrumentation, November 1993, 836-841.
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Papers in future conferences

1. Thakur, R.K. and Agarwal, V. (2009): A Quantitative Feedback Theory Based Control of a Variable Speed Squirrel Cage Induction Generator, Accepted for presentation at the IEEE PEDS conference to be held in Taipei, Taiwan during November 2-5, 2009.
2. Somaiah, B., Govindan, K., Dattagupta, S. and Agarwal, V.: Analysis and comparative study of input pulsating current of fuel cells by inverter load with different power converter topologies, accepted for presentation at the International symposium on fuel cell technologies: FUCETECH 2009, to be held at Nehru Centre, Mumbai during 11-13 November 2009.
3. Pradeep K. Peter and Agarwal, V.: Ground Isolated Switched Capacitor DC-DC Converters for Space Applications, under review for possible inclusion in the proc. of APEC 2010 to be held in Palm Springs, CA, USA during Feb. 21 - 25, 2010.

Invited Magazine Article(s):

1. Vivek Agarwal, Electromagnetic Interference Electromagnetic Compatibility, Industry Watch Electrical and Electronics, an Infomedia India Magazine for Industries.
2. Vivek Agarwal and Chetan Patki, Wind Energy Conversion Systems- A Review, Electrical India Magazine.
3. Vivek Agarwal and B. Somaiah, Fuel cells as alternate source of Energy, Electrical India Magazine.

Spot Light

Recently there was a news about the design and development of a web server based spirometer carried out in the Applied Power Electronics Laboratory (APEL), Dept of Electrical Engineering, IIT Bombay. Following are some of the news links:

[\[Link 1 \]](#) [\[Link 2 \]](#) [\[Link 3 \]](#) [\[Link 4 \]](#) [\[Link 5 \]](#) [\[Link 6 \]](#) [\[Link 7 \]](#) [\[Link 8 \]](#) [\[Link 9 \]](#) [\[Link 10 \]](#) [\[Link 11 \]](#) [\[Link 12 \]](#)

Awards and Honors

1. Senior Member of IEEE since 2001.
2. Nominated to "IEEE Fellow" grade (IEEE Fellows class of 2010).
3. Associate Editor for IEEE Transaction on Power Electronics. [\[Link \]](#)
4. System Society of India Vikram award, consisting of a gold medal and citation for contribution to real life problems of importance to the nation has been conferred on the nominee for the work on web server based spirometer.
5. The following paper:
S. Jain and V. Agarwal, "Comparison of the performance of maximum power point tracking schemes applied to single -stage grid -connected photovoltaic systems", Vol. 1, Issue 5, September 2007.
was among the top 20 most downloaded IET Electric Power Applications papers by users of the IEEE Xplore database in 2008 and is ranked No. 5 from the hundreds of papers that the journal has published since its launch in 1980, receiving 378 full text downloads during 2008. [\[Link \]](#)

6. The paper by the nominee and his student with the following details; Joshi, M. and Agarwal, V. (1997): Design optimization of ZVS and ZCS Quasi-resonant converters for EMI reduction, Proceedings of International Conference on Electromagnetic Interference and Compatibility, Hyderabad, India, December 1997, 407 - 414. Received the best paper award.
7. The paper by the nominee and his student with the following details: Agarwal, V. and Kulkarni, R.D. (2001): Reliability Prediction of Electronic and Power Electronic Devices Subjected to Gamma Radiations. Proceedings of the International Conference on Quality, Reliability and Control, Mumbai, India, December 26-28, 2001. Received the best paper award for a technical session
8. The work based on web based spirometer was reported in several newspapers and news websites.
9. Award for excellence in Teaching Assistantship, Univ. of Victoria, 1991.
10. Listed in various editions of Marquis Who's who; For example in the 10th Anniversary Edition of Who's Who in Science and Engineering (published in December 2007).
11. Fellow of IETE and Life member of ISTE. [IETE: Institute of Electronics and Telecommunications engineers, India; ISTE: Indian Society of Technical Education]
12. Executive council member of IETE Mumbai during 2001.
13. Member, Editorial Board, Inderscience Journal of Intelligent Defense Support Systems.
14. Member, Editorial Board, OPSEARCH the official journal of the Operational Research Society of India (ORSI), published by Springer India.
15. Participated in the activities of IEEE Bombay section since 1995 (this includes lectures in local engineering colleges, workshops etc.)
16. In the process of initiating an Industrial Electronics Society (IES) chapter as part of the IEEE Bombay section.
17. Author or co-author of several papers published in IEEE journals and conference proceedings during the last 18 years.
18. Reviewer for various IEEE conferences and journals (e.g. IEEE Tran. on Power Delivery, IEEE Tran. on Power Electronics, IEEE Tran. on Industrial Electronics and so on.).
19. Reviewer of several Ph.D. and M.Tech thesis
20. Served as session chairman in several conferences, delivered plenary talks and so on.
21. Member, Organizing committee, International Conference on Quality, Reliability and Control (Communication and Information Systems), Dec 26-28, 2001, organized by IETE Mumbai Centre and IIT- Bombay.
22. In-charge, for registration, National Power Electronics Conference (NPEC), 2003, IIT-Bombay.
23. Member, National Organizing committee, International Conference on Reliability, Safety and Hazards (ICRESH), Dec 1-3, 2005.
24. Co.-Chair, Organizing committee, 3rd International Conference on Quality, Reliability and Infocom Technology, Dec 2-4, 2006.
25. Member, Organizing Committee and registration chair for the International Conference on Industrial Technology (ICIT) - an IEEE IES sponsored conference, held in Mumbai, India during Dec. 2006.
26. Co-chair, International advisory committee for the International Conference on Reliability, Safety and Quality Engineering. The conference was held in Jan, 2008 in Mumbai, India and was co-technically sponsored by IEEE reliability society.
27. Asia liaison officer on the international programme committee of International Conference on Sustainability in Energy and Buildings, SEB-09, UK, 2009

B.Tech Students

- Rahul Jadhav
- Sumit Agarwal
- Manoj Kuldeep
- Sangeeta Meena
- Shrivant Valluru
- Sapan Shrivastava
- Neeraj Mandotia

M.Tech Students

Amit Jain, 1996	Sandeep Dhadich, 2004	Rakesh Aggarwal, 2007	Rajesh P, 2008
Amitabh Chatterjee, 1996	Mohit Kumar, 2004	Krishnanjulu Thota, 2007	J.Suryaprabha, 2008
S. Ganesh, 1996*	B.Raju Sekhar, 2004	M.Ravi, 2007	Pradeep Sharma, 2008
Ratnesh Singh, 1997	S.Bhaktavatsala, 2004*	C.Praveen, 2007	Rahul Porwal, 2008
Nabanita Ray, 1997	N.Reddy, 2005	Venkat Ramani, 2007	V.N.V.Srikanth, 2008
P. Siva Prakash, 1997	N.C.S. Ramachandran, 2005	Praveen Patidar, 2007	Chetan Patki, 2009
Anand kumar singh, 1997	Sandeep Satav, 2005	Shirish Deodhar, 2007	B.S.N.Raju, 2009
S. Sreejakumar, 2001	Vineet Aras, 2005*	Amit Kaushik, 2007	Rahul Patel, 2009
Mahesh Nankar, 2001	Somak Gupta Roy, 2005*	Shabbir Bohra, 2007	Ashish Sharma, 2009
Suresh Suralkar, 2001	Nitesh Kumawat, 2005	Atul Gupta, 2007	Sundeep Sunkari, 2009

S. Santhosh, 2001 Nitesh Singh, 2001 Pradeep Anand, 2001* Prashant Gogle, 2002 Mini Rajeev, 2002 Pavan Kumar Chillara, 2003 T. Ranganadh, 2003 C. Pavan Kumar, 2003 R. Vishwanath, 2003 Hiren Patel, 2003 Sunil Kumar, 2003* Anil Rahate, 2004 D.V. M. M. Krishna, 2004	A.N.V. Uday Kiran, 2005 Kapil Maheshwari, 2005 Vishalkumar Bhanani, 2005 Nitesh Kumawat, 2005 Milan Sheta, 2005* Pundlik Ghate, 2005 Lalit N. Saptarshi, 2006 E. S. Balaji, 2006 Raghavendra Thota, 2006 Tarun Kumar, 2006 N.Murali, 2006 Ramanji Reddy, 2006 Vishnu Sharma, 2006	P. Rajesh, 2007 Poonam Jasuja, 2007 Bh. Srinivasulu, 2007 Biswanath Naik, 2007 Mukesh Bagul, 2007 Ashutosh Maheshwari, 2007 Ashwini Dixit, 2008 Ashish Talwalker, 2008 G.Sudhakar, 2008 P.Santosh Krishna, 2008 Jai Krishna, 2008 K. Chaitanya, 2008 Sai Krishna, 2007	Vinod kumar, 2009* Neeraj Mandolai, 2009 Raj Kiran, 2009 Pankaj Arora, 2009* Kriti Kumar, 2010(E) C.Chandramouli, 2010(E) Shantanu R.Nakhate, 2010(E) Hussain, 2010(E) Deepak Parmar, 2010(E) Davu Anil Kumar, 2010(E) Rupesh G.Wandhare, 2010(E) Bhavik C.Chaudhari, 2010(E) Sagar Petkar, 2010(E)
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*Either supervisor or co-supervisor for these students

Phd Students

- Shashank Wekhande, 2001
- Madhuwanti Joshi , 2001
- Sincy George, 2005
- R.D.Kulkarni, 2007
- A.Alamayehu, 2007
- Sachin Jain, 2008
- C. Sreekumar, 2008
- Hiren Patel, 2008
- S.Padma Kumar, (ongoing)
- Rajesh Thakur, (ongoing)
- Gopal Joshi, (ongoing)
- Shekhar Dimble, (ongoing)
- Pooja sharma, (ongoing)
- Boddu Somaiah, (ongoing)
- Pradeep Peter, (ongoing)
- Sushil Thale, (ongoing)
- Vishal Jain, (ongoing)

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