



Mahmadasraf A. Mulla

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S. V. National Institute of Technology, Surat - 395 007, Gujarat, India.
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Course Taught

- Electrotechnique
- Power Electronics Converters
- Electrical Drives
- Electrical Circuits
- Computer Simulations in Electrical Engineering

Area of Research

- Multilevel Inverter
- Direct AC-AC Converters, Matrix Converter
- Power Quality Applications and Active Power Filters
- Electrical Drives
- Switched Mode DC-DC Converters

Teaching Experience

- Total teaching experience: 19 years
- Associate Professor, Electrical Engineering Department, S. V. National Institute of Technology, Surat - 395 007, Gujarat, India. Since 16-09-2010 [06 Years].
- Lecturer, Electrical Engineering Department, S. V. National Institute of Technology, Surat - 395 007, Gujarat, India. During 16-09-1997 to 15-09-2010 [13 Years].
- Lecturer (Adhoc), Electrical Engineering Department, S. V. National Institute of Technology, Surat - 395 007, Gujarat, India. During 06-08-1996 to 21-06-1997 and 04-08-1997 to 15-09-1997 [01 Year Approx.]

Publications

- Book: 01 - Mahmadasraf Mulla, Rajagopalan Chudamani, Anandita Chowdhury, *Studies of Control Algorithms for Series Hybrid Active Power Filter*, LAP Lambert Academic Publishing, Germany, ISBN: 978-3-659-90333-5, 2016.
<https://www.morebooks.de/store/gb/book/studies-on-control-algorithms-for-series-hybrid-active-power-filter/isbn/978-3-659-90333-5>
- Total publication in refereed journals and conferences: 33.
- Journal Articles: International - 06, National – 04.
- Conference Articles: International - 12, National – 11

Publications Details

Details of all article are listed at Google scholar, which is accessible with URL:
<http://scholar.google.co.in/citations?hl=en&user=tUOehagAAAAJ>

My Research Scholars

1. Piyushkumar Lavjibhai Kamani (D15EL001) - Area of Research: Multilevel Inverters
2. Payal P. Patel (D15EL002) - Area of Research: Direct AC-AC (Matrix) Converters
3. Rajeshkumar M. Prasad (D16EL001) - Area of Research: Rotor Side Control of Induction Machine
4. Vaghela Meghna A. (DS16EL006) - Area of Research: Multi-port DC-DC Converters

Membership

1. IEEE - Senior Member – 40190059 - SM'2016-17, M'2011-15, StuM'97-2002
2. Member –IEEE Industrial Electronics Society
3. Member –IEEE Power Electronics Society
4. Member –IEEE Industry Applications Society
5. Member –IEEE Power & Energy Society
6. Member – IEEE Education Society
7. Member - IAENG - International Association of Engineers - 120733
8. Member ACM - Association for Computing Machinery - 2599907
9. The Institution of Engineers, INDIA. Associate Member AM/088079/8
10. Indian Society for Technical Education, New Delhi. Life Member LM 25854
11. The Society of Power Engineers, INDIA. Associate Member AM/4217
12. Certificate of Competency, Electrical Supervisors, Government of Gujarat G/AS/E 16345.

Community Involvement / Administrative Activity

- PG Incharge of M. Tech. in Power Electronics And Electrical Drives (2008-2016)
- TEQIP II – Department Coordinator
- Incharge – Technical and Non Teaching Staff
- Incharge – Power Electronics and Computer Laboratory
- Coordinator - PG Accreditation
- Member - Stock Verification Committee
- Department Website Content Management
- Student council – MIS Committee – Chairman
- Member – Civil Engineering Stock Verification committee
- Member – Convocation committee

Awards, Distinctions and Fellowships

- Session chair in the IEEE International Conference on Global trends in Signal Processing, Information Computing & Communication (ICGTSPICC 2016) during 22 – 24 December 2016 at SSBT's College of Engineering and Technology, Bambhori, JALGAON, Maharashtra, India
- Promoted to Senior Member IEEE in December 2016.
- Worked as a one of the coordinator for conducting examination of DGVCL recruitment of Junior Engineer 2015 (Electrical) – consultancy worth 8 lakhs.
- Worked as a one of the coordinator for conducting examination of DGVCL recruitment of Junior Engineer 2014 (Electrical and Civil) – consultancy worth 12 lakhs.
- Served as a subject expert for the GTU interview of Assistant Professor in Electrical Engineering at Faculty of Engineering Technology and Research (FETR), Isroli - Tajpore, Bardoli on 26th August 2014.
- Session chair in the IEEE International Conference on Power and Energy 2012 (PECON-2012), at Kinabalu, Sabah, Malaysia, during 2-5 December, 2012.
- Won Certificate of Merit for the paper entitled, "Series Active Power Filter Using Generalised Instantaneous Power Theory", in the 2012 international conference of Electrical and Electronics Engineering, The World Congress on Engineering 2012 (WCE-2012), held at London, U.K., during 4-6 July, 2012.

- Session chair in the 2012 international conference of Electrical and Electronics Engineering, The World Congress on Engineering 2012 (WCE-2012), held at London, U.K., during 4-6 July, 2012.
- Served as superintendent for DOEACC – hardware examination.

Thesis Supervised

1. M. Tech. thesis titled, "Bi-directional power flow in Back-to-Back converter for DFIG based Wind Turbine System", by K Dharani Chandra Kumar (P14EL004).
2. M. Tech. thesis titled, "Shunt Active Power Filter Control with Adaptive Hysteresis Current Control Technique", by Anshul Awasthi (P14EL009).
3. M. Tech. thesis titled, "Current Control Techniques for Shunt Active Power Filter", by Disha Arora (P13EL019).
4. M. Tech. thesis titled, "A Study on ZVZCS phase shift PWM full bridge DC-DC converter with simple auxiliary circuits", by Linta Eliya Mathew (P13EL004).
5. M. Tech. thesis titled, "Minimization of torque ripple in Switched Reluctance Motor", by Dipika Damania (P13EL018).
6. M. Tech. thesis titled, "A Study on ZVZCS phase shift PWM full bridge DC-DC converter with simple auxiliary circuits", by P. Saikumar Naidu (P12EL005).
7. M. Tech. thesis titled, "A study and implementation of speed controller for Switch Reluctance Motor", by Nayan K. Rakholiya (P12EL006).
8. M. Tech. thesis titled, "A Three Phase Four Wire Power Filter Comprising a Three Phase Three Wire Active Filter and Zig-Zag Transformer", by Subramanian P J (P12EL020).
9. M. Tech. thesis titled, "A Comparative Study of Different Control Techniques for Series Hybrid Active Power Filter", by Nagamalleswara Rao K (P11EL024).
10. M. Tech. thesis titled, "Digital Filters for Active Power Filters", by Md Aftab Alam (P11EL035).
11. M. Tech. thesis titled, "Generalised Instantaneous Power Theory and its Application to Series Hybrid Active Power Filter", by Patel Payal P. (P10EL887).
12. M. Tech. thesis titled, "Design and Implementation of Series Hybrid Active Power Filter using p-q Theory", by V S Sai Munjurulu (P10EL852).
13. M. Tech. thesis titled, "Theoretical Assessments and Experimental Evaluation of Different Reference Generating Scheme for Shunt Active Power Filter", by Patel Sanjay C. (P10EL853).
14. M. Tech. thesis titled, "Comparative Study of PWM Rectifier with Phase Controlled Rectifier", by Satya Prakash Upadhyay (P09EL879).
15. M. Tech. thesis titled, "Design and Implementation of Shunt Active Power Filter", by Patel Vijay K. (P09EL874).
16. M. Tech. thesis titled, "Speed Control of Induction Motor using Cascaded Multilevel Inverter", by Jyanti Jadav (P08EL856).
17. M. Tech. thesis titled, "STATCOM-SMES System Co-ordination in Control Controlling Power System Dynamics", by Prajapati Darshit (P07EL855).
18. M. Tech. thesis titled, "Single Phase and 3 Phase SPWM Inverter Realization for Induction Motor Drives", by Chirag A Naik (P06EL857).

Conference/Workshop/Seminar Organized

Sr. No.	Title	Organized By	During
1.	Lecture Series on "Electrical Machines and Power Electronics"	TEQIP II and SVNIT	12 –13 March, 2016
2.	Finishing School on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	23 –26 January, 2016
3.	One week Self-Financed Short Term Training Program on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	07 -11 December, 2015
4.	Finishing School on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	1 – 2, 8 - 9 August, 2015
5.	One week Finishing School on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	17 – 18, 24 - 26 January, 2015
6.	One week Short Term Training Program on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	29 Dec 2014 to 02 Jan 2015
7.	Two Days Workshop on "Implementation of Power Electronics Systems"	M. G. Institute of Tech. Edu. and Research, Navsari.	17 to 18 October, 2014
8.	One week Short Term Training Program on "Implementation of Power Electronics Systems"	TEQIP II and SVNIT	01 to 05 July, 2013
9.	One week Short Term Training Program on "Laboratory Curriculum Development in Electrical Engineering"	AICTE and SVNIT	19 to 23 January, 2009
10.	One week Short Term Training Program on "Recent Trends in Power Electronics"	AICTE and SVNIT	7 to 11 July, 2008
11.	National Level Seminar on "Energy Auditing, Conversion and Prevention of Energy Pilferage"	SVRCET, Surat (Sponsored by GEDA & GEB)	5 - 6 March, 1999

Expert Talks

1. Lecture titled, "Hands-on Learning of DC and AC Drives" in the QIP Short Term Course on "Advances in Electrical Machines" at SVNIT, Surat during December 12-16, 2016.
2. Lecture titled, "Hands-on Learning of a PV Module Characteristic and Maximum Power Point Tracking" in the IEEE Gujarat Section workshop "Emerging Research Trends in Engineering-2016 (ERTE – 2016)" at Marwadi Education Foundation Group of Institution's, Rajkot during December 2-3, 2016.
3. Lecture titled, "Multilevel Inverters – Recent Advancements" in the TEQIP Symposium on "Electrical Machines and Power Electronics" at IIT Gandhinagar during 4th – 5th November, 2016.
4. Lecture titled, "Maximum Power Point Tracking for Solar PV System" in the TEQIP Symposium on "Electrical Machines and Power Electronics" at IIT Gandhinagar during 4th – 5th November, 2016.
5. Lecture titled, "MPPT Boost Converter for Solar PV" in the TEQIP - II Sponsored One Week STTP on "Solar Photovoltaic Energy: Contemporary Technologies & Recent Advances" during 8th – 12th October, 2016, organized at SVNIT.
6. Lecture titled, "Mitigation of Power Quality Problems using Active Power Filters", in the NaMPET sponsored STC on "Application of Custom Power Devices for Power Quality Improvement" organised at Department of Electrical Engineering, Malaviya National Institute of Technology Jaipur during 6th to 8th October 2016.
7. Lecture titled, "Energy Efficient Power Conversion using Power Electronics", at L&T-MHPS Boilers Pvt. Ltd., Surat-Hazira road, Hazira, in the program of Engineer's Day celebration on 9th September 2016.
8. Lecture titled, "Development of PMSM Drive", in the Summer School on Power Electronics at IIT Gandhinagar during June 20 - July 2, 2016.
9. Lecture titled, "Active power filters", in the Summer School on Power Electronics at IIT Gandhinagar during June 20 - July 2, 2016.
10. Lecture titled, "Protection in Inverter circuits", in the Summer School on Power Electronics at IIT Gandhinagar during June 20 - July 2, 2016.
11. Lecture titled, "Power Semiconductor Devices", in the TEQIP-II sponsored Lecture Series on "Electrical Machines and Power Electronics", during 12 –13 March, 2016, organized at SVNIT.
12. Lecture titled, "Power Electronic Converters", in the TEQIP-II sponsored Lecture Series on "Electrical Machines and Power Electronics", during 12 –13 March, 2016, organized at SVNIT.
13. Lecture titled, "Power quality issues and solution use Active Power Filter", in the GUJCOST sponsored STTP on Power Electronic Applications in Power System and Industries, during 28-Dec-2015 to 01-Jan-2016 at SVMIT, Bharuch.
14. Lecture titled, "Implementation of reference generation algorithms for Active Power Filters using ARM Cortex M4 32-bit Microcontroller", in the TEQIP-II sponsored STTP on Exploring 32-bit Microcontroller for Power Electronics Applications, during 21-25 December, 2015, organized at SVNIT.
15. Lecture titled, "Power Quality Issues and Solutions", in the TEQIP-II sponsored STTP on Advances in Power System Engineering, during 22-26 June, 2015, organized at SVNIT.
16. Lecture titled, "Implementation Aspects of Reference Generation Algorithms for Active Power Filters", in the ISTE Approved Short Term Training Program on "Applications of Modern Power Electronics in Industries and Utilities" during 15-27 June, 2015 at Nirma University, Ahmedabad.
17. Lecture titled, "Realisation of Active Power Filters using Cortex M4 32-bit Microcontroller", in the Faculty Development Program on Advancement and Application of Power Electronics in Present Scenario, during 22 - 26 December 2014 at MNIT Jaipur.
18. Lecture titled, "Realisation of Series Hybrid Active Power Filters" in the TEQIP-II sponsored STTP on Power Electronics Systems and Control, during 08 – 12 December 2014, organized at SVNIT.

19. Lecture titled, "Designing and demonstrating of an Inverter circuit using Microcontroller" at B. V. P. Institute of Technology, Vidyabharti Trust, Umrahk, Bardoli, on 12th September 2014.
20. Lecture titled, "Drive Circuit Designing for Thyristor and MOSFET / IGBT", in the Electrical Engineering at Faculty of Engineering Technology and Research (FETR), Isroli - Tajpore, Bardoli on 12th September 2014.
21. Lecture titled, "Implementation of Power Electronics Systems", at Electrical Department, U. V. Patel College of Engineering, Ganpat University, Mahesana, on 25th July 2014.
22. Lecture titled, "Measurement of High Voltage and High Current", in the TEQIP-II sponsored STTP on Advances in High Voltage Technology, during 23 – 27 June 2014, organized at SVNIT.
23. Lecture titled, "Realisation of Active Power Filter using ARM Cortex™-M4 Microcontroller", in the TEQIP-II sponsored STTP on Exploring 32-bit Microcontrollers, at Department of Electrical Engineering, SVNIT, Surat, during 03 – 07 June 2013.
24. Lecture titled, "Advanced Converters for Unity Power Factor Conversion", at Electrical Department, Marwadi Institute of Technology, Rajkot, on 05-May-2012.
25. Lecture titled, "Reactive Power Control" at Gujarat Technical University, Ahmedabad, on 16-Mar-2012.
26. Lecture titled, "Introduction to SEQUEL (A Solver for circuit EQUations with User-defined ELEments) software" in the 2-week ISTE workshop on "Solar Photovoltaics: Fundamentals, Technologies and Applications" during 12-22 December, 2011, combindly organized by ISTE, IIT Bombay and SVNIT.
27. Lecture titled, "Measurement of HVAC and HVDC", in the STTP on High Voltage Testing Techniques", during 21 – 25 December 2009, organized by AICTE and SVNIT.
28. Lecture titled, "Introduction to PSIM Software", in the STTP on Laboratory Curriculum Development in Electrical Engineering", during 19th to 23rd January, 2009, organized by AICTE and SVNIT.
29. Lecture titled, "Advanced Laboratory Techniques in Power Electronics", in the STTP on Laboratory Curriculum Development in Electrical Engineering", during 19th to 23rd January, 2009 organized by AICTE and SVNIT.
30. Lecture titled, "Laboratory Techniques in Testing Laboratory", in the STTP on Laboratory Curriculum Development in Electrical Engineering", during 19th to 23rd January, 2009 organized by AICTE and SVNIT.
31. Lecture titled, "Advanced Laboratory Techniques in Microcontroller", in the STTP on Laboratory Curriculum Development in Electrical Engineering", during 19th to 23rd January, 2009, organized by AICTE and SVNIT.
32. Lecture titled, "Introduction to the course on LCDEE", in the STTP on Laboratory Curriculum Development in Electrical Engineering", during 19th to 23rd January, 2009, organized by AICTE and SVNIT.
33. Lecture titled, "Embedded Control of PMBLDC Motor", in the STTP on Recent Trends in Power Electronics, during 7th to 11th July, 2008, organized by AICTE and SVNIT.
34. Lecture titled, "Energy Efficient Appliances", in the awareness program on "Electrical Energy Saving and Related Aspects" at Department of Electrical Engineering, SVNIT, Surat, during 13-14 September, 2007.
35. Lecture titled, "Testing of Instrument Transformers (CT & PT)", in the workshop on Testing in Electrical Engineering at Department of Electrical Engineering, SVNIT, Surat, during 3-5 January, 2007.

Conference/Workshop/Seminar/Training Attended

1. TEQIP Symposium on "Electrical Machines and Power Electronics" at IIT Gandhinagar during 4th – 5th November, 2016.
2. TEQIP-II sponsored workshop on "Outcome Based Education", by Prof. A. G. Keskar from VNIT Nagpur, at SVNIT, Surat, on 24 February 2016.
3. TEQIP-II sponsored workshop on "Objective and Outcome Based Education", at SVNIT, Surat, during 21 - 22 December 2013.
4. TEQIP-II sponsored STTP on "Exploring 32-bit Microcontrollers", at Department of Electrical Engineering, SVNIT, Surat, during 03 – 07 June 2013.
5. IEEE International Conference on Power and Energy 2012 (PECON-2012), at Kinabalu, Sabah, Malaysia, during 2-5 December, 2012.
6. Condensed Translation Training Course on Hindi, conducted by Central Translation Bureau, New Delhi, during 26 to 30 Nov 2012.
7. The Seventh IEEE International Conference on Industrial and Information Systems (ICIIS-2012), held at Indian Institute of Technology Madras, Chennai India, during 06 - 09 August, 2012.
8. The 2012 international conference of Electrical and Electronics Engineering, The World Congress on Engineering 2012 (WCE-2012), held at London, U.K., during 4-6 July, 2012.
9. 11th IEEE Environment and Electrical Energy International Conference (EEEIC-2012), held at Venice, Italy, during 18 - 25 May, 2012.
10. National Workshop on "Developing Soft Skill", at SVNIT, Surat, during 19 - 21 January 2012.
11. Short Term Training Program (STTP) on "Finite Element Analysis", at Anchor Institute Cell, SVNIT, Surat, sponsored by Industrial. Commissionerate, Government of Gujarat, during 09-13 June, 2010 (05 Days).
12. AICTE sponsored STTP on "Microcontrollers and their Applications", at Electrical Engineering Department, SVNIT, Surat, during 14-18 December, 2009 (05 Days).
13. Workshop on "Power Electronics Education", organized by NaMPET and Electrical Engineering Department, SVNIT, Surat, during 7-8 May, 2009 (02 Days).
14. AICTE sponsored STTP on "Advanced Electrical Power Systems", at Electrical Engineering Department, SVNIT, Surat, during 26-30 January, 2009 (05 Days).
15. Embedded Systems Conference India, organized by UBM India Pvt. Ltd., Bangalore, during 14-17 October, 2008 (04 Days).
16. Seminar on "ARM Microcontroller Solution", organized by Embedded System, Pune, on 25th August, 2008 (01 Days)
17. Training program on "Management Capacity Development Program for Future Manager", organized by EQUATE and SVNIT, during 4-8 February, 2008 (05 Days).
18. Workshop on "Recent Trends in Industrial Automation", organized by Department of Electrical Engineering, SVNIT, Surat, during 2-4 January, 2008 (03 Days).
19. Training course in "Practical Energy Efficiency, Design Engineering and Energy Auditing", organized by IDC Technologies, during 12-13 November, 2007 (02 Days).
20. Workshop on "Testing in Electrical Engineering", organized by Department of Electrical Engineering, SVNIT, Surat, during 3-5 January, 2007 (03 Days).
21. Seventh international Conference on Transformers "TRAFOTECH 2006" and International Seminar on Instrument Transformers "TECH-IT 2006", organized by IEEMA, Mumbai, during 19-21 January, 2006. (03 Days).
22. International Conference and Workshop on "Web Technologies", organized by W3C and CDAC, New Delhi, during 10-11 November, 2005. (02 Days).
23. AICTE sponsored STTP on "Wideband Wireless Digital Communication", organized by Electronics Engineering Department, SVNIT, Surat, during 13- 18 December, 2004 (06 Days).
24. Workshop on "Designing with Digital Signal Processors and Controllers", at Department of Electrical Engineering, Faculty of Technology & Engineering, The Maharaja Sayajirao University of Baroda, Vadodara. (India), during 7-19 June, 2004 (13 Days) (2 Week).

25. AICTE sponsored STTP on "MATLAB for Analysis and Simulation of Electrical, Electronics and Control Systems", held at Nirma Institute of Technology, Ahmedabad, during 25th to 30th November, 2002 (06 Days).
26. Training Programme on "DB2 UDB v7.1", organized as a part of IBM University Program by IBM India Ltd., Mumbai, during 17th to 21st September, 2001 (05 Days).
27. Continuing Education Programme on "Application of IT in Library & Information Centre", organized by Continuing Education Centre, SVRCET, Surat, during 30th July to 3rd August 2001 (05 Days).
28. Faculty Development Programme in Entrepreneurship, organized by Entrepreneurship Development Cell, SVRCET, Surat, sponsored by Gujarat Council on Science & Technology, Gandhinagar, during 23rd to 28th July 2001 (06 Days).
29. International Conference on "Knowledge based Computer System", organized by NCST, Bombay, during 18th to 19th December 2000 (02 Days).
30. AICTE / ISTE sponsored Training program on "Advances in Solar Energy", organized by Department of Mechanical Engineering, S. V. Regional College of Engineering and Technology, Surat, during 3rd to 14th July, 2000 (12 Days) (2 Week).
31. National Level Seminar on "Biomedical Instrumentation", organized by Department of Electrical Engineering, S. V. Regional College of Engineering and Technology, Surat, during 29th to 31st October, 1999 (03 Days).
32. AICTE sponsored National Level Seminar "IMPULSE-99 Vision Beyond 2000" at Department of Electrical Engineering, Dayasagar College of Engineering, Kumaraswamy Layout, Bangalore – 78, during 15 - 16 September, 1999 (02 Days).
33. AICTE sponsored STTP on "Biomedical Instrumentation", at Department of Electrical Engineering, University of Roorkee, Roorkee, during 8 - 12 March, 1999 (05 Days).
34. National Level Seminar on "Energy Auditing, Conversion and Prevention of Energy Pilferage", at Department of Electrical Engineering, S. V. Regional College of Engineering and Technology, Surat, sponsored by GEDA & GEB, during 5-6 March, 1999 (02 Days).
35. IEEE International Conference on "Application of Computers, Electronics and Electrical Engineering in Petroleum and Chemical Industries (CEEPCI-98)" held at ONGC, Chankheda, Ahmedabad, during 10th to 12th December, 1998 (03 Days).
36. Tenth National Power System Conference, held at Department of Electrical Engineering, Faculty of Technology & Engineering, The Maharaja Sayajirao University of Baroda, Vadodara-390 001, during 14 - 16 October, 1998 (03 Days).
37. Advanced course on "Specification and Verification of Real-time System using Duration Calculus", jointly organised by United Nations University, International Institute of Software Technology, Macan and Department of Electronics and Computer Engineering, SVRCET, Surat, during 26 - 31 January, 1998 (06 Days).
38. Symposium on "Modern Trends in Power Electronics", held at Department of Electrical Engineering, Faculty of Technology & Engineering, The Maharaja Sayajirao University of Baroda, Vadodara. (India), during 14th to 17th March, 1996 (04 Days).

Education

Doctor of Philosophy, Electrical Engineering,

S. V. National Institute of Technology, Surat, Gujarat, India, 395007.
2010-2014

- Thesis title: "STUDIES ON CONTROL ALGORITHMS FOR SERIES HYBRID ACTIVE POWER FILTER"
- Supervisors: Dr. (Mrs.) R. Chudamani (rc@eed.svnit.ac.in) and Dr. (Mrs.) A. Chowdhury (ac@eed.svnit.ac.in)
- **Abstract:** This research work includes the study and experimental validation of series hybrid active power filter (SHAPF) with a novel control algorithm, to compensate source current harmonics and source voltage unbalances simultaneously. The control algorithm derives reference voltage for compensating source unbalance from the sequence components and a reference voltage for compensating harmonic compensation by decomposing source voltage vector into quantities that represent different components of powers. In the proposed method, the instantaneous power multivector is defined using generalised instantaneous power theory. This instantaneous power multivector is composed of an average component and oscillating component. Using vector algebra, it is possible to obtain the voltage vectors corresponding to these components of power multivector. The separated components of voltage vector corresponding to oscillating components of instantaneous powers are useful for generating the reference voltage for SHAPF. The power multivector is expressed in three-phase coordinates and hence gives a simplified direct formula for the reference voltage generation of SHAPF, which is computationally less intensive as compared with existing methods of control for SHAPF.

Simulation studies for the more commonly used control algorithm of SHAPF have been carried out and presented to highlight their advantages and disadvantages. In order to evaluate the performance of the proposed control algorithm, simulation studies of SHAPF using proposed control algorithm for various conditions of the source voltage (balanced and unbalanced) and with different types of harmonic generating loads (current harmonics generating load and voltage harmonics generating load) have been carried out and the results are presented. Simulation studies show that the performance of the SHAPF with the proposed algorithm is better compared with existing methods reported in the literature.

Experimental investigations have been carried out for evaluating the performance of the proposed algorithm with SHAPF. In the experimental prototype the control circuit is developed using ARM Cortex-M4 STM32F407VGT6 microcontroller. The filtering performance of SHAPF is tested and the results indicate the effectiveness of the proposed algorithm. The operation of voltage harmonics generating load (three-phase diode rectifiers with capacitive filter at the DC side) under unbalanced source conditions draws highly nonlinear and unbalanced currents. Operation of this configuration under different unbalance conditions is analysed further and four distinct modes of operation of this configuration are identified. The compensation in all four distinct modes of operation is done using SHAPF working with the proposed algorithm. Overall, it has been observed that the THD of source currents is lower than 5 % in all test cases, which meets the regulations of IEEE 519 standard and the load voltages unbalance is lower than 2 % which meets the regulations of EN 50160 standard. The experimental results confirm the effectiveness of the proposed control algorithm and also validate the simulation results.

Keywords - Active power filter, generalised instantaneous power theory, geometric algebra, passive filter, power multivector, series hybrid active power filter, voltage vector decomposition.

Post Graduate Diploma in Information Technology (PGDIT)

Manipal Academy of Higher Education, Manipal, India.

2002-2003

- Two semester post graduate diploma course in information technology.
- Secured grade 'A' in both semesters.

Master of Engineering - Electrical Engineering (Industrial Electronics)

Faculty of Technology, M. S. University, Vadodara, Gujarat, India.

1995-1997

- Thesis title: "A SHUNT ACTIVE POWER FILTER - REALISATION".
- Grade Point Average: 3.97 out of 4.00.
- Details of Marks:

Course	Marks Secured	Percentage of Marks	Remarks
M.E.-Part I	371/550	67.45%	Distinction
M.E.-Part II	407/550	74.00%	Distinction
M.E.-Part III	265/300	88.33%	Distinction

Bachelor of Engineering - Electrical Engineering

S. V. National Institute of Technology (formally SVRCET), Surat, Gujarat, India, 395007.

1991-1995

- Dissertation Topic: "Conversion of Solar Energy for Domestic Application".
- Details of Marks:

Course	Year of Passing	Semester	Year wise % of Marks	Class/ Division
B.E.-I	1992	I & II	64.72 %	First Class
B.E.-II	1993	III & IV	60.25 %	First Class
B.E.-III	1994	V & VI	68.91 %	Distinction
B.E.-IV	1995	VII & VII	75.31 %	Distinction

School Education Details

Examination	Board	Month & Year of Passing	School	Marks Obtained
H.S.C. STD XII	Gujarat Secondary Education Board, Gandhinagar	March 1991	Sir C.J.N.Z. Madresa High School, Navsari	70.38 %
S.S.C Std. X	Gujarat Secondary Education Board, Gandhinagar	March 1989	D. S. & B. B. Govt. High School, Abrama	80.86 %