

---

**B.P.Divakar**  
Electrical and Electronics Engineering Department  
Reva Institute of Technology and Management  
E-Mail: [cebpdiva@hotmail.com](mailto:cebpdiva@hotmail.com)



**PERSONAL INFORMATION:**

**Father's Name:** Dr B.R. Prabhakar, Retd Prof, HVE Dept, I.I.Sc

**Address:** 10, 8<sup>th</sup> main, 21<sup>st</sup> cross, CHBS Layout, Vijayanagar, Bangalore 40

**EDUCATIONAL QUALIFICATION:**

- a) Bangalore Institute of Technology, Bangalore, India.  
**B.E.**, in Electrical Engineering, Feb-1988, first class.
- b) Annamalai University, Chidambaram, India,  
**M.E.**, in Power Systems, sept-1992; first class with distinction.
- c) The Hong Kong Polytechnic University, Hong Kong,  
**Ph.D** in Power Electronics, 1998.

**EXPERIENCE: Teaching and research**

- a) Bangalore Institute of Technology, Lecturer,  
Electrical Engg. Dept, *Oct-1992 to Mar-94*.
  - b) The Hong Kong Polytechnic University, Lecturer,  
Electrical Engg. Dept, *Feb-98 to July-98*.
  - c) The Hong Kong Polytechnic University, Research  
associate, Electrical Engg. Dept, *Oct-98 to Aug -00*.  
Soft-switching of inverter, Design Considerations
  - d) The Hong Kong Polytechnic University, Lecturer,  
Electrical Engg. Dept, *Sept-00 to 30<sup>th</sup> June – 03*.
  - e) The Hong Kong Polytechnic University, Research  
associate, Electrical Engg. Dept, *Sept-03 to July -04*;  
*Sep-04 to Dec-04; Jan-05 to Jun-05*  
Experiments on Fuel-Cells and simulation study on  
the application of SMES system.
-

---

f) The Hong Kong Polytechnic University, Research Fellow,  
Electrical Engg. Dept, *July-05 to Oct-31-07*  
Design of HID ballasts for automotive application.

g) The Hong Kong Polytechnic University, Research Fellow,  
Electrical Engg. Dept, *Nov-1-07 to April-2-08*  
Battery management control strategy.  
Collaborated with a team from Automotive Parts and Accessory Systems R&D Centre.

h) The Hong Kong Polytechnic University, Visiting Lecturer,  
Electrical Engg. Dept, *From Sept-07 to Apr-09*

i) Reva Institute of Technology and Management, Professor,  
Electrical and Electronics Dept, *From August-2009.*

**EXPERIENCE: Industry**

Engineer at *HiPot Engineers* (Then Sarala Engineers and Fabricators), Bangalore, Manufacturers of High Voltage equipment and Instruments.

**Ph.D THESIS:**

Design and implementation of novel topologies for DC-DC converter and development of a new Power Factor controller.

**RELEVANT INFORMATION:**

a) PhD Thesis

The topic of my Ph.d Work is on the design and implementation of new topologies for DC-DC converters and development of a new power factor controller. The original contribution of this work was the development of four new topologies for DC-DC conversion. Of these, two circuits were single-switch converters operating at constant switching frequency.

---

---

b) Research Interests:

- Power factor correction methods.
- Development of new topologies for DC-DC converters.
- Soft-switching techniques for inverters
- Applications of inverters in battery energy storage systems
- Electronic ballasts, BMS, UPS and EMI.
- Multilevel Inverters
- Sensorless control of Induction Motor
- Dynamic voltage restorer
- Battery Management systems

c) Subjects taught:

- Network analysis
- Basic Electronics
- Engineering Economics and management
- Electrical Machines
- Power Electronics and Drives
- Modern Power Electronics
- Power Electronics in utility applications
- High Voltage Engineering
- Power system operation and control

**e) Publications & Patent**

**Patent**

Eric Cheng, B.P. Divakar and D.H.Wang, "Method and system for automatically controlling power supply to a lamp of a vehicle", U.S. Patent 7,781,987, Aug 24, 2010.

**Journals**

1. B.P.Divakar, A. Ioinovici, "Zero –Voltage- transition PWM converter with low stresses and zero capacitive turn-on losses for all switches," *IEEE Transactions on Aerospace and Electronic Systems*, vol33, no.3, July 1997, pp.913-920.
  2. B.P.Divakar, D. Sutanto, "Optimum buck converter with a single switch." *IEEE transactions on Power Electronics*, 2000, pp 636-642
  3. B.P.Divakar, D.Sutanto, "Novel single switch DC-DC converter with PWM control," *International journal of electronics*, 2000, Vol 87, pp 741-756
  4. Divakar, B.P., Cheng, K.W.E., Sutanto, D., "Zero-voltage and zero-current switching buck-boost converter with low voltage and
-

- 
- 
- current stresses," *Power Electronics, IET* , vol.1, no.3, pp.297-304, September 2008.
  5. B.P. Divakar, K.W.E. Cheng et.al "A new voltage multiplier integrated HID ballast with dimming control for automotive application ," *IEEE Transactions on Industrial Electronics*, Volume 56, Issue 7, July 2009 Page(s):2479 – 2492
  6. Cheng K.W.E., Divakar B.P., Wu Hongjie, Ma Haibo, Ding Kai, and Ho Ho Fai "Battery Management System (BMS) and SOC Development for Electrical Vehicles," *IEEE Transactions on Vehicular Technology*, Volume 60, NO 1, Jan 2011, pp 76-88.

### Conference

1. B.P.Divakar, A. Ioinovici, "Zero-Voltage-transition Converter with low conduction losses operating at constant switching frequency," *IEEE PESC REC.*, 1996, pp. 1885-1890.
  2. B.P.Divakar, D. Sutanto, "A New buck converter with low current stress," *International conference for Power Electronics Drives and Motion, Hong Kong, Oct .14-17, 1997 PP.227-234.*
  3. B.P.Divakar, D. Sutanto," A new single switch PWM converter," *International conference for Power Electronics Drives and Motion, Hong Kong, OCT. 14-17, 1997, PP.163-170 .*
  4. B.P.Divakar, D.Sutanto,"An optimum PWM DC-DC converter using A single switch," *19<sup>th</sup> international telecommunication energy conference, OCT-19-23, 1997, pp 111-115*
  5. B.P. Divakar, D. Sutanto, "A novel boost power factor pre-regulator," *IEEE International conference on Power Electronics and drive systems, 27-29 July-99, pp.915-920.*
  6. B.P.Divakar, D.Sutanto, "A novel converter for Fuel-Cells applications," *IEEE PEDS*, 2005, pp162-165.
  7. K.W.E. Cheng, D.H. Wang, B.P. Divakar, et.al "Development of HID Electronic ballast for Automotive systems", *IEEE PESC, 2006, pp. 2170-2175.*
  8. B.P. Divakar, K.W.E. Cheng, D.H. Wang and P. Dong "Examination of the power conditioning driving circuit for automotive HID lamp" *APSCOM Conf proceedings on CD ROM, 2006*
  9. B.P. Divakar, K.W.E. Cheng, "Voltage multiplier integrated HID ballast and the application of Triple insulated wire in the design of Igniter transformer" *International conference on Power electronics systems and applications proceedings*, 2006, pp. 225-228
  10. B.P. Divakar, K.W.E. Cheng, "Study of Dimming control methods for HID automotive lamps" *International conference on Power electronics systems and applications proceedings*, 2006, pp. 277-282.
  11. B.P. Divakar, K.W.E. Cheng, D. Sutanto, Shi Zhanghai and K.F. Kwok "The use of power factor and K-factor as goodness factors in the analysis of dc-dc converters", *AUPEC -2008, 14-17 Dec.*
- 
-

- 
12. B.P. Divakar, K.W.E. Cheng, Shi Zhanghai and K.F. Kwok "power factor and K-factor in the analysis of dc-dc converters", *International conference on Power Electronics systems and applications proceedings*, 2009.
  13. B.P. Divakar, K.W.E. Cheng, H.J. Wu et. al. "Battery Management system and control strategy for Electrical and Hybrid vehicles", *International conference on Power Electronics systems and applications proceedings*, 2009, 20-22 May.
  14. K. Narayanaswamy and B.P. Divakar, "Simulation Study of Multilevel Inverters topologies", *International conference on Emerging Trends in Engineering proceedings*, NMAM Institute of Technology, NITTE, May 4-5, 2011.
  15. B.P. Divakar and K.W.E. Cheng, "Understanding the conducting states of active and passive devices in an inverter circuit used for power system application", *International conference on Power Electronics Systems and applications proceedings*, Hong Kong, June - 2011.
  16. H.S.. Gangadharaiah and B.P. Divakar, "Implementation of digital UART using VHDL for XILINX CPLDs", Accepted for presentation at *International conference at REC Bhalki- ICN -2011*

#### **Other Publications**

- [1] P. Dong, K. W. E. Cheng, S. L. Ho, D. H. Wang, B. P. Divakar and X. D. Xue, "Simplified Model and Simulation Validation Used in Xenon Automotive Lamp", *IET APSCOM* 30 OCT – 2 Nov 2006.
  - [2] Dong, P.; Cheng, K.W.E.; Ho, S.L.; Wang, D.H.; Divakar, B.P.; Ding, K., "General Discussion on Dimming Control Method Used for Discharge Lamp," *Power Electronics Systems and Applications*, PESA ,12-14 Nov 2006 , pp. 178-181.
  - [3] P. Dong, K. W. E. Cheng, D. H. Wang and B. P. Divakar, "Investigation on the Modeling and Ageing Characteristics of the HID Car Headlight automotive System", *Journal of Key Engineering Materials (KEM)*, Vol. 364-366, 2008, pp.1280-1284.
  - [4] Y.J. Bao, K. W. E. Cheng, and B. P. Divakar, "Research on a novel Switched reluctance wind power generator system for electric vehicles ", *Power Electronics Systems and Applications*, 2009. PESA 2009. 3rd International Conference on 20-22 May 2009 , on CDROM
  - [5] Ding, K.; Cheng, K.W.E.; Xue, X.D.; Divakar, B.P.; Wang, S.X. Xu, C.D. Wang, D.H., "A novel single-phase voltage sag restorer with diode-clamped multilevel bridge," *Power Electronics Systems and Applications*, 2009. PESA 2009. 3rd International Conference on 20-22 May 2009 , on CDROM
  - [6] Kwok, K.F.; Divakar, B.P.; Cheng, K.W.E., "Design of an LED thermal system for automotive systems," *Power Electronics Systems and Applications*, 2009. PESA 2009. 3rd International Conference on 20-22 May 2009, on CDROM
-

---

[7] Adil usman and B.P. Divakar, "Simulation Study of load frequency control of single and two area systems", VTU's, 1<sup>st</sup> Inter collegiate technical festival, REVA ITM, May 13-14, 2011.

**f) Other responsibilities :**

- Seminar organizer, presentation skills coordinator and Secretary, Departmental Learning and Teaching Committee From Sept -00 to June 03, in Hong Kong.
- Committee chairman for the design of Staff Diary at REVA ITM.
- Technical committee Chairman for VTU tech festival at REVA ITM, May -2011
- Founder of Project club at EEE dept, RITM

**Presentation skills co-ordinator (HK):**

Responsible for designing the activities for this course in Hong Kong. Students worked in groups and build a robot with advanced LEGO KITS known as ROBOLAB and program it using ROBOLAB software. The robots were designed to perform a specific function. The task the robot was supposed to perform would be given by the staff in the class. Students would attend in a group according to a timetable and discuss the progress. The activities designed for the class help to improve the capability of a student in different areas such as teamwork, time management and participation in mutual discussion to convey ideas, learning to work under constraints, cooperative learning & problem solving and communication. Working in a team, students could contribute to the solution and benefit from the contributions of others.

**Teaching Contribution:**

Motivated students to develop circuits and softwares related to Power electronics that were later used as supplements in the teaching of "power Electronics and Drives".  
Developed a novel method to teach the topic of 3-Phase rectifiers and 3-phase inverters.

**Technical talk/Seminar presentation/Short course**

1. HID Lighting for automobiles, EEE Dept, RITM, Sept-09
  2. Power Electronics application, IEEE forum, RITM, Jan-10
  3. Mentoring Students, RITM, Jan-10
  4. Good teaching Practices-My perspective, EEE Dept, RITM, Feb-10
-

---

6. Statistical data about future energy generation option  
Panel discussion; REVAMP Tech festival, RITM, April-7-2011

**R&D Activities:**

**Five candidates have registered for Ph.D in the following areas:**

1. Battery management system for electric vehicles
2. Development of new topology for multilevel inverter
3. Sensorless speed control of Induction motor
4. Development of new topology for powerfactor correction
5. Development of rapid prototyping tools for active filters using PSOC.

**R&D Grants**

Rs 6.5 Lakh grant has been obtained for the battery management system project from VTU.

**Reviewer:**

Reviewer for several IEEE Transactions and Conferences

**Editorial Member:**

Journal of Power Electronics Systems and Applications, Hong Kong

**FDP attended:**

Recent Advances in High voltage Testing and Measurement Techniques at IISC, 28-29, July 2011

**PG Project guided:**

- Implementation of UART (high speed) using VHDL for XILINX CPLDs

**UG Projects guided:**

- Battery charger
  - Simulation of an advanced aircraft power system
  - Simulation study of Multilevel Inverters
  - Development of a ballast for tubelights
  - Development of SPWM Inverter
  - Boost Power factor corrector
  - Development of Sepic dc-dc converter
  - Simulink model of a PV system
  - Emergency Backup supply for a cord less phone
  - Control of DC/DC converters for solar energy systems with maximum power tracking
  - Development of a 9 level multilevel inverter.
  - Development of Laboratory kit module for DC-DC converters
  - Integrated BLDC motor controller
  - Electrical Stress analysis on composite long rod insulator
-

---

**Current UG Projects:**

- Microcontroller based control of DC-DC converters
  - Mathematical Modelling and closed loop design guidelines for buck converter
  - Power Electronic interfacing circuit with MPPT algorithm for PV cell
  - Current mode control of Sepic dc-dc converter
  - Wireless transmission of current/voltage/power data
  - Software database management of remote electricity billing system.
  - Design of an UPS system.
  - Home automation
  - IR based student responsive system
-