CURRICULUM VITAE

1. PERSONAL INFORMATION

Name	**Nabil A. Ahmed**
Date of Birth	December 3, 1966
Place of Birth	Sohag, Egypt
Nationality	Egyptian
Gender	Male
Present Occupation	**Professor**
Major	**Electrical Engineering**
Minor	**Power Electronics and Renewable Energy**
Research Interests	Power Electronics, Renewable Energy Systems (Solar, Wind, Fuel Cells), Hybrid Generation Systems, Maximum Power Point Tracking, Active Power Filters, Development of Soft Switching Converters (DC-DC and AC-AC Converters), High Frequency Inverters for Induction Heating Applications and Arc Welding Power Supplies.
Permanent Address:	Department of Electrical Engineering, Faculty of Engineering, Assiut University, Assiut 71516, Egypt. E-mail: nabil@aun.edu.eg nabil2002_eg@yahoo.com Phone: + 20-88-2334688 (Secretary) + 20-88-2501073 (Home) Fax: + 20-88-2332553 (Office)
Current Address	Electric Engineering Department, Faculty of Technological Studies, Public Authority of Applied Education and Training, P.O. Box: 42325, El-Shuwaikh 70654, Kuwait. E-mail: na.ahmed@paaet.edu.kw Phone: + 965-97436101 (Mobile) + 965-22314316 (Office) + 965-24759189 (Home) Fax: + 965-24816568 (Office)

2. ACADEMIC QUALIFICATION

1996-2000 **Ph.D.** in Electrical Engineering, Power Electronics and Electrical Machine Drives, System Production Eng., Graduate School of Engineering, University of Toyama, Toyama, **Japan**.
Title: "*Development and Applications of Symmetrical PWM AC-AC Voltage Converters*".

1991-1993 **M.Sc.** in Electrical Engineering, Power Electronics and Electrical Machine Drives, Electrical and Electronics Engineering Department, Faculty of Engineering, Assiut University, **Egypt**.
Title: "*A Novel DC chopper Drive For Single-Phase Induction Motor*".

1985-1989 **B.Sc.** (with Distinction Degree) in Electrical Engineering, Electrical and Electronics Engineering Department, Faculty of Engineering, Assiut University, **Egypt**.
Project "**Grade of Distinction**".
Title: *"Electronic Control for Firing of Impulse Generators"*

3. EMPLOYMENT HISTORY AND EXPERIENCE

1. **Professor**, Electrical Eng. Dept., Assiut University, Assiut, **Egypt**.
   (from October 30, 2011 till Now, **Currently on Leave**)
2. **Associate Professor**, Electrical Eng. Dept., Assiut University, Assiut, **Egypt**.
   (from July 31, 2005 till October 29, 2011.
3. **Associate Professor**, Elec. Eng. Dept., Public Authority for Applied Education and Training, **Kuwait**.
   (from Feb. 21, 2012 till Now.
4. **Assistant Professor**, Elec. Eng. Dept., Public Authority for Applied Education and Training, **Kuwait**.
   (from September 16, 2007 till Feb. 21, 2012.
5. **Assistant Professor**, Electrical Eng. Dept., College of Technological Studies, Public Authority of Applied Education And Training, **Kuwait**.
   (from September 16, 2006 till now)
6. **Visiting Professor**, Follow-Up Research, Japan Student Organization (JASSO), University of Toyama, Toyama, **Japan**.
   (from June 29, 2007 till September 14, 2007)
7. **Visiting Professor and Post Doctoral Fellw**, Japan Society for the Promotion of Science (JSPS), Sophia University, Tokyo, **Japan**.
   (from April 12, 2005 till September 15, 2006)
8. **Senior Researcher and Post Doctoral Fellow,** Electric Energy Saving Research Center (EESRC), Kyungnam University, **Korea**.
   (from October 8, 2004 till Apri l 9, 2005)
9. **Assistant Professor,** Electrical Eng. Dept., Assiut University, Assiut, **Egypt**
   (from June 25, 2000 till July 30, 2005)
10. **Lecturer,** Electrical Eng. Dept., South Valley University, Aswan, 2001-2004, **Egypt** (Part time)
11. **Lecturer,** Electrical Eng. Dept., High Institute of Energy, Aswan, 2003-2004, **Egypt** (Part time)
12. **Assistant Lecturer**, Electrical Eng. Dept., Assiut University, Assiut, **Egypt**
    (from April 17, 1994 to June 25, 2000)
13. **Demonstrator**, Electrical Eng. Dept., Assiut University, Assiut, **Egypt**
    (from November 22, 1990 to April 17, 1994)
14. **Research Assistant,** Elec. & Electronics Eng. Dept., Toyama University, **Japan**
    (from July 1, 1999 to January 31, 2000.
15. **Research Student,** Elec. & Electronics Eng. Dept., Toyama University, **Japan**
    (from January 25, 1996 to March 31, 1997.
16. **Part-Time Work as a Technical Engineer and Trainer in the Following Private Computer Training Institutes:**
    International British Institute (IBI), Assiut Branch, (from April 1994-January 1996)
    Egyptian American Center (EAC), Assiut Branch, (from April 1994-January 1996)
    International Computer Center (ICC), Assiut Branch, (from April 1994-January 1996)
17. **Egyptian Armed Forces**
    (from Dec 16, 1989 to March 1, 1991)

4. LANGUAGES:

English (Excellent Spoken and Writing)
Japanese (Good)
Arabic (Mother Tongue)

5. HONORS AND ACADEMIC AWARDS

- **Egypt National Award for Scientific Research and Technology**, Egypt, 2005.
- Selected for **"Marqui's Who's Who in Science and Engineering"** since 2007.

- **Best Paper Award**, International Appliance Technical Conneference, IATC 2006, March 27~29, 2006, Chicago, USA.
- **Best Paper Award**, International Conference on Electrical Machines and Systems, ICEMS 2005, September 27~29, 2005, Nanjing, China.
- **Best Presentation Award**, International Conference on Electrical Machines and Systems, ICEMS 2004, October 31~November 3, 2004, Jeju Island, Korea.
- **Top of the B.S. Graduating Class** of Assiut University in the academic year 88/89**.**
- **Govt. of Egypt National Merit Scholarship** for the academic years 1985 ~ 1989.
- **Japan Society for the Promotion of Science (JSPS) Fellowship**, at the Electric and Electronics Eng. Dept., Sophia University, Tokyo, Japan, July 2005 - July 2007.
- **Follow-up Research Fellowship, Japan Student Services Organization (JASSO)**, University of Toyama, Toyama, Japan, June 29 –September 14, 2007.
- **Post Doctorial Fellow** at the Electric Energy Saving Research Center (EESRC), Kyungnam University, Korea from October 2004 – April 11, 2005.
- **Govt. of Japan Monbusho scholarship for Ph.D. students** (Jan., 1996- March, 2000).
- **Undergraduate "Distinction Award**" of years 1987/1998 and 1988/1989.
- Serving as **Session Chair** for the International Conference of Power Electronics ICPE'04, October 18~22, 2004, Busan, Korea.
- **Actively participated in all the meetings of the Council** of the Elec. Engineering Dept., Assiut Univ. from 10/2001-to-9/2002, and the EE Dept. Committees for Performance Evaluation & Curricula Review.

6. MEMBERSHIP and REVIEWING

Membership

1) Institue of Electronics and Electric Engineering (IEEE), Power Electronics Society.
2) Japan Institute of Electrical Engineering (IEEJ).
3) World Academy of Sience, Engineering and Technology (WASET) Technical Committee on Natural and Applied Sciences.
4) Egyptian Engineering Syndicate.
5) Society of Kuwait Engineers.
6) Accreditation Board for Engineering and Technology (ABET), Faculty of Technological Studies, Kuwait.
7) Self Evaluation and Accreditation Team at the Faculty of Technological Studies, Kuwait.
8) Department Member, Electrical and Electronics Engineering Department, Faculty of Engineering, Assiut University, Assiut, Egypt. (June 2000 to Now), Currently on Leave.
9) Department Member, College of Technological Studies, Public Authority for Applied Education and Training (Sept. 2006 to Now).
10) Team of Assiut University Management Information System (MIS) for Students and Management Affairs (Phase I).
11) Self Evaluation and Accredatation Team at the Faculty of Engineering, Assiut University, Assiut, Egypt.
12) Quality Assurance Team at the Faculty of Engineering, Assiut university, Assiut, Egypt.

Reviewer for the following Journals/Transactions:

International Transactions and Journals

1) IEEE Transactions on Industry Applications
2) IEEE Transactions on Power Electronics
3) IEEE Transactions on Industrial Electronics
4) IEEE Transactions on Sustainable Energy

5) IEEE Transactions on Energy Conversion
6) IET Electrical Power Application (Previously IEE on Electrical Power Applications)
7) Journal of Solar Energy, Elsiver Publisher
8) Journal of Energy, Elsiver Publisher
9) International Journal of Electrical Power and Energy Systems
10) Electric power systems Research, Elsiver Publisher
11) Journal of Applied Energy, Elsiver Publisher
12) Electrical Power Systems and Components
13) Internation Journal of Power Electronics (IJPELEC)
14) International Journal of Electronics Letters
15) International Journal on Power System Optimization
16) International Research Journal of Engineering Science, Technology and Innovation
17) International Journal of Circuit Theory and Applications
18) Scientific Journal of Electrical Systems
19) World Journal of Modeling and Simulation
20) Journal of Science and Technology
21) Journal of Science and Technology (SJST)
22) Scientific Journal of Electrical Systems

Member of the Editorial Board of the following Journals:

1) International Journal of Engineering and Technology Innovation (IJETI, ISSN 2223-5329)
2) ISRN Electronics is one of the International Scholarly Research Network (ISRN) Electronics
3) International Journal on Power System Optimization.
4) World Academic For Science, Engineering and technology (WASET) on Natural and Applied Sciences.

Reviewer and member of the International Technical Program Committee (ITPC) of the following International Conferences:

1) IEEE Energy Conversion Congress and Exposition (ECCE), Milwaukee, USA, September 18-22, 2016.
2) IEEE Energy Conversion Congress and Exposition (ECCE), Montreal, Canada, September 20-24, 2015.
3) 2013 IEEE Energy Conversion Congress and Exposition (ECCE), Denver, Colorado, USA, September 15-19, 2013.
4) IASTED International Conference on Power and Energy Systems (EuroPES 2012), Napoli, Italy June 25–27, 2012.
5) The 7th IEEE Conference on Industrial Electronics and Applications (ICIEA 2012), Singapore, 18–20 July 2012.
6) IEEE Energy Conversion Conference & Expo (ECC'2010), Atlanta, Georgia, September 12-16, 2010.
7) 5th IEEE Conference on Industrial Electronics and Applications, ICIEA'2010, Taichung, Taiwan from 15-17 June 2010.
8) IEEE International Symposium on Industrial Electronics, ISIE'10, Bari, Itali, July 4-7, 2010.
9) International Conference on Renewable Energy ICRE'09, Damascus, Syria, 30 November-3 December, 2009,
10) IEEE Energy Conversion Congress and Exposition (ECCE 2009), San Jose, California, USA on September 20-24, 2009.
11) Renewable Energy Applicatuions; Optional or Necessary?, Kuwait, November 3-6, 2009.
12) IASTED International Conference on Solar Energy, SOE'2009, Phuket, Thailand, March 16-18, 2009.
13) IASTED International Conference on Power and Energy Systems (EuroPES 2009), Palma de Mallorca, Spain from September 07, 2009 to September 09, 2009.

14) International Conference on Power and Energy Systems EuroPES 2008, Corfu, Greece, Jun 23-25, 2008.
15) The Fourth International Conference on Energy Research and Development (ICERD-4), Kuwait, November 17-19, 2008.
16) The 39th IEEE Power Electronics Specialist Conference, PESC'08, Island of Rhodes, Greece, June 15-21, 2008.
17) The 38th IEEE Power Electronics Specialist Conference, PESC'07, Orlando, Florida, USA, June 17-21, 2007.
18) The first Annual Conference for Young Scientists basic Science and Technology, Assiut University Faculty of science, Assiut, May 5-6, 2007.
19) The 37 IEEE Power Electronics Specialists Conference, PESC'06), Jeju, Korea, , June 18-22, 2006.
20) The 36 IEEE Power Electronics Specialists Conference, PESC'05, Brazil, June 12-16, 2005.
21) IEEE Sixth International Conference on Power Electronics and Drive Systems, PEDS'05, Kuala Lumpur, Malaysia, November 28-December 1, 2005.
22) IASTED International Conference on Power and Energy Systems "EuroPes 2003", Palma de Mallorca, Spain, August 29-31, 2007.
23) European Power and Energy Systems "EuroPes 2006", Rhodes, Greece, June 26-28, 2006.
24) IASTED Modeling and Simulation, Montreal, Canada, May 24-26, 2006.
25) The 16th International Conference on Modeling and Simulation, ASM'2005, Cancun, Mexico, May 18-20, 2005.
26) IASTED International Conference on Power and Energy Systems (EuroPES 2005), Benalmadena, Spain, June 15-17, 2005.
27) IEEE 7th International Conference on Intelligent Engineering Systems, INES'2003, Assuit, Egypt, March 4-6, 2003.
28) IASTED International Conference on Power and Energy Systems "EuroPes 2003", Marbella, Spain, September 03-05, 2003.
29) IASTED International Conference on Power and Energy Systems - PES 2004, Florida, USA, November 29 - December 1, 2004.
30) IASTED International Conference on Power and Energy Systems (EuroPES 2005), Benalmadena, Spain from June 15-17, 2005.

7. COMPUTER PROFICIENCIES AND SKILLS

- International Computer Driving Licience (ICDL).
- dSPACE 1103 digital signal propcessor.
- Real time work (Data Acquisition and Control) of experiments, equipment and instrumentation.
- Constructing and developing of scientific programs in the field of electrical power engineering.
- Programming: C/C++/Visual C, Fortran 95/90/77, Visual Fortran, GWbasic, Pascal, Logo.
- Teaching, training and using of Electrical and Electronic Engineering Software and Simulation packages such as PSPICE, Matlab and Matlab Simulink, Mathcad, SEMICAD, PSIM, Work Bench and World Power Simulator.
- Teaching, Training and using of other Software Packages. Such as Microsoft Office (Word, Power Point, Excel, Access), Photoshop, Lotus, Data Base, Visio Drawing and Information Technology.
- Teaching, Operating Systems: Windows XP/2000/NT/98, DOS.

8. COURSE TOUGHT

Taught a variety of the following under graduate and post graduate courses at different universities and institutes as Assiut University (Egypt), Sophia University (Japan), Electric Energy Saving Research Center, Kyungnum University, (Korea), College of Technological Studies (Kuwait), South Valley University (Egypt), El Minia University (Egypt):

Under Graduate Courses:

- Progeramable Logic Controller (PLC), (Elec.Eng., College of Technological Studies, **Kuwai**t).
- High Voltage Engineering (Electrical Eng. Dept., College of Technological Studies, **Kuwai**t)
- Automatic Control (Electrical Eng. Dept., College of Technological Studies, **Kuwait**)
- Advanced Topics in Electrical Machines (4th year B.Sc. students, El-Minya Univ., **Egypt**)
- Variable Speed Drives (4th year B.Sc. students, Faculty of Eng., Assiut Univ., **Egyp**t)
- Electrical Machines Theory III (4rd year B.Sc. students, Assiut Univ., **Egypt)**
- Electrical Machines Theory II (3rd year B.Sc. students, Assiut Univ., **Egypt**)
- Electrical Machines Theory I (2nd year B.Sc. students, South Valley Univ., **Egypt)**
- Power Electronics (Electrical Eng. Dept., College of Technological Studies, **Kuwait**)
- Electrical Energy and Distribution Systems (College of Technological Studies, **Kuwai**t)
- Industrial Electronics II (4rd year B.Sc. students, Sophia Univ., **Japan**)
- Industrial Electronics I (3rd year B.Sc. students, Kyungnam Univ**., Korea**)
- Computer and Its Applications (Electrical Eng. Dept., College of Basic Education, **Kuwai**t)
- Power System Components (4th year B.Sc. students, Assiut Univ., **Egypt)**
- Protection of Power Systems (4th year B.Sc. students, Assiut Univ., **Egypt**) and **Kuwait**
- Automatic Control (Electrical Eng. Dept., College of Basic Education, **Kuwai**t)
- Application of Industrial Electronics in Industry 3rd year B.Sc, El-Minya Univ., **Egypt**)
- Electrical Machines II (Electrical Eng. Dept., College of Technological Studies, **Kuwait**)
- Systems Simulation (4th year B.Sc. students, Faculty of Eng., Assiut Univ., **Egyp**t)
- Numerical Analysis(2th year B.Sc. students, Faculty of Eng., Assiut Univ., **Egyp**t)
- Power Electronics I (3rd year B.Sc. students, Assiut Univ., **Egyp**t)
- Power Electronics II (4th year B.Sc. students, Assiut Univ., **Egyp**t)
- Electrical Material (Electrical Eng. Dept., College of Technological Studies, **Kuwai**t)
- Electriacl Circuits (Electrical Eng. Dept., College of Technological Studies, **Kuwai**t)
- Electronic Circuits (Electrical Eng. Dept., College of Technological Studies, **Kuwait**)
- Basic Electricity (Electrical Eng. Dept., College of Technological Studies, **Kuwai**t)
- Electronic Circuits (Electrical Eng. Dept., College of Technological Studies, **Kuwai**t)
- Basic Electricity (Electrical Eng. Dept., College of Technological Studies, **Kuwait**)
- Electrical Circuits (Petrolium Eng. Dept., College of Technological Studies, **Kuwai**t)
- Electrical Measurements and Instrumentation (High Institute of Energy, Aswan, **Egypt)**

Post Graduate Courses:

- Renewable Energy (M.Sc. Course, Assiut Univ., **Egyp**t)
- Advanced Energy Conversion and Management (M.Sc. Course, Assiut Univ., **Egyp**t)
- Variable Speed Drives (Diploma Course, Assiut Univ., **Egypt**)
- Advanced Topics in Protection of Power Systems (Diploma Course, Assiut Univ., **Egypt**)
- Supervisor of 5 M. Sc. Graduated Students.
- Currently, Supervising 2 M.Sc. Students.

Thesis Supervision

- Farag Abo El-Usr, "Speed Control of Shaded-Pole Motor", **M.Sc. Thesis**, Elec. & Electronics Eng. Dept., Faculty of Eng., Assiut University, Assiut, Egypt.2002-2005.
- Ahmed, Abdel Malik, "Starting of Three-Phase Induction Motor by a Flux Weakening Technique", **M.Sc. Thesis**, Elec. & Electronics Eng. Dept., Faculty of Eng., Assiut University, Assiut, Egypt.2001-2003.

- Essam Khalaf, "Performance of Reluctance Motor Fed from Variable Frequency Supply", **M.Sc. Thesis**, Elec. & Electronics Eng. Dept., Faculty of Eng., Assiut University, Assiut, Egypt.2000-2002.
- Emad H. Alzohri , "Power Factor Improvement Techniques with Single-Phase AC Voltage Controllers", **M.Sc. Thesis**, Elec. & Electronics Eng. Dept., Faculty of Eng., Assiut University, Assiut, Egypt.2001-2003.
- Ibrahim S. Alhamed, "The Varstor as a Surge Protection Device for Electronic Equipments", **M.Sc. Thesis**, Elec. & Electronics Eng. Dept., Faculty of Eng., Assiut University, Egypt.

Supervising and Co-supervising the following B.Sc. Projects:

- Vector Control of Three-Phase Induction Motors, 2004.
- Speed Control of DC Motor Using Buck-Boost Converter, 2003.
- Harmonic Elimination Using Active Power Filter, 2003.
- Speed Control of Single-Phase Induction Motor by Voltage and Frequency, 2002.
- Three-Phase Induction Motor Fed From Single-Phase Supply with Electronically Controlled Capacitor, 2002.
- Electrification of Assiut University Hospitals, 2002.
- A Simple Topology of Three-Phase Symmetrical PWM AC-AC Power Converter, 2001.
- Design of Three-Phase Induction Motor, 1995.
- Design of Three-Phase Distribution Transformer, 1994.
- Chopper Fed-DC Series Motor, 1993.
- Transient Analysis of Synchronous Generator Loaded by a Rectifier Circuit, 1992.
- A Triac-Fed Single-Phase Induction Motor, 1991.

Interesting to Teach:

- Computer Aided Electric Machine Design
- Advanced Topics in High Voltage Engineering
- Advanced Topics in Renewable Energy Sources
- Special Topics in Power Electronics Engineering
- Systems Analysis & Design
- Engineering Statistical Analysis
- Optimization Techniques
- Management Systems Engineering
- Fuzzy Logic
- Genetic Algorithms
- Artificial Intelligience
- Programining Languages (Visual C, C++, Fortran)
- Many Others

Course Coordinator:

- Electrical Networks (Electrical Eng. Dept., College of Technological Studies, Kuwait)
- Basic Electricity (Electrical Eng. Dept., College of Technological Studies, Kuwait)

9. LIST OF PUBLICATIONS in Chronological Order

Refereed Journals and Transactions

[1] K. Alothman, **Nabil A. Ahmed** and M. E. AlSharidah, **"dSPACE Implementation of Closed Loop Speed Control of DC Motor using PI Controller"**, Accepted for Publication in Journal of Electrical Engineering.

[2] A. K. Alothman, **Nabil A. Ahmed** and M. AlSharidah, **"Small-Signal Analysis of Boost Converter Fed DC Motor with dSPACE Implementation"**, Submitted for Publication in the Arabian Journal for Science and Engineering.

[3] **Nabil A. Ahmed**, J. Y. Madouh, **"High Frequency Full-Bridge Isolated DC-DC Converter for Fuel Cell Power Generation Systems"**, Journal of Electrical Engineering, vol. 100, no. 1, pp. 239–251, March 2018.

[4] K. Alothman, **Nabil A. Ahmed** and M. E. AlSharidah**,"Experimental Implementation of PEM Fuel Cell Powered DC Motor for Vehicle Applications"**, Journal of Engineering Research, vol. 4, no. 3, pp. 95-113, September 2016.

[5] K. Alothman, **Nabil A. Ahmed**, M. E. AlSharidah and Bader. N. Alajmi, "**Model Predictive Control for Shunt Active Power Filter in Synchronous Reference Frame"**, Electrical Engineering and Technology, vol. 11, no. 2, pp. 405-415, February 2016.

[6] K. Alothman, **Nabil A. Ahmed** and M. AlSharidah, **"Harmonics Elimination of H-Bridge Cascaded Multilevel Inverters Using Linear Fuzzy Regression with None-equal DC Voltage Sources"**, Journal of European Power Electronics and Drives, EPE, vol.25, no. 3, pp. 709-718, 2015.

[7] K. Alothman, **Nabil A. Ahmed**, F. S. Al-Fares and M. E. AlSharidah, "**Parameter Identification of PEM Fuel Cell using Quantum-Based Optimization Method"**, Arabian Journal for Science and Engineering, vol. 40, no. 9, pp 2619-2628, September 2015.

[8] K. Alothman, **Nabil A. Ahmed** and M. AlSharidah, "**A Hybrid Real Coded Genetic Algorithm-Pattern Search Approach for Selective Harmonic Elimination of PWM AC/AC Voltage Controller"**, International Journal of Electrical Power and Energy Systems, vol. 44, no. 1, pp. 123–133, January 2013.

[9] **Nabil A. Ahmed**, Jamal Madouh and Ahmad M. Al-Kandari, **"Advanced Power Conditioner Using Sinewave Modulated Buck-Boost Converter Cascaded Polarity Changing Inverter"**, International Journal of Electrical Power and Energy Systems, vol. 43, no. 1, pp. 280-289, December 2012.

[10] **Nabil A. Ahmed**, **"High-Frequency Soft Switching AC Conversion Circuit with Dual Mode PWM/PDM Control Strategy for High Power IH Applications"**, IEEE Ttrans. on Industrial Electronics, vol. 58, no. 4, pp. 1440-1448, April 2011.

[11] **Nabil A. Ahmed**, A. K. Al-Othman and M.R. AlRashidi, "**Development of an Efficient Utility Interactive Combined Wind/ Photovoltaic/Fuel Cell Power System with MPPT and DC bus Voltage Regulation"**, Journal of Electric Power Systems Research, vol. 81, no. 5, pp. 1096-1106, May 2011.

[12] **Nabil A. Ahmed**, Faisal Q. El Enezi, "**Comprehensive Analysis and Simulation of Symmetrical Single-Phase PWM AC-AC voltage Converters"**, Journal of Electric Power systems Research, vol. 81, pp 57-65, January 2011.

[13] Q. Al-Enezi, J.K. Sykulski, **Nabil A. Ahmed**, "**Visibility and Potential of Solar Energy on Horizontal Surface at Kuwait Area"**, Journal of Energy Procedia, vol. 12, pp. 862-872, 2011.

[14] **Nabil A. Ahmed**, "**Advanced Energy Conversion System Using Sinusoidal Voltage Tracking Buck-Boost Converter Cascaded Polarity Changing Inverter"**, AIP, vol. 1337, pp. 48-54, 2011.

[15] **Nabil A. Ahmed** and Nabil H. Abbasy, **"PMU Optimal Allocation Using a Posteriori Bus-Observing Redundancy Removal Approach"**, Selected Topics in Power Systems and Remote Sensing, Journal of Iwata Prefecture, pp. 356-363, 4-6 October 2010

[16] **Nabil A. Ahmed**, Masafumi Miyatake and A. K. Al-Othman, "**Hybrid Photovoltaic/Wind Turbine Energy generation System with Voltage- Based Maximum Power Point Tracking"**, Journal of Electric Power Components and Systems. vol 37, no. 1, pp. 43-60, 2009.

[17] M. Al-Kandari and **Nabil A. Ahmed**, **"Electronically Switched Capacitor Fed three-Phase Induction Motor Operating from Single-phase Supply"**, Journal of Electric Power Components and Systems, vol. 37, no. 6, pp. 612 – 628, June 2009.

[18] Bishwajit Saha, Soon Kurl Kwon, **Nabil A. Ahmed**, Hideki Omori and Mutsuo Nakaoka, **"Commercial Frequency AC to High requency AC Converter With Boost-Active Clamp Bridge Single Stage ZVS-PWM Inverter"**, IEEE Ttrans. on Power Electronics, vol. 23, no. 1, pp. 412-419, January 2008.

[19] **Nabil A. Ahmed**, Masafumi Miyatake and A. K. Al-Othman, "**Power Fluctuations Suppression of Stand-Alone Hybrid Generation Combining Solar Photovoltaic/Wind Turbine and Fuel Cell Systems"**, Journal of Energy Converison and Management, , vol. 49, no. 10, pp. 2711-2719, May, 2008.

[20] **Nabil A. Ahmed**, **"Computational Modelling and Polarization Characteristics of Proton Exchange Membrane Fuel Cell with Evaluation of the Interface Systems"**, Journal of European Power Electronic, EPE, vol. 18, no. 1, pp. 32-41, March/April, 2008.

[21] **Nabil A. Ahmed** and Masafumi Miyatake, **"A Novel Maximum Power Point Tracking Controller for Photovoltaic Applications under Partially Shaded Insulation Conditions"**, Journal of Electric Power Systems Research, vol. 78, no.5, pp. 777–784, May 2008.

[22] **Nabil A. Ahmed**, Hyun Woo Lee and Mutsuo Nakaoka, **"Dual Mode Time-Sharing Sinewave Modulation Soft Switching Boost-Full Bridge One-Stage Power Conditioner without Electrolytic Capacitor DC Link"**, IEEE Trans. on Industry Applications, vol. 43, no. 3, pp. 805-813, May/June 2007.

[23] K. Al-Othman, **Nabil A. Ahmed,** A. M. Al-Kandari and H. K. Ebraheem, "**Selective Harmonic Elimination of PWM AC/AC voltage Controller Using Hybrid RGA-PS Approach"**, Journal of World Academy of Science, Engineering and Technology, vol. 23, pp. 140-148, August 2007.

[24] K. Al-Othman, **Nabil A. Ahmed**, A. M. Al-Kandari, and H. K. Ebraheem, "**Selective Harmonic Elimination of PWM AC/AC Voltage Controller Using Hybrid RGAPS Approach"**, International Journal of Electrical and Computer Engineering, vol. 1, no. 5, pp. 746-752, 2007.

[25] **Nabil A. Ahmed** and Mutsuo Nakaoka, **"Boost-Half Bridge Edge Resonant Soft witching PWM High Frequency Inverter for Consumer Induction Heating Appliances"**, IEE Proceedings Electric Power Application, vol. 153, no. 6 , pp. 932-938, Nov./Dec. 2006.

[26] Kazunori Nishimura, Katsuya Hirachi, Eiji Hiraki, **Nabil A. Ahmed**, Hyun Woo Lee and Mutsuo Nakaoka, "**Advanced Three-Phase PFC Power Converters with Three-Phase Diode Rectifier and Four Switch Boost Chopper",** Korean Institute of Power Electronics, KIPE Journal of Power Electronics, vol. 6, no. 4, pp. 356-365, October 2006.

[27] **Nabil A. Ahmed**, Toshiaki Iwai, Hideki Omori, Hyun Woo Lee and Mutsuo Nakaoka, **"A Novel Auxiliary Edge-Resonant Snubber-Assisted Soft Switching PWM High Frequency Inverter with Series Capacitor Compensated Resonant Load for Consumer Induction Heating"**, Journal of Power Electronics, KIPE Journal of Power Electronics, vol. 6, no. 2, pp. 95-103, April 2006.

[28] **Nabil A. Ahmed**, K Fathy, K Morimoto, E Hiraki, HW Lee, M Nakaoka, **"A Novel Soft-Switching PWM HB DC-DC Converter with DC Rail High and Low Side Active Edge Resonant Snubbers Assisted by High Frequency Transformer Parastic Components",** 電子情報通信学会技術研究報告. EE, 電子通信エネルギー技術, The Institute of Electronics, Information and Communication Engineers Japan (IEICE), vol. 105, no. 601, pp. 133-137, Feb. 2006.

[29] Hidekazu Muraoka, Osamu Noro, Kenya Sakamoto, Nabil A Ahmed and Hyun Woo-Lee, "适合低压大电流直流输入的软开关局部 PDM PWM 高频 DC-DC 功率变换器", in Japanese, Journal of Power Electronics, vol. 5, 2005.

[30] K Ogura, **Nabil A. Ahmed**, HW Lee and Mutsuo Nakaoka, **"Single-Phase Sinewave Inverter System with Time Sharing DC Link Voltage Sinewave Tracking Soft Switching PWM Boost Chopper for Stand-Alone Fuel Cell Power Generation Systems",** [全国大会] 平成 17 年電気学会全国大会論文集, the Institute of Electrical Engineering Japan, IEEJ, vol. 4, no. 97, pp. 150-151, March 2005.

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Books

[137] **Nabil A. Ahmed**, **"Electrical Measurements and Instrumentation",** Assiut University, Assiut, Egypt, September 2003.

10. CONFERENCE ATTENDANCES and PRESENTATIONS

10. 1 International Conferences

1) The 2nd IEEE International Conference on Applied System Innovation, ICASI, Malyisia, 20-21, 2018.
2) The 2nd International Conference on Energy Science and Application (ICESA 2014), January 10-11, 2014, Indiana, USA.
3) IEEE 10th International Power and Energy Conference, IPEC 2012, 12 - 13 December 2012, Ho Chi Minh City, Vietnam.
4) A Forum on Green Buildings, College of Technological Studies, Shuwaikh, Kuwait, March 26-27, 2012.
5) Forth Global Conference on Power Control and Optimization PCO 2010, Kuching, Sarawak, Malaysia, December 2-4, 2010.
6) International Conference of Renewable Energy Applications: Option or Necessity, EC2009, Kuwait, November 3-6, 2009.
7) International Conference on Power Electronics and power Engineering, ICPEPE 2008, Paris, France, November 21-23, 2008.
8) Fourth International Conference on Energy Research and Development (ICERD-4), Kuwait, November 17-19, 2008.
9) The International Power Electronics Technology Exhibition and Conference, PET'05, Dallas, USA, October 28~ Nov. 1, 2007.
10) IEEE 5th International Power Electronics and Motion Control Conference, IPEMC'06, Shanghai, China, August 14-16, 2006.
11) International Conference on Electrical Engineering, ICEE'06, YongPyong, Korea, July 9-13, 2006.
12) The International Appliance Technical Conference, IATC'06, Chicago, USA, March 27 27~29, 2006.
13) The IEEE Sixth International Conference on Power Electronics and Drive Systems, PEDS'05, Kuala Lumpur, Malaysia, November 28 – December 1, 2005.
14) The 31st Annual Conference of the IEEE Industry Electronics Society, IECON'05, Raliegh, North Carolina, USA, November 6-10, 2005.
15) The Power Electronics Technology Exhibition and Conference, PET'05, Baltimore, Maryland, USA, October 25~27, 2005.
16) The 40th Annual Meeting of IEEE Industry Applications Society, IAS'05, Hong Kong, October 2-6, 2005.
17) The IEEE Eighth International Conference on Electrical Machines and Systems, ICEMS'2005, Nanjing, China, September 27~29, 2005.
18) The Fifth International Power Electronics Conference, IPEC-Niigata 2005, Toki Messe, Niigata, Japan, April 4 ~8, 2005.
19) The Fourth International Conference of Power Conversion and Intelligent Motion, PCIM'2005, Holiday Inn Pudong, Shanghai, China, March 15 ~17, 2005.
20) The 30th Annual Conference of IEEE Industrial Electronics IECON'04, November 3~ 6, 2004, Paradise Hotel, Busan, Korea.

21) The International Conference on Electrical Machines and Systems (ICEMS 2004), October 31~November 3, 2004, Jeju Island, Korea.

22) The International Conference on Power Electronics (ICPE'04), October 18~22, 2004, Busan Exhibition & Convention Center, Busan, Korea.

23) The 2004 International Conference on Electrical, Electronic and Computer Engineering, ICEEC'04, September 5-7, 2004, Ain Shams University, Cairo, Egypt.

24) The 46th IEEE International Midwest symposium on Circuits and systems, Cairo, Egypt, Dec. 27-30, 2003.

25) The Ninth International Middle-East Power System Conference, MEPCON'2003, Cairo, Egypt, Dec.16-18, 2003.

26) IEEE 7th International Conference on Intelligent Engineering Systems, INES'2003, Assuit, Egypt, March 4-6, 2003

27) Al Azhar Engineering 8th International Conference, AEIC'93,Cairo, Egypt, Dec. 18-21, 1993.

28) International Conference on Industrial Electronics, Technology & Automation, IETA'2001, Egypt, Dec. 19-21, 2001.

29) The International Middle-East Power System Conference, MEPCON'97, Cairo, Egypt, Dec. 19-22, 1997.

30) IEEE-IAS (Industry Application Society), and IAS of IEE Japan Energy Conversion Conference, PCC'97, Nagaoka, Japan, August 3 ~ 6, 1997.

31) The International Middle-East Power System Conference,, *MEPCON'96,* Luxor, Egypt, January 3-6, 1996.

32) The 1st International Middle-East Power System Conference, Assiut, Egypt, Dec.19-22, 1989.

10.2 National Conferences

33) Japan-Kuwait Joint Symposium on Fuel Cells Seminar, "Research and Development, Applications on Fuel Cells and Hydrogen Production Technology", Kuwait Institute of Scientific Research (KISR), January 24, 2008.

34) The Japan Institute of Electronics, Information and Communication Engineers, JIEICE, Technical Meeting, Komamoto, Japan, February 17, 2006

35) The Institute of Electrical Engineering of Japan, IEEJ, The 2006 Annual Meeting Record, Yokohama, Japan, March 12-17, 2006.

36) The Institute of Electrical Engineering of Japan, IEEJ, Static Power Converters Annual Meeting, Osaka, Japan, January 21-22, 2006,

37) First National Conference for Scientific Research, Cairo International Conference center, Nasir City, Cairo, Egypt, May 28-29, 2005.

38) The Korean Institute of Power Electronics (KIPU) Autumn Conference, Seoul National University, Seoul, Korea, November 20, 2004.

39) Korean Institute of Electrical Engineers (KIEE) EMECS Power Electronics Autumn Annual Conference, Dnuog-buk University, Chnag, Korea, October 15-16, 2004.

40) Korean-Japan Joint Symposium on Advanced Industry Applications, Kyungnam University, Masan, Korea, October 22~23, 2004,

41) Korean International Machinery EXPO'2004, Gyeongsangnamdo, Changwon City, Korea, October 9-11, 2004.

10.3 Tutorial Attended

1) **Prof. Muhammad Harounur Rashid**, "Developments in Teaching Power Electronics Courses", Electrical Engineering Department, Faculty of Engineering, Kuwait University, Kuwait, March 12, 2009.
2) **Prof. Vassilios G. Agelidis**, "State-of-the-Art Power Electronics Technologies for the De-regulated Power Systems", IEEE PEDS 2005 - Tutorial 4, Kuala Lumpur, Malaysia, Nov. 28, 2005.
3) **Dr Pat Wheeler and Prof Jon Clare**, "Matrix Converter Technology", Power Electronics, Machines and Control Group, IEEE IECON 2005, Tutorial 2, Raleigh, NC, USA, November 6 , 2005.
4) **Prof. Bimal K. Bose, Life Fellow, IEEE**, "Power Electronics and Motor Drives-Technology Status and Trends", IEEE IECON 2005, Tutorial 1, Raleigh, NC, USA, November 6 , 2005
5) **Prof. Bimal K. Bose, Prof. Anton Mauder, Prof. Kamal Al-Hadded, Prof. Victor R. Stefanovic, and Prof. Marian P. Kazmierkowsky**, "Panel Discussion Session on Technology Advances in Power Electronics and motor Drives", Hannover Sheraton Capital Center, Nov. 9, 2005.
6) **Prof. V. Sukumar, Fairchild Semiconductor**, "Optimizing Silicon for Next Generation Appliances, International Appliance Technical Conference, IATC'06, Chicago, USA, March 27, 2006.
7) **Dr. Marco D'antonio and Dr. Gianni Vitale**, "Induction Cooking Applications using ZVQR converter with Cascade Devices - Emitter Switched Bipolar Transistor", IATC'06, Chicago, USA, March 27, 2006.
8) **"Power Electronics Products",** Toshiba Mitsubishi-Electric Industrial Systems Corp. (TMEIC), Tokyo, Japan, July 6, 2006.

10.4 National Workshops and Training Courses

1) Worldwide Instructional Design Systems, Curriculum-design Software Course, April 20-24, 2008.
2) Production of Educational materials using Windows Movie Maker, March 2-3, 2008.
3) Managing Class Work Electronically, March 9-13, 2008.
4) Total Quality Management in Education, April 1-3, 2007.
5) Questionnaire Design, March 10-12, 2007.
6) Bases of Writing Notebooks in the Process of Learning, March 24-26, 2007.
7) New Trends in Teaching and Education, July 2-5, 2005.
8) Decision Making and Solving the Problems, July 4-7, 2005.
9) Skills of Active Communication, September 28-30, 2004.
10) Legal Aspects of Universities, September 20-21, 2004.
11) Development of Universities Education, January 28-30, 2004.

10.5 Technical Visits

1) Toshiba-Mitsubishi Electric Industrial Systems Corp. (TMEIC), Fuchu Works, Fuchu, Tokyo, July 6, 2006.
2) Tokyo Semiconductor Exhibition, Makuhari Messe Complex, Chiba, Tokyo, March 2, 2006.
3) The 39th Tokyo Motor Show, Makuhari Messe complex, Chiba, November 2, 2005.
4) Fuji Electric Manufacturing Company of Electric Power Plants including Renewable Energy Sources, Substations, Power systems, Motor drives, Transportation, Power Devices, November 22, 2005.
5) Nanjing Electric Power Plant, Nanjing, China, September 29, 2005.
6) Jeju Wind Energy Power Plant, Jeju Island, Korea, November 1, 2004.
7) Jeju Recycle Power Plant, Jeju Island, Korea, November 2, 2004.
8) Kurimat Thermal Power Plant, Kurimat, Egypt, November 11, 2001.
9) Kanazawa Nuclear Power Plant, Kanazawa, Japan, July 22, 1998.

10) Assiut Thermal Power Plant, Assiut, Egypt, March 16, 1992.

11. PROFESSIONAL SEMINARS

1) **Nabil A. Ahmed**, "Solar Energy and Its Integration into Power Grids", Electrical Eng. Department, College of Technological Studies, Kuwait, May 25, 2009.
2) **Nabil A. Ahmed**, "Modeling and Polarization Characteristic of Fuel-Cell Generation Systems", Electrical Eng. Department, College of Technological Studies, Kuwait, June 4, 2007.
3) **Nabil A. Ahmed**, "Interesting Applications of Power Electronics", Electrical Eng. Department, College of Technological Studies, Kuwait, Nov. 26, 2006.
4) **Nabil A. Ahmed**, "Interior Lighting", Society of Kuwait Engineers", February 12-16, 2007.
5) **Nabil A. Ahmed**, "Internal Lighting and Decoration", Society of Kuwait Engineers", May 4-8, 2008.
6) **Nabil A. Ahmed**, "New and Renewable Energy Sources", Society of Kuwait Engineers", October, 12-16, 2008.

12. FUNDED PROJECTS

No.	Project Title	Funding Agency	Place/Date
1	Optimal Size and Locations of Distributed Generators in kuwait Electrical Grid	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2018
2	Active Output Filter under Nonlinear Load Condition for Solar Powered Unmanned Aircraft System	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2017
3	PEM Fuel Cell Powered Permanent Magnet DC Motor for Electrical Vehicle Applications	Public Authority of Applied Education and Training (PAAET)	Kuwait 2016
4	Active and Reactive Power Control of Renewable Energy Systems connected to Grid	Public Authority of Applied Education and Training (PAAET	Kuwait 2015
5	Model Predective Control for Shunt Active Power Filter in Synchronous Reference Frame	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2014
6	Solar Photovoltaic/Wind Energy Hybrid Generation System with Voltage Based Maximum Power Point Tracking	Kuwait Foundation for Advanced Science (KFAS)	Kuwait, 2009
7	Negative Sequence Injection Based Space Vector Modulation For Islanding Detection of Utility Interconnected Distributed Generators	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2008
8	Advanced Topology of Time Sharing Power Conditioner Using Soft Switching Boost Chopper Cascaded Half Bridge Inverter	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2007
9	Switched Capacitor Control Fed Three-Phase Induction Motor Operating from Single-Phase Supply	Public Authority of Applied Education and Training (PAAET)	Kuwait, 2006
10	Soft Switching High Frequency DC Feeder and DC Connected Bus Converter for Automotive Power Systems and Hybrid Electric Vehicles (HEV)	Honda R&D Co. Ltd.	Tokyo, Japan, 2006
11	Power Fluctuations Suppression of Stand-Alone Hybrid Generation Systems Combining Solar Photovoltaic and Wind Turbine with Fuel Cell	Electrical Eng. Dept., Sophia University, Japan	Tokyo, Japan, 2006
12	Soft Switching High Frequency Inverters for Consumer Induction Heating Appliances	Matsushita (National Panasonic), Nakanishi MFG, Electric Industrial Co., Ltd	Osaka, Japan, 2005
13	Soft Switching High Frequency DC-DC Converters for	Welding Engineering	Osaka, Japan,

	Arc Welding Power Supplies	Department, Daihen Corporation	2005
14	ZCS-PFM High Frequency DC-DC Converter for Microwave Power Generation.	MFG, Electric Industrial Co., Ltd.	Osaka, Japan, 2005
15	Soft Switching High Frequency DC-AC Time-Sharing Power Conditioning Connecting Renewal Energy Systems to Utility Interactive and Residential Power Applications.	Electric Energy Saving Center, Kyungnam University	Masan, Korea, 2004

12.1 Current and Past Research Projects Description

1. **Optimal Size and Locations of Distributed Generators in Kuwait Electrical Grid** (Public Authority of Applied Education and Training, PAAET, 2018) This project uses the genetic algorithm (GA) and Particle Swarm optimization (PSO) optimization technique based load flow study to determine the optimum size and location to place a DG unit in radial system to reduce the power loss and to improve the voltage profile of the entire power system. An objective function based on the optimal power flow is considered and GA and PSO will be employed to obtain the maximum net present worth of the DG [6] or using exact loss formula sensitivity factor [15], during interconnected operation by optimizing the production of local DGs and power exchanges with the main distribution grid. To confirm the accuracy and validity of a mathematic model and the proposed optimization technique, actual examples will be compared with other optimization approaches used to solve the economic dispatch problem. The algorithm is tested on an IEEE 33 and 39 bus systems. The superiority and usability of the proposed approach will be discussed in details. The system will be simulated with the power system simulator for engineering (PSS/E), which is an integrated, interactive program for simulating, analyzing, and optimizing power system performance and provides probabilistic and dynamic modeling features. The software provides for transmission planning and engineers a tool for use in the design and operation of reliable networks. Since its introduction in 1976 it has become the most widely used commercial program of its type. Kuwait Ministry of Electricity in Kuwait uses PSS/E software for all its studies due to its efficiency and accurate results.
   The objective of this project is to design suitable DGs that can be installed to the Kuwait distribution network in order to:
   - Improve the performance shaving to reduce the overall cost of power by generating during peak load hours when the cost of electricity is high.
   - Standby generation to provide power during system power interruption.
   - DGs have positive impact on the reduction of the distribution network power losses,
   - Improving voltage profile and enhancement of the system power quality.
   - Effectively improve power system stability, power quality, energy efficiency, and help environmental protection of the network

2. **Active Output Filter under Nonlinear Load Condition for Solar Powered Unmanned Aircraft System** (Public Authority of Applied Education and Training, PAAET, 2017) In this Project a new electric power structure for solar powered unmanned aircraft system is proposed. The presented topology is a prospective improvement to both Solong and Zyphyr models. The proposed UAS model utilized Zyphry UAS by using ac bus-line instead of dc bus-line to supply the propellers. The system involves PV array, lithium sulfur based energy management system, dc bus-line, inverter, active output filter (AOF) and ac bus-line. AOF topology is utilized to reduce the power conversion system size. The system is investigated under nonlinear load condition with closed-loop control strategy. Active compensation resistance technique control is deployed to ensure high quality

sinusoidal line voltages. It introduces an emulated resistance in series with H-bridges stage, this active resistance will create an injected voltage across it to damp unwanted harmonics created from the nonlinear load. The obtained results of voltage and current waveforms prove the feasibility and the accuracy of the proposed system.

3. **PEM Fuel Cell Powered Permanent Magnet DC Motor for Electrical Vehicle Applications** (Public Authority of Applied Education and Training, PAAET, 2016)
   A practical implementation of dSPACE control board for speed control of a PEM fuel cell fed electric vehicle is presented in this project. Fuel cell based electric vehicles, when compared to conventional vehicles, are relatively more efficient in terms of energy conversion and do not pose any threat to climate due to no emissions of hazardous gases. The dSPACE DS1103 controller platform is employed as an interface between MATLAB/Simulink and hardware in order to execute the on-line vehicle control scheme and manipulate various variables and parameters such as vehicle speed, voltage and current. The use of dSPACE DSP makes the control process simpler, flexible and does not need a complicated mathematical model of the electric vehicle. That in turn, leads to less computational time and a faster control response. The control scheme was implemented experimentally under different reference speed commands and sudden load changes. The experimental outcomes proved that the proposed setup is efficient, accurate and above all environmentally suitable due to a reduced amount of carbon dioxide (CO_2) emission for a given power output.

4. **Active and Reactive Power Control of Renewable Energy Systems for AC Grid-Tie Application (**Public Authority of Applied Education and Training, PAAET, 2015)
   Power quality for grid-connected renewable energy system is of importance. Conforming to IEEE 1547, the standard for grid interconnection is a requirement for all renewable energy systems intended for grid interconnection. Performance, stability and safety should be implemented within these systems. Since the nineties, renewable energy technology advanced tremendously because of many breakthrough implementations of power electronic devices. Economically, renewable energy markets have been expanding in part due to the ever increasing prices of oil as a bulk source for electrical energy. For these reasons, research focused on renewable energy integration with the power grid has gained more focus especially in power quality. This work focuses on a new implementation of model predictive current (MPC) controller in renewable energy system. A real-time MPC to control the active and reactive power flow of DG system in microgrid has been presented. The MPC of the selected DG system to instantaneously and individually control active and reactive power flow has been investigated and implemented. The dynamic performance of MPC has been evaluated by simulation and experimental results. Both simulation and experimental results have confirmed the effectiveness of the MPC by demonstrating the DG's talent of generating pure active power, pure reactive power, and a combine of active and reactive power and the proposed control system satisfies well the performance requirements. The transient response demonstrates good dynamic response of the control system, which enables to effectively increase the transient and dynamic stability of the micro grid.

5. **Model Predective Control for Shunt Active Power Filter in Synchronous Reference Frame (**Public Authority of Applied Education and Training, PAAET, 2013-2014). This project evaluates the performance of model predictive control (MPC) for a shunt active power filter (APF) in synchronous reference frame using the space vector pulse-width modulation (SVPWM). Synchronous reference frame based controller for a three-phase three wire current source shunt active power filter is proposed. The three phase load currents are transformed into synchronously rotating reference frame in order to reduce the

order of the control system. The proposed predictive current control calculates a reference current command for harmonic current components in synchronous reference frame. The fundamental load current components are transformed into DC components in synchronously rotating reference frame revealing only the harmonics. The predictive current controller will add robustness and fast compensation to generate commands to the SVPWM and controlling the APF with minimum switching frequency while maintaining fast harmonic compensation. By using the model predictive control, the optimal switching state to be applied to the next sampling time is selected. The APF current contains only the harmonic and reactive components, which are the reference compensating currents. In this method the supply current will be equal to the fundamental component of load current and a part of the current at fundamental frequency for losses of the inverter system. Mathematical analysis and the feasibility of the suggested approach is verified through simulation results under steady state and transient conditions for non-linear loads and the final report will contain its experimental validation.

6. **Solar Photovoltaic/Wind Energy Hybrid Generation System with Voltage Based Maximum Power Point Tracking** (This project is sponsored by Kuwait Foundation for Advanced science (KFAS) 2009-2011). This project is aimed at combining PV and WT generating systems to maximizing the output energy and reducing the output power fluctuations. A simple and sensorless MPPT controller will be employed to achieve MPPT for both PV and wind energies and to deliver this maximum power to a fixed dc voltage bus. The fixed voltage bus supplies the dc load, while the ac loads are fed through a PWM inverter. The dc voltage bus can be regulated using a PWM voltage source inverter. In this project, a novel solar inslation and wind-speed estimation scheme for the MPPT control of solar PV and WT power systems will be proposed, which is based on estimating these parameters without any direct or indirect measurements. The effectiveness of the proposed algorithm will be verified by simulation and experimental results.

7. **Negative Sequence Injection Based Space Vector Modulation For Islanding Detection of Utility Interconnected Distributed Generators** (This project was sponsored by Public Authority of Applied Education and Training (PAAET), Kuwait, 2009). It introduces a novel method of islanding detection for distributed generation networks employing negative sequence current injection measurement. The negative sequence current injection is generated in the synchronous space vector of the inverter reference current. Simulations were conducted on a distributed generator fed loads and injected negative sequence current components using PSIM software to confirm the effectiveness of the proposed method. Detailed simulations were run to demonstrate the performance of the NSCI islanding detection technique at inverters terminals.

8. **Switched Capacitor Control Fed Three-Phase Induction Motor Operating from Single-Phase Supply (**Public Authority of Applied Education and Training (PAAET), Kuwait, 2007) An electronically controlled capacitor, which employs one fixed capacitor with an electronic switch, is used to improve the performance of the three-phase induction motor operating from a single-phase supply. Variable capacitor values are obtained by controlling the duty cycle of the electronic switch. Instantaneous symmetrical components are used in modeling the motor, including the switching capacitor. Theoretical studies have been carried out for the system considered, and the results are presented and discussed. The results presented include transient speed, current, and torque patterns under starting and running conditions. The validation of the developed mathematical model by computer simulation and experimental results in comparison with conventional operation using one or two fixed capacitor values prove the accuracy and the strength in the proposed method.

9. **Advanced Time Sharing Power Conditioner Using Soft Switching Boost Chopper Cascaded Half Bridge Inverter** (This project was sponsored by Public Authority of Applied Education and Training PAAET, Kuwait 2007). In this project, a novel circuit topology of one-stage power conversion system composed of a sinewave absolute modulated boost chopper with a bypass diode and time-sharing sinewave pulse modulated half-wave (HB) inverter has been presented. This novel power conversion system uses the same concept of dual mode time-sharing control. A passive auxiliary circuit for soft switching operation of the boost chopper was introduced for further improvement in the total conversion efficiency of the proposed power conversion system. The operating principles and the unique features of this novel power processing converter using HB inverter are described and evaluated through a design example in terms of the switching voltage and current waveforms and actual power conversion efficiency as compared with the conventional hard switching and previously developed time-sharing ones using full-bridge (FB) inverter based on experimental and simulation results. This power conversion sysystem can be incorporated in utility AC power grid and in energy storage applications.

10. **Soft Switching High Frequency DC Feeder and DC Connected Bus Converter for Automotive Power Systems and Hybrid Electric Vehicles (HEV)**. (This project has been sponsored, Honda R&D Co. Ltd., Tokyo, Japan, 2006). In recent years, electronically controlled load in automobiles has increased significantly. Further increase is expected due to more comfort features, and potential replacement of some mechanical systems by all electrical systems like active suspension and power steering. The present bus voltage in automotive systems (14 V), decided by the alternator charging voltage, implies very high currents for the expected high power consumption. To keep the current levels manageable, the 42 V power net has been proposed, and adopted by most auto companies and suppliers for future generation automobiles. The choice of 42 V has been made on the basis of safety considerations, load dump overvoltage transients, and optimal utilization of silicon in power semiconductor devices. Hybrid electric vehicles (HEVs) are now gaining commercial success due to their higher mileage, lower emissions, and tax breaks. The main aims of this project are to:
    - Propose a dual dc bus voltage system, with both 42 and 14 V loads. Thus, a dc-dc converter, possibly bidirectional, will be required for interconnection between the two system voltages. Furthermore, converters with sophisticated controls will be required for features like active suspension and power steering.
    - Operate engine at optimal efficiency, achieved at high speeds. During initial acceleration and at low speeds, power is supplied by a battery powered motor leading to reduced idling losses and emissions. For high acceleration, power is derived from both the engine and the battery. During high speeds, the battery is charged from a generator connected to the engine. The motor used for generating mechanical power can also be used as a generator. During braking, the generator feeds energy back to the battery.
    - Use power electronic converters to control the motor (and generator for a separate machine), and for battery charging. In HEVs, the battery has to be maintained at less than full charge to receive regenerative energy during braking. Hybrid and completely electric vehicles with fuel cells as the power source and some means of energy storage may also be developed. These require power converters to interface fuel cell, energy storage element, motor/generator, and other electronically controlled loads.
    - A novel control schemes has been proposed to solve the large switching loss of the power devices with corresponding high frequency in the HEV systems.

11. **Power Fluctuations Suppression of Stand-Alone Hybrid Generation Systems Combining Solar Photovoltaic and Wind Turbine with Fuel Cell** (Sophia University,

Japan, 2006) This project was sponsored by the Japan Society for Promotion of Science (JSPS) A hybrid energy system combining variable speed wind turbine, solar photovoltaic and fuel cell generation systems is presented to supply continuous power to residential power applications as stand-alone loads. The wind and photovoltaic systems are used as main energy sources while the fuel cell is used as secondary or back-up energy source. Three individual dc–dc boost converters are used to control the power flow to the load. A simple and cost effective control with dc–dc converters is used for maximum power point tracking and hence maximum power extracting from the wind turbine and the solar photovoltaic systems. The hybrid system is sized to power a typical 2 kW/150 V dc load as telecommunication power plants or ac residential power applications in isolated islands continuously throughout the year. The results show that even when the sun and wind are not available; the system is reliable and available and it can supply high-quality power to the load.

12. **Soft Switching High Frequency Inverters for Consumer Induction Heating Appliances** (Nakanishi (National Panasonic) MFG, Electric Industrial Co., Ltd, Osaka, Japan, 2005) A novel soft-switching PWM utility frequency AC to high-frequency AC power conversion circuit, incorporating boost-half-bridge inverter topology, which is more suitable and acceptable for cost effective consumer induction heating applications, is presented. The operating principle and the operation modes are described using equivalent circuits with the operating voltage and current waveforms. The operating performances are illustrated and evaluated, including the power regulation and power conversion efficiency against duty cycle characteristics based on the power dissipation as compared with those of the previously developed high-frequency inverter. The practical effectiveness of the power converter is substantially proved, based on experimental results from a practical design example.

13. **Soft Switching High Frequency DC-DC Converters for Arc Welding Power Supplies** (Welding Engineering Department, Daihen Corporation Osaka, Japan, 2005) This project presents two new circuit topologies of the dc bus line side active resonant snubber assisted voltage source high frequency link soft switching PWM full-bridge dc-dc power converters acceptable for either utility ac 200V-rms or ac 400V-rms input grid. These high frequency switching dc-dc converters proposed in this project are composed of a typical voltage source-fed fullbridge PWM inverter, high frequency transformer with center tap, high frequency diode rectifier with inductor input filter and dc bus line side series switches with the aid of a dc bus line parallel capacitive lossless snubber. All the active switches in the full-bridge arms as well as dc bus line snubber can achieve ZCS turn-on and ZVS turn-off transition commutation with the aid of a transformer leakage inductive component and consequently the total switching power losses can be effectively reduced. So that, a high switching frequency operation of IGBTs in the voltage source full bridge inverter can be actually designed more than 20 kHz. It is confirmed as the switching frequency of full-bridge soft switching inverter increases, the soft switching PWM dc-dc converter has remarkable advantages for its power conversion efficiency and power density implementations as compared with the conventional hard switching type. The effectiveness of these new dc-dc power converter topologies can be proved to be more suitable for low voltage and large current dc-dc power supply as arc welding equipment from a practical point of view.

14. **ZCS-PFM High Frequency DC-DC Converter for Microwave Power Generation** (Nakanishi (National Panasonic) MFG, Electric Industrial Co., Ltd. Osaka, Japan, 2005) This project presented a novel prototype of high-frequency transformer parasitic parameters with a lossless inductive snubber and a series resonant capacitor assisted series-

resonant zero current switching pulse frequency modulated DC-DC power converter. This DC-DC converter is designed for industrial use of high power magnetron for microwave power generation. In order to implement a complete and efficient soft switching commutation, the performance of the new converter topology is practically confirmed and evaluated in the prototype of power microwave generator from a practical point of view.

15. **Soft Switching High Frequency DC-AC Time-Sharing Power Conditioning Connecting Renewal Energy Systems to Utility Interactive and Residential Power Applications** (This project has been sponsored by Electric Energy Saving Center, Kyungnam University, Masan, Korea, 2004) This project was aimed at presenting a novel system topology and control scheme of a selective dual-mode pulse-modulated high-efficiency single-phase sinewave power conversion circuit for the new energy generation and storage applications. This power-conversion system is composed of a timesharing-operated sinewave-absolute-modulation boost chopper with a bypass diode in the first power conditioning and processing stage and time-sharing sinewave partially pulse-modulated full-bridge inverter in the second stage. The proposed power conditioner is operated by a selective time-sharing dual-mode pulse pattern signal processing control scheme without electrolytic capacitor dc link. The unique operating principle of the two-power conditioning and processing stages with sectional time-sharing dual-mode partial sinewave-modulation scheme is described and discussed with a design example. In addition, this project presented also a passive auxiliary resonant snubber circuit for soft switching operation of the boost chopper. The new conceptual operating principle and the control implementation of this novel power conditioner are presented and evaluated through experimental and simulation results.

13. UNIVERSITY DEAPARMENT AND PUBLIC SERVICES

Administrative Services				
Status	**Committee**	**Place**	**Date**	**Remarks**
Member	Promotion Committee	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2009-2010	**Investagatio the files of faculty members submitted for promotionthe.**
Chairman	Equipments and Tools Committee	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2007-Now	**Responsible toward PAAET to order all the needed educational equipments and tools to furnish all the Electrical Engineering Departments' laboratories and workshops at both of College of Technological Studies and College of Basic Education, Kuwait.**
Member	Department Council	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2006 – 20011	**Actively participated in all the meetings of the Council of the Elec. Engineering Dept.**
Member	Research Committee	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2007-Now	**Participating in managing all the departmental issues related to research. Working for the evaluation of the department research projects.**
Member	Journals and Transactions Committee	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2007	**Evaluating the International Journals and Transactions suitable for publication for the promotions of the department members.**
Member	Baccalaureate	Dept. of Elec. Eng.,	2008-	**Establishment of the**

	Committee	College of Technological Studies. Kuwait	2009	**Baccalaureate program at the department, Creat & develop the curricula, Preparation of the course syllabus and contents.**
Member	Committee of Curricula	Dept. of Elec. Eng., College of Technological Studies. Kuwait	2009-2010	**Development of the department curricula, Preparation for the B.Sc. program.**
Member	Accreditation Team	Dept. of Elec. Eng., Faculty of Technological Studies. Kuwait	2008-20011	**Working in different criteria for ABET accreditation of the Electrical Machines and Distribution of Electrical Energy programs.**
Member	Department Promotion Committee	Dept. of Elec. Eng., Faculty of Technological Studies. Kuwait	2006-2009	**Working for the evaluation of promotions of the department members.**
Chairman	Planning & Budget Committee	Dept. of Elec. Eng., Faculty of Technological Studies, Kuwait.	2006 – Now	**Managing and planning all the departmental issues related to budget**
Chairman	Research Committee	Department of Physics, Faculty of Science, Assiut Univ., Egypt.	2002-02003	**Designing two courses related to Industrial Electronics and Electronic Circuits**
Member	Graduate Program Committee	Elec. Eng. Dept., Faculty of Eng., Assiut Univ., Egypt	2000-2003	**Assisting to manage departmental issues related to graduate studies and launching a new graduate program.**
Member	Department Committee	Elec. Eng. Dept., Faculty of Eng., Assiut Univ., Egypt	2000-2001	**Managing and planning all the departmental issues**
Member	Management Information System (MIS)	Assiut University, Assiut, Egypt	2003-2004	**The main objective of the Management Information System (SAMIS) is to automate all managerial/ administrative operations which are being run at the student affair administration office**
Member	Self Evaluation & Accreditation Team	Faculty of Engineering, Assiut University, Egypt	2002-2003	**The mission of this team is to evaluate, advocate for, and advance the quality of education in Assiut University. Develops standards to objectively evaluate landscape architectural programs and judges whether our university landscape architectural program is in compliance with the accreditation standards. Promote self-examination and self-analysis of programs and curriculum.**
Member	Quality Assurance Team	Faculty of Engineering, Assiut University, Egypt	2002-2003	**Providing evidence needed to establish quality in work, teaching and activities that require good quality. All those planned or systematic actions necessary to provide enough confidence that students and service will satisfy the given requirements for quality.**

14. RESEARCH REFERENCES

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