Dr. Issa Batarseh
Distinguished Pegasus Professor
Director, Power Electronics Research Center
Department of Electrical and Computer Engineering
University of Central Florida
Orlando, Florida, USA

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Dr. Issa Batarseh is a Pegasus Professor of Electrical Engineering at the University of Central Florida (UCF) and serves as the Founder and Director of the Florida Power Electronics Center (FPEC). He earned his B.S. degree in Electrical and Computer Engineering and his M.S. and Ph.D. degrees in Electrical Engineering from the University of Illinois at Chicago in 1983, 1985, and 1990, respectively.

Dr. Batarseh's work focuses on solar energy conversion technologies, particularly in high-frequency, high-efficiency, and smart grid-tied photovoltaic (PV) energy systems. His research team has led the design, development, and commercialization of transformative technologies, including smart microinverters, which have significantly improved energy efficiency and accessibility. These innovations have been instrumental in advancing renewable energy adoption, optimizing energy conversion, and reducing greenhouse gas emissions, benefiting modern clean energy systems worldwide.

Dr. Batarseh has authored over 110 journal articles, 450 conference papers, and holds 40 issued U.S. patents. He has mentored 45 Ph.D. and 45 M.S. students, many of whom have contributed to leading advancements in academia and industry. He is the author of the textbook entitled, *Power Electronics – Circuit Analysis and Design* (2nd Edition, Springer, 2018).

His contributions to renewable energy have earned him numerous accolades, including the 2025 IEEE Medal for Environmental and Safety Technologies, and the prestigious IEEE PELS R. David Middlebrook Achievement Award and UCF's Pegasus Professor Award, the university's highest academic honor. He is a Fellow of both IEEE and AAAS, a member of the National Academy of Inventors (NAI), and an inductee into the *Florida Inventors Hall of Fame*. In 2025, he was short listed for the *Global Energy Prize*.

Dr. Batarseh has co-founded three start-up companies: Petra Solar, (now Petra Systems), Advanced Power Electronics Corporation (ApECOR), and Tech-e-book.com.

From 2010 to 2014, Dr. Batarseh served as the President of Princess Sumaya University for Technology (PSUT) in Amman, Jordan. He is also a Registered Professional Engineer in the State of Florida.

EDUCATION

Ph.D.	Electrical Engineering, *University of Illinois, Chicago*, June 1990.
M.S.	Electrical Engineering, *University of Illinois*, *Chicago*, December 1985.
B.S.	Electrical Engineering and Computer Science (EECS), *University of Illinois*, Chicago, June 1983. *Graduated with High Honors.*
Certificate	Harvard Kennedy School, *"Leading in Times of Crisis,"* May 2012, Athens, Greece.

ACADEMIC & ADMINISTRATIVE EXPERIENCE

Academic Experience:

- ***Pegasus Professor, August 1991 – Present***
  Department of Electrical and Computer Engineering
  University of Central Florida, Orlando, Florida, USA
  Conducting research and teaching in power electronics. Developed the educational and research infrastructure in the ECE Department and new degree programs in the college. Established the MS concentration in power electronics, and several power conversion and energy certificate programs.

- ***Fulbright Visiting Associate Professor, January 1997 - August 1997***
  Electrical and Electronics Engineering Department
  Princess Sumaya University for Technology,
  Amman, Jordan
  Taught and developed power electronics and energy conversion teaching and research infrastructure.

- ***Postdoctoral Researcher, August 1990 - June 1991***
  Electrical Engineering and Computer Science Department
  University of Illinois, Chicago, Illinois, USA

- ***Visiting Assistant Professor, August 1989 - June 1990***
  Electrical Engineering Department
  Purdue University, Calumet, Indiana, USA

- ***Research & Teaching Assistant, September 1983- August 1989***
  Electrical Engineering and Computer Science Department
  University of Illinois, Chicago, Illinois, USA

- ***Internship Research Engineer, Summers of 1987 & 1988***
  Electronics Engineering Dept.
  Zenith Electronics Co., Glenview, Illinois, USA

Administrative Experience:

- ***Founder and Director, 1998 – Present***
  Florida Power Electronics Center (www.fpec.ucf.edu)
  University of Central Florida, Orlando, FL, USA

  Leading a research, development, and commercialization team in power electronics systems. In 1998, with infrastructure equipment funds from the US National Science Foundation and industry, he established FPEC to conducts cutting-edge, and high-quality research in energy conversion systems. In 25 years, the center has been the launch pad for several spin-off companies, 700 published papers,

attracted more than $25 million in research funding from industry, state and federal sources, and more than 40 issued patents, and has graduated more than 150 doctoral and master students.

- ***Director of Energy System Integration, Dec. 2016 – Aug. 2018***
  Florida Solar Energy Center (FSEC) at the University of Central Florida, Orlando, FL, USA

  Dr. Batarseh was charged to establish the ESI division to focus on the Center's research and energy storage integration efforts and enable technology transfer and commercialization, while executing and managing several multi-million projects with federal agencies. Help develop core capabilities to perform high-quality power electronics and grid-integration system modeling, analysis and evaluation for Florida's power electronics and utility industry.

- ***University President, Sept. 2010 – Aug. 2014***
  Princess Sumaya University for Technology (PSUT)
  Amman, Jordan

  While on professional development leave from UCF, Dr. Batarseh served as President of PSUT where he helped develop several new undergraduate and graduate degree programs, launched the AACSB accreditation process and obtained the ABET accreditation for four engineering and computer science degree programs, and developed renewable energy educational and research activities. Over his tenure at PSUT, he led the university through its largest academic and research growth and led as the PI for a multi-million research project in renewable energy funded by the European Union. He received the highest leadership recognition by the King of Jordan for the university excellence ranking. He led the development of the first interdisciplinary BS degree in renewable energy systems. He was appointed by the Royal Court to a national innovation council to set the innovation agenda for Jordan.

- ***School Director, July 2003 – Aug. 2010***
  School of Electrical Engineering and Computer Science (EECS) in the College of Engineering and Computer Science
  University of Central Florida, Orlando, Florida, USA

  Dr. Batarseh was responsible for running the School EECS with 67 full-time faculty members, 18 staff members and more than 2,500 graduate and undergraduate students enrolled in four degree programs: electrical engineering, computer engineering, computer science, and information technology. He provided the leadership to develop strategic plan to promote research and educational synergies in the school and he oversaw the school's vision, mission, research and educational direction, and budget.

- ***Associate Dean for Graduate Studies, Aug. 1998 – May 2003***
  College of Engineering and Computer Science (CECS)
  University of Central Florida, Orlando, Florida, USA

  Dr. Batarseh was responsible for the applications, admissions, fellowship processes for more than 1100 graduate students in CECS. He was responsible for maintaining high quality graduate programs, and developing new and innovative graduate degree programs. The position reported to the dean directly.

- ***Assistant Chair, Aug. 1997 – Aug. 1998***
  Electrical and Computer Engineering (ECE) Department
  University of Central Florida, Orlando, Florida, USA

  Dr. Batarseh was responsible for faculty teaching assignments, managed the new courses, certificate and degree programs approval process at the departmental level. The position reported to the chairman of the ECE Department.

GLOBAL AWARDS AND HONORS

- *Global Energy Prize*. Shortlisted Winner, 2025.
- Recipient of the *2025 IEEE Medal for Environmental and Safety Technologies* "for pioneering contributions to the advancement of renewable energy systems through significant improvement in the overall energy efficiency of microinverters".
- Recipient of the *National Academy of Inventors' Invention Ambassador Program*, 2024.
- *Global Energy Prize*. Shortlisted Winner, 2024.
- *Fellow of the National Academy of Inventors*, USA for commercialization achievements in terms of the number of issued patents, licenses executed, and spin-offs. Election to the US National Academy of Inventors is among the highest professional distinctions accorded solely to academic inventors and entrepreneurs, 2015.
- *Fellow of the American Association for the Advancement of Science (AAAS)* for making significant contributions in research and services to professional societies, and the communication of science to the public, 2009.
- *Fellow of IEEE* for contributions in power electronics with applications to solar energy and dc-dc conversion, 2005.
- Recipient of the *IEEE PELS R. David Middlebrook Achievement Award* for contributions to power electronics conversion and application to photovoltaic (PV) generation. This global award is the highest award in the hierarchy of the IEEE Power Electronics Society (PELS) awards bestowed by the society for energy-related technical contribution. 2019.
- Selected for the *Star of Science Award* *bestowed* by the World Science Forum for international distinction in the field of electrical engineering, 2017.
- Inducted into *Florida Inventors Hall of Fame* for inventing low cost, high efficiency microinverters for photovoltaic (PV) applications that led to UCF becoming the first university to design and market the microinverter for a single solar PV panel, 2017.
- Recipient of *University Distinguished Pegasus Professor*. This is the highest university honor in the hierarchy of the university award system bestowed by the University President for distinguished full professors for academic excellence in research, education, and professional service, 2021.
- Member of the *NASA Electrical Power TDT team*. This agency-wide technical committee serves to address all energy issues that may arise across all NASA centers in the USA, 2009-2025.
- Appointed by the *Jordan's Royal Court* to serve on the "Innovation Solution Commission". The commission reported directly to the office of the King, 2014-2018.
- Received *the IEEE Millennium Medal Award*, 2000 for outstanding contributions to IEEE.
- Appointed to serve on the US Fulbright Commission to Jordan, 2011 – 2014.

TEACHING

TEACHING AWARDS AND RECOGNITIONS:

- Recipient of *the University Scholarship of Teaching and Learning (SoTL) Award* for outstanding contributions in scholarship of teaching. This is the highest teaching recognition for professors, 2020.
- *Excellence in Undergraduate Teaching Award*, College of Engineering & Computer Science, 2020
- Recipient of the *Engineer of the Year Award*, highest recognition for research faculty in the state of Florida presented by the Florida Engineering Society, 2016.
- Selected for the *Technology Transfer Grant* to develop technical e-book Platform, Aug. 2013-2014.
- Appointed to the leadership position of the State-wide *"Florida Energy System Consortium (FESC)" among nine-board members.* FESC was created by the Florida State Government and was charged to "perform research and development on innovative energy systems that lead to alternative energy strategies, improved energy efficiencies, and expanded economic development for the state", 2009-2024.

- Awarded *several US patents* for the e-book for electrical circuits, 2012-2016.
- Recognition by the *Institute of International Education (IIE)* for the excellent work in the Rescue Funds Program at PSUT, New York, 2012.
- Received the Highest Student Evaluations for Teaching Assistant Award, University of Illinois, Chicago (UIC), 1987.
- Awarded the Fulbright Scholar position, Jordan 1997.
- University Teaching Incentive Awards (UCF), 2004, 2017
- Outstanding Engineering Educator of the Year, IEEE, 1998.
- Awarded one undergraduate LEAD Scholar, Spring 1997.
- Excellence in Undergraduate Teaching Award, College of Engineering, 1996.
- Highest Student Evaluations for TAs, University of Illinois, Chicago (UIC), 1987.
- Graduated with High Honors, Dean's List, Honors College, UIC, 1981-1985.

PH.D. DISSERTATIONS SUPERVISED

Currently Enrolled:

1. Anirudh Pise, Expected Graduation: Fall 2025
2. M. Nilian, Expected Graduation: Spring 2026
3. Russ Case, Part time, Joined 2020, Private Sector

Ph.D. Completed (Supervised 45 doctoral students all at UCF):

1. Reza Rezail, Spring 2024
   Analysis And Design of Multiport Converters For Photovoltaic and Electrical Vehicle Applications
   (Senior Design Engineer, Jabil Manufacturing Corp, Florida)

2. Sahin Gullu, Spring 2024
   Analysis, Design and Optimization of Grid-Tied Photovoltaic Energy System
   (Faculty member, Turkey)

3. Sumana Ghosh, Spring 2023
   Design and Analysis of Multi-port Converters utilizing LLC Resonant Tank
   (R&D Engineer: Cree-Wolfspeed, Research Triangle, NC)

4. Mohammed Rias, Spring 2023
   Modular, Multiport, And Multilevel Converters Based On Gallium Nitride Wide Band Gap Devices
   (Senior design engineer: ApECOR, Orlando, FL)

5. MD Safayatullah, Spring 2023
   Design and Control of Dual Active Bridge Converter for EV and PV Applications
   (Senior Design Engineering, Ford Corp, Detroit, MI)

6. Ranadhir Sarkar, Summer 2022
   Search space reduction techniques for solution of combinatorial optimization problems in power system.
   (Research Engineer, Electric Power Engineers, Texas)

7. Seyyed Rashid Khazeiynasab, Fall 2021
   Parameter Calibration and Optimization In Smart Grid For Synchronous Generators And Power Electronic Converters
   (Senior Data Scientists, Oracle, Austin, Tx)

8. Fahad Alaql, Summer 2021

Analysis and Design of LLC Resonant Converters For Wide, Low-Input, High- Output Voltage Dc Bus Applications
(Assistant Professor, King Saud University, Saudi Arabia)

9. Abdullah Alhatlani, Summer 2021
Design And Analysis Of Multi-Port Converters Utilizing LLC resonant Tank
(Assistant Professor, King Saud University, Saudi Arabia)

10. Khalil Alluhaybi, Spring 2020
Integrated Microinverter and Storage for Portable Photovoltaic Systems
(Employment after graduation: Assistant Faculty, Taiba University, Saudi Arabia)

11. Amit Bhattacharjee, August 2019.
Development of multiport bidirectional converter for Photovoltaic and Energy storage integration
(R&D at Bloom Energy, N.J.)

12. Xi Chen, August 2019.
Analysis, Design and Efficiency Optimization of Power Converters for Renewable Energy Applications
(R&D, at Maxim Integrated, Austin, Texas)

13. Mahmoud Al-Harbi, July, 2018.
Design and Implementation of PV-Firming and Optimization Algorithms for Three-Port Microinverters
(Assistant Professor, Taiba University, Saudi Arabia)

14. Seyed-Milda Tayebi, Spring 2017.
Advanced Control Techniques for Efficiency And Power Density Improvement of a Three-Phase Microinverter
(Senior R&D Enphase Energy System)

15. Ahmadreza Amirahmadi, Spring 2014
Control Based Soft Switching Three Phase Micro Inverter: Efficiency and Power Density Optimization
(Senior Design Engineer, JPL, Pasadena, CA)

16. Lin Chen, Spring 2014
Investigation of Dual-Stage High Efficiency & Density Module Integrated Converter for Solar Application
(Alpha & Omega Semiconductor San Jose, California)

17. Qian Zhang, Spring 2013
A high efficiency module solar system architecture
(International Rectifiers, CA)

18. Xiang Fang, Spring 2012
Analysis and Design Optimization of Resonant DC-DC Converters
(Apple, San Francisco Bay Area, CA)

19. Ala Al Haj Hussein, Summer 2011
Design and Operation of Stationary Distributed Battery Micro- Storage Systems
(Professor, Prince Mohammad University (PMU), Saudi Arabia)

20. Zhijun Qian, Spring 2010
Design and implementation of the multi-port DC-DC converters with Solar Input
(Designer, Linear Technology, Milpitas, California)

21. John Elms, Summer 2010

Design of High Power-Density Bidirectional Converters for Electric Vehicles
(CEO of ApECOR)

22. Majd Batarseh, Spring 2010
Digital Pulse Width Modulation Techniques for DC–DC Converters
Co-advisor: Dr. John Shen
(Associate Professor, Princess Sumaya University for Technology, Jordan)

23. Wisam Al-Hoor, Summer 2009
Adaptive Efficiency Optimization for Digitally Controlled Power Converters.
(Integrated Device Technology, Tempe, AZ)

24. Ehab Shoubaki, Summer 2009
Unified Large And Small Signal State-Space Based Modeling And Symbolic Simulation For PWM Converters
(Researcher, The University of North Carolina at Charlotte)

25. Feng Tian, Spring 2009
Pulse Frequency Modulation ZCS Flyback Converter in Inverter Applications
(MKS Instruments, Boston, MA)

26. Khalid Rustom, Fall 2007
Steady State and Dynamic Analysis and Optimization of Single Stage Power Factor Correction Converters
(VP at Advanced Charging Technologies, Orlando, FL

27. Liangbin Yao, Fall 2007
Topology and Control of High Frequency DC-DC Converters
(Maxim Integrated Products, San Francisco, CA

28. Osama Al-Rahaman, Fall 2007
Soft-Switching High Frequency DC-DC Converters
(Head of R&D, Infineon, Orlando Office)

29. Hua Zhou, Summer 2007
Integrated Magnetics on DC-DC Converters
Co-advisor: Dr. Tom Wu
(GE Healthcare Florence, South Carolina)

30. Yangyang Wen, Summer 2007
Digital Control of Switching Power Supply
(Maxim Integrated, Austin, Texas)

31. Husam Al-Atrash, Fall 2007
Integrated Topologies and Digital Control for Satellite Power Management and Distribution Systems
(Tesla, Palo Alto, CA)

32. Xiangcheng Wang, Summer 2006
Active Transient Voltage Compensator for VRMs Applications
(Cirrus Logic, Austin, Texas)

33. Songquian Deng, Fall 2005
High Frequency DC-DC Converters
(Founder and CEO of Songquan Photography, Edison, New Jersey)

34. Hong Mao, Spring 2004
Topology and Control of Low-Voltage High-Current Isolated DC-DC Converters
(Lowpower Technology, Head of Dallas Design Center, Allen, Texas)

35. Jia Luo, Spring 2004
Novel Voltage Regulator Controllers and Transient Compensators for Powering Microprocessors
(Intersil, San Francisco Bay Area, CA)

36. Jaber Abu Qahouq, Fall 2003
High-Density High Current Fast-Transient Low-Voltage DC-DC Converters
(Professor, University of Alabama, Tuscaloosa, Alabama)

37. Weihong Qiu, Summer 2003
A Novel Energy Direct Transfer Concept in AC-DC Converter with Power Factor Correction
(Apple, San Francisco Bay Area, CA)

38. Wenkai Wu, Spring 2003
Control methods for a new topology in Single-Stage PFC
(Texas Instruments, Rhode Island Area)

39. Zaki Moussaoui, Spring 2003
New Designs of High Frequency Resonant Ballasts
(Apple, San Francisco Bay Area, CA)

40. Wei Gu, Fall 2001
Hysteretic Control in the design of Low Voltage Converters for new Generation of Microprocessors
(Dell, Austin, Texas)

41. Christopher Iannello, Summer 2001
Dynamic Modeling of Power Converters Using A Unified Approach
(NASA, Kennedy Space Center)

42. Shiguo Luo, Summer 2001
Front-End Converter Design And System Integration Techniques In Distributed Power Systems
(Dell, Austin, Texas)

43. Guangyong Zhu, Fall 1999
Dynamic Modeling of Power Factor Correction Circuits
(Dell, Austin, Texas)

44. Wei Huai, Fall 1999
Single-Stage Single-Switch Power Factor Correction Circuits: Analysis, Design and Implementation
(CTO, NetPower Technologies, Dallas, Texas)

45. Aslam Khan, Spring 1999
Analysis and Design of Resonant Power Factor Correction Techniques
(Bassett Healthcare Network, Cooperstown, New York)

M.S. THESES SUPERVISED

1. Yousef Husam Abudyak, Spring 2025
Advanced Grid Forming Technologies

Grid-Forming Inverters: Comprehensive Review, Design, and Implementation of Advanced Control Methods

2. Anirudh Pise, Fall 2017
   Ultra-Efficient Cascaded Buck-Boost Converter

3. Siddhesh Shinde, Fall 2016
   AC Battery with frequency regulation and grid tied applications.

4. Utsav Somani, Summer 2013
   Design optimization of LLC topology and phase skipping Control of three phase inverter for PV applications

5. Anna Grishina, Summer 2012
   A New Quasi Resonant DC-Link For Photovoltaic Micro-inverters
   Co-advisor: Dr. John Shen

6. Christopher Hamilton, Fall 2010
   Control Strategy for Maximizing Power Conversion Efficiency and Effectiveness of Three Port Solar Charging Station for Electric Vehicles

7. Souhib Harb, Summer 2010
   Analysis and Design of Inverter Topologies for Photovoltaic Application

8. Michael Islas, Fall 2009
   Efficiency Improvement Techniques for High Voltage Capacitor Charging

9. Gustavo Gamboa, Summer 2009
   Realization of Power Factor Correction and Maximum Power Point Tracking for Low Power Wind Turbines

10. Michael Pepper, Spring 2009
    Bi-Directional DC-DC Converter for Hybrid Electric Vehicles

11. David Bills, Fall 2007
   Analysis and Design of Forward Resonant Converters

12. Keith Mansfield, Fall 2007
    Grid-Connected PV Inverters

13. John Elms, M.S. Summer, 2007
    Maximum Energy Harvesting for Oscillating Energy Harvesting Systems

14. Justin Reese, Summer 2007
    Design, Modeling, and Control of Three-Port Converters for Solar Power Applications

15. Majd Batarseh, Fall 2006
    A Non-Isolated Half Bridge Buck- Based Converter for VRM Application and Small Signal Modeling of a Non-Conventional Two-Phase Buck

16. Wissam Al-Hoor, Spring 2006
    Unified Computer Aided Steady State Model for Soft-Switching Cell

17. Osamah Abdel Rahman, Spring 2006
    High Frequency Two-stage DC-DC Conversion

18. Ehab Shoubaki, Summer 2005
Small Signal Modeling of Power Electronic Converters

19. Liangbin Yao, Summer 2005
Digital Control of Half-Bridge DC-DC Converters with Current Doubler Rectification

20. Husam Al-Atrash, Spring 2005
Multi-channel Solar Inputs with DSP Control Analysis and Design of a Modular Solar-Fed Fault-Tolerant Power System with Maximum Power Point Tracking

21. Feng Tian, Spring 2005
Solar-Based Single-Stage High-Efficiency Grid-Connected Inverter

22. Yangyang Wen, Fall 2004
Design and Implementation of a Digital Controller with DSP for Half-Bridge DC-DC Converters

23. Todd Edward Persen, Fall 2004
FPGA-based Design of a Maximum-Power-Point Tracking System for Space Applications (co-advisor).

24. Shilpa R. Kaluvala, Fall 2003
High Frequency Link Inverters for Fuel Cell-Based Systems

25. Khalid Rustom, Spring 2002
Maximum Tracking Control in Photo-Voltaic Based Systems

26. Abel Halim Al-Sharaqawi, Spring 2002
Small-Signal Modeling of Megamp Converters

27. Joy Mazumdar, Summer 2002
Design and Analysis of High-Frequency Inverters for Solar System Applications

28. Mansi Soundalgekar, Summer 2001
Dynamic Modeling of Low-Voltage Converters for New Generation of Computer Systems

29. Basset Yacoub, Spring 2001
Analysis and Design of High-Order Parallel Resonant Converters

30. Syed Raihan, Spring 2001
Evaluation and Improvement of an Internet Based Circuit Design Package

31. Smitha Ridy, Fall 2000
Internet Based Circuit Design Package

32. Jaber Abu Qahouq, Spring 2000
Generalized Analysis of Soft-Switching DC-DC Converter Families

33. Qiong Zhang, Spring 2000
Design and Evaluation of an Internet-Based Circuit Design Package used in an Undergraduate Engineering Circuit Course

34. Chris Iannello, Summer 1999

Dynamic Modeling of Power Converters Using A Unified Approach

35. Robert Eriksson, Fall 1999
The Development of a Circuit Markup Language using XML and a Corresponding editor/browser in Java (co-advisor)

36. Faouzi El Filali, Summer 1998
Analysis and Design of Soft-Switching DC-to-DC Converters

37. Hsiao-Ping Lin, Summer 1998
Soft-Switching Resonant Converters

38. Loutfella Elkaldi, Fall 1997
A Study of Power Factor Correction and Total Harmonic Distortion in Power Electronic Systems

39. Allam Hatoum, Spring 1996
Steady-state Analysis and Small-Signal Modeling of Switch Mode Power Converters

40. John Evans, Spring 1995
Harmonics Analysis of three-phase systems

41. Jinrong Qian, Summer 1994
Classification and Generalization of ZVS and ZCS of Resonant Power Factor Correction Circuits

42. Aslam Khan, Summer 1994
Analysis and Design of Resonant Power Factor Correction Techniques

43. Audry Bonsall, Summer 1994
Design and Simulation of Parallel-Series Resonant Converters

44. Zaki Moussaoui, Spring 1994
Steady State Analysis and Control Characteristic Curves for Resonant Converters

45. Christos Megalemos, Summer 1993
Small Signal Modeling of the LCC-Type Parallel Resonant Converters

HONOR UNDERGRADUATE THESES:

1. Ross A. Kerley, Fall 2011
Small-Scale Hybrid Alternative Energy Maximizer for Wind Turbines and Photovoltaic Panels

2. Jonathan Baker, Summer 2009
An Optimal, Low-Cost Design for Small Wind Turbine Converters Applied to Charging Batteries

3. Christopher Hamilton, Summer 2009
Digital Control Algorithms: Low Power Wind Turbine Energy Maximizer for Charging Lead Acid Batteries

4. Roberto Miguez, Spring 2009
Introduction to the Grand Solar Belt of America: Combinatorial Optimization Using Genetic Algorithms

5. Venceslav Gaydarzhiev, Fall 2007
Energy Extraction using Maximum Energy Harvesting Control as a refinement over Maximum Power Point Tracking

on an Energy Harvesting Backpack.

6. Najlae Yazghi, Fall 2006
   Interactive Learning System for Electrical Engineering Circuits

7. Justin Reese, Fall 2006
   Averaged Model of a Three-Port Solar Power Converter

8. Matt Hicks, Spring 2006
   High Frequency DC-DC converters

9. Adje Mensah, Fall 2004
   Modeling and Analysis of Solar Arrays for Grid Connected Systems with Maximum Power Tracking

10. Rebecca Hayman, Fall 2004
    DSP-Based Design of Solar-Based Inverter Systems

11. Loni Gibson, Fall 2000
    Steady State Analysis and Simulation of an Inverter Circuit for NASA Applications

12. Enrique Tenicela, Summer 2000
    Steady State Analysis for a New Power Static Inverter Topology for Aerospace Applications

13. Danny Tawil, Spring 1995
    Analysis of PWM Converters Including Transistor and Inductor Losses

14. Debra-Ann Kemnitz, Spring 1994
    Simulation of Family of DC-to-DC Resonant Converters

15. Henry Nguyen, Spring 1993
    Steady State Analysis and Design of Parallel Resonant Converters

COURSES TAUGHT

Taught various courses at the undergraduate and graduate levels in the following areas:
Engineering Freshman Experience, Undergraduate Research Experience, Fundamentals of Electrical Engineering, Electronics, Advanced Electronics, Energy and Power Systems, Machines, Power Electronics, Advanced Power electronics, Senior Design.

Average Student Evaluation over the year approximately: 4.0-4.5/5.0.

BOOKS AND BOOK CHAPTERS

1. I. Batarseh, *Introduction to Circuits-Interactive ebook*, In Print, Pearson, 2025.
2. I. Batarseh and Ahmad Harb, 2nd Edition, *Power Electronics*: Springer, Dec. 2017.
3. I. Batarseh and H. Wei "Power Factor Correction Circuits," Power Electronics Handbook: Devices, Circuits, and Applications, 2nd ed., Academic Press, 2007, Ch. 19, pp. 517-542.
4. I. Batarseh "The Power MOSFETs," Power Electronics Handbook: Devices, Circuits, and Applications, 2nd ed., Academic Press, 2007, Ch. 4, pp. 41-70.
5. I. Batarseh, Power Electronic Circuits, John Wiley Publisher, 2004, 576 pages.
6. I. Batarseh, "The Power MOSFETs," Power Electronics Handbook, Academic Press, 2001. Ch. 6, pp. 75-100.

CURRICULUM RELATED ACTIVITIES

Course Improvement: Dr. Batarseh leads the department teaching and research efforts in power electronics and energy conversion. He has introduced several new courses and modifying the contents of several courses including: Engineering Freshman Experience, Fundamentals of Electrical Engineering, Electronics, Energy and Power Systems, Power Electronics, Advanced Power Electronics.

Laboratory Development: Developed several Electrical Engineering Laboratory manuals with colleagues in the ECE Department.

Faculty Mentor: Helped mentor several students including 15 Undergraduate Thesis, Senior Design Projects, NASA Undergraduate Scholarship Program, and students from local High Schools.

PUBLICATIONS IN EDUCATION

Dr. Batarseh, with his students, has published the following refereed educational conference and journal papers that were mostly presented at various national and international conferences. All remaining publications are research based and are listed under the Referred Publications section below.

Journal Papers:

1. R. A. Amarin, O. Garibay, and I. Batarseh, "A Topic-Driven Modular Approach to Engineering Education Delivery," International Journal of Emerging Technologies in Learning, Vol. 8, No. 1, pp. 53-57, March, 2013. http://online-journals.org/i-jet/article/view/2470

2. R. Amarin, E. Shoubaki, Issa Batarseh, "Java Based Symbolic Circuit Solver For Electrical Engineering Curriculum" International Journal of online Engineering, Vo. 8, No. 4, pp. 9-13, November 2012. http://www.online-journals.org/index.php/i-joe/article/view/2155

3. R. A. Amarin, I. Batarseh, K. B. Sundaram, and A. Weeks, "Importance of Practical Relevance and Design Modules in Electrical Circuits Education," Int. J. of Online Engineering (iJOE), vol. 7, no. 2, pp. 10-14, 2011. http://www.online-journals.org/index.php/i-joe/article/view/1646

4. R. A. Amarin, F. Batarseh and I. Batarseh, "Adaptive Electronic Quizzing Method for Introductory Electrical Circuit Course", Int. J. of Online Engineering (iJOE), vol. 5, no. 3, pp. 4-7, 2009. http://www.online-journals.org/index.php/i-joe/article/view/930

Conference Papers:

1. R. A. Amarin, O. Garibay, and I. Batarseh, "A Topic-Driven Modular Approach to Engineering Education Delivery," presented at International Conference on Interactive Mobile and Computer Aided Learning (IMCL), Amman, Jordan, Nov. 2012. doi: 10.1109/IMCL.2012.6396447.

2. R. A. Amarin, E. Shoubaki, and I. Batarseh, "Java Based Symbolic Circuit Solver For Electrical Engineering Curriculum," presented at IEEE EDUCON Education Engineering, Marrakesh, Morocco, April 17-20, 2012.

3. R. A. Amarin and I. Batarseh, "eTutor – An Interactive Module for Electrical Engineering Curriculum," presented at American Society for Engineering Education, Philadelphia, PA, Oct. 28-29, 2011.

4. R. A. Amarin, , K.B. Sundaram, A. Weeks, I. Batarseh, "Importance of Practical Relevance and Design Modules in Electrical Circuits Education," presented at IEEE Global Engineering Education Conference, pp. 792-796, 2011.

5. F. Batarseh, I. Batarseh, Michael Haralambous, “QuizMe – An Interactive Learning Tool with Application to Electrical Circuits," Proc. 8th ASEE Global Colloquium on Engineering Education, Budapest, Hungary, Oct. 2009. GC 2009-73.

6. I. Batarseh, “Interactive Power Electronics Applets for Educational Delivery,” 49th IWK Conference, Technische Universität Ilmenau, Germany, Sept. 2004. (Invited)

7. S. Harb, I. Batarseh, “Teaching Electrical Circuit Analysis Using Web-Based Simulation,” 49th IWK Conference, Technische Universität Ilmenau, Germany, Sept. 2004. (Invited)

8. Z. Qu and I. Batarseh, “Web-Based Simulation Architecture for Engineering Education Using Java/XML,” presented at American Society for Engineering Annual Conference, St. Louis, MO, June 18-21, 2000.

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RESEARCH

Dr. Batarseh's research has resulted in the publication of more than 400 journal articles and presentations to international and national refereed conferences. He has supervised 43 doctoral dissertations, 44 master's theses, and 15 undergraduate honors theses. He holds 39 U.S. patents; one international patent and the results of his research have been licensed for commercialization to several U.S. companies. In addition, he has co-founded three private companies to bring his innovations to the marketplace. Dr. Batarseh has contributed to securing nearly $15 million for UCF's research in energy conversion and integration technologies. Through private and governmental funding, Dr. Batarseh's team has been developing innovative power electronic systems to enable the solar energy conversion, storage and its integration into electricity grids.

Summary of Technical Expertise:

1) Designed, built and commercialized DC-to-AC grid-forming solar inverters
2) Developed new resonant topologies and control techniques for single-phase and three-phase DC-AC inverters
3) Design and built the smallest DC-to-DC converters for telecom and renewable energy application.
4) Developed several resonant control techniques of DC-DC and DC-AC converters.
5) Developed power factor correction circuits for various application such as computers and LED lighting

Citation Indices:

Google Citations: 18,700+
h-index: 65
i10-index: 269 *(Number of papers cited by at least 10 times each)*
https://scholar.google.com/citations?user=xl0jn_IAAAAJ&hl=en

RESEARCH HONORS & AWARDS

- IEEE-APEC Outstanding Presentation Award for paper entitled " A Novel Grid-tied Dual -PV LLC Converter MPPT Using Adaptive Neuro Fuzzy Interface System (ANFIS)", 2022.
- Founder and President of the *National Academy Inventors (NAI)* Chapter at the University of Central Florida, 2017-2021.
- Invited to serve as *Fellow Advisory Committee*, National Academy of Inventors (NAI), 2017.
- Invited to serve on the *Board of Directors of Petra Systems.* Prof. Batarseh was the co-founder of the company based on the signed license agreement with UCF, 2012-present.
- Selected as a *Corporate Fellow, Petra Systems* for entrepreneurship and technical leadership in technology development, 2019.
- In US patents # 9,473,044 and 9,484,840, Prof. Batarseh presented for the first time the idea of phase-skipping control in three-phase microinverter resulting in peak efficiency of 98%. This patent was licensed to the private sector MaxHarvest Microinverters, 2015.
- Recipient of the *University Research Award.* It is the highest university research recognition in the hierarchy of the university awards for distinguished full professors for academic excellence in research, education, and professional service, 2015.
- *Founder and Board member of the ApECOR, Corp*. based on the signed license agreement with UCF, 2004 - present.
- Recipient of the *Best Paper Award*, 5th IEEE Vehicle Power and Propulsion Conference (VPPC'09), entitled "Modular Bidirectional DC-DC Converter for Hybrid/Electric Vehicles with Variable-Frequency Interleaved Soft-Switching", 2009.
- IEEE International Future Energy Challenge *Overall First Prize for Wind Turbine Energy Maximizer*, hosted by IEEE and the IEEE Power Electronics Society, 2009.
- In 2007, nine of Prof. Batarseh's US Patents have been licensed to Petra Systems [7,646,116; 7,583,128; 7,471,524; 7,388,761; 7,251,113;7,196,916;7,149,096; 6,982,887; 6,906,931)] with $54 million in VC

funding.

- Received the *best paper prize* from the IEEE Power Electronics Society, IEEE Transactions on Power Electronics for paper entitled "Flyboost Power Factor Correction Cell and a New Family of Single Stage AC/DC Converters," Vol. 20, No. 1, pp. 25-34, 2005.
- Awarded the State of Florida "*Davis Productivity Award for Best Invention",* 2004.
- Invited for short-term visits as the Visiting Research Scholar, IMMS Institut für Mikroelektronik- und Mechatronik-Systeme gemeinnützige GmbH (IMMS GmbH), Ilmenau, Germany, 1997-2008.
- Selected as a short-term research visitor by the UNDP (United Nations Development Program) to Jordan under the special project known as the Transfer of *Knowledge through Expatriate Nationals (TOKTEN),* summer, 1991.

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7. **S. R. Khazeiynasab, J. Zhao, I. Batarseh and B. Tan, "Power Plant Model Parameter Calibration Using Conditional Variational Autoencoder," in IEEE Trans. on Power Systems, vol. 37, no. 2, pp. 1642-1652, March 2022, doi: 10.1109/TPWRS.2021.3107515.**

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307. A. Khan, P. Kornetzky, I. Batarseh, “Analysis and Design of a Boost-Derived DC-to-AC Inverter,” IEEE-Southcon Record, pp. 592 –598, June 1996.

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From 1991-1995:

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310. J. Qian, A. Aslam, I. Batarseh, "Turn-Off Switching Loss Model and Analysis of IGBT Under Different Switching Operation Modes," IECON'95, Orlando, Vol. 1, pp. 240-245, November 1995.

311. J. Qian, I. Batarseh, "Comparison of PWM Zero-Voltage Switching DC-DC Converters with Output Isolation," IEEE-IAS, Annual Meeting, October 8-12, Orlando, Vol. 3, pp. 2589-2596, October 1995.

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313. J. Qian, I. Batarseh, M. Ehsani, "Analysis and Design of a Clamped-Mode Isolated ZVS Boost Converter," IEEE-PESC'95, Atlanta, GA, Vol. 2, pp. 1201-1207, June 1995.

314. N. Kutkut, C.Q. Lee, I. Batarseh, "A Generalized Program for Extracting the Control Characteristics of Resonant Converters Via The State-Plane Diagram," IEEE-PESC'95, Atlanta, GA, pp. 1236-1242, June 1995.

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322. A. Khan, I. Batarseh, K. Siri, J. Bonda, "Analysis and Design of a Boost Derived DC-to-AC Converter with Zero-Voltage-Switching," IEEE Southcon'95, Ft. Lauderdale, FL., pp. 592-598, March 1995.

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Lauderdale, FL., pp. 47-52, March 1995.

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329. I. Batarseh, R. Liu, A. Ortize-Conde, A. Yacoub, K. Siri, “Steady-state analysis and Performance Characteristics of the LLC-Type Parallel Resonant Converter,” IEEE-Power Electronics Specialists Conference (PESC'94), June , Taipei, Taiwan, Vol. 1, pp. 597-606, June 1994.

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331. I. Batarseh “Course and Laboratory Instructions in Power Electronics,” IEEE-Power Electronics Specialists Conference (PESC'94), June, Taipei, Taiwan, Vol. 2, pp. 1359-1368, June 1994.

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334. I. Batarseh, D. Kemnitz “Undergraduate Education in Power Electronics,” IEEE Southcon'94, Orlando, FL., pp. 207-213, March 1994.

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336. A. Bonsall, Z. Moussaoui, I. Batarseh, “Modeling and PSPICE Simulation of the Series-Parallel Resonant Converter,” IEEE Southcon'94, Orlando, FL., pp. 270-275, March 1994.

337. A. Khan, I. Batarseh, “Analysis and Design of the Boost Derived PWM Converter,” IEEE Southcon'94, Orlando, FL., pp. 552-559, March 1994.

338. A. Khan, I. Batarseh, K. Siri, J. Elias, “Boost Power Factor Correction Circuits,” IEEE-Southcon Record, pp. 552-559, Mar 1994.

339. J. Qian, I. Batarseh, “Analysis and PSPICE Simulation for Resonant Power Factor Correction Circuits,” IEEE Southcon'94, Orlando, FL., pp. 560-566, March 1994.

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341. I. Batarseh, “Performance Characteristics of the LCC-Type Parallel Resonant Converter,” Proceedings of the IEE-International Power System Conference'93, Amman-Jordan, pp. 17-23, October 1993.

342. Z. Wang, M. Sznaier, I. Batarseh, “Robust Control Design for a Conventional Series Resonant Converter using μ-synthesis,” In the 2nd IEEE Conference On Control Applications, Vancouver, Canada, Vol. 2, pp. 885-890, September 1993.

343. I. Batarseh, “State-Plane Analysis of Current Driven Full-Bridge Parallel Resonant Converter,” In the Conf. Rec. of the Society of Instrument and Control Engineering (SICE)'93, Kanazawa, Japan, pp. 1557-1563, Aug. 4-6, 1993.

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346. J.P. Agrawal, I. Batarseh, “Improving the Dynamic Modeling and Static Cross Regulation in Multi-Output Resonant Converters,” In the Conf. Rec. of APEC'93, March 7-11, San Diego, CA, pp. 65-70, March 1993.

347. I. Batarseh, J. Nayfeh, “Analysis of a New Parallel Resonant Converter Topology,” International Power Conversion Conference-PCIM'92, pp. 17-25, Sept. 1992.

348. I. Batarseh “Analysis of the Voltage Fed Parallel Resonant Converter,” In the Conf. Rec. of Society of Instrument and Control Engineering (SICE), Tokyo, Japan, pp. 1185-1188, July 1992.

349. R. Liu, C.Q. Lee, I. Batarseh, “A Unified Approach to the Design of Resonant Power Factor Correction Circuits,” IEEE-Power Electronics Specialists Conference (PESC'92), Vol. 1, pp. 181-188, June 1992.

350. I. Batarseh, R. Severns, “Resonant Converter Topologies with Three and Four Energy Storage Elements,” In the Conf. Proc. of the High Frequency Power Conversion'92, May 4-8, pp. 374-383, May 1992.

351. I. Batarseh, K. Siri “Generalized Analysis of High-Bridge Resonant Converters,” In the Conf. Proc. High Frequency Power Conversion'92, May 4-8, pp. 221-228, May 1992.

352. I. Batarseh, “The Japanese Experience in Technology Transfer and How it May Apply to Saudi Arabia,” Symposium on Industrial Management-Japanese Experience, Dhahran, Saudi Arabia, pp. 197-218, Dec. 15-18, 1991.

353. I. Batarseh, C.Q. Lee, “State-Plane Analysis of High Order Parallel Resonant Converters,” IEEE-Midwest Symposium on Circuits and Systems, Monterey, CA, Vol. 2, pp. 939-942, May 1991.

354. K. Siri I. Batarseh, C.Q. Lee, “Small Signal Analysis of Parallel Resonant Converters,” IEEE-Midwest Symposium on Circuits and Systems, Vol. 2, pp. 739-742, May 1991.

From 1988-1990:

355. I. Batarseh, C.Q. Lee, “State-Plane Analysis of High Order Parallel Resonant Converters,” In the Annual Meeting of SESCON'90, Cairo, Egypt, pp. 71-81, Dec. 1990.

356. I. Batarseh, C.Q. Lee, “Multi-Output LLCC-type Parallel Resonant Converter,” In the Conference Record of IEEE-IECON'90, pp. 850-856, Pacific Grove, CA, Vol.2, pp. 850-856, November 1990.

357. I. Batarseh, R. Liu, C.Q. Lee, “Unified Approach to the Analysis and Design of Resonant Converters: Part II - Continuous Conduction Mode in High Order Converters,” In the Conf. Record of IEEE-ICCAS, Nanjing, China, July 1989.

358. I. Batarseh, C.Q. Lee, "Steady-State Analysis of the Parallel Resonant Converter with LLCC-Type Commutation Network," In the Conf. Rec. of IEEE-PESC'89, Milwaukee, WI, Vol. 2, pp. 971-978, June 1989.

359. R. Liu, I. Batarseh, C.Q. Lee, "LLC-Type and the Class-E Converters," In the Conference Rec. of High Frequency Power Conversion'89, Naples, Florida, pp. 486-496, May 1989.

360. I. Batarseh, R. Liu, C.Q. Lee, A. Upadhyay, "150 Watts and 140 kHz Multi-Output LCC-Type Parallel Resonant Converter," In the Conf. Rec. of the IEEE-APEC'89, pp. 221-230, February 1989.

361. C.Q. Lee, I. Batarseh, R. Liu, "Design of Capacitive Coupled LCC-Type Parallel Resonant Converter," In the Conf. Rec. of IECON'88, Singapore, pp. 672-677, Oct. 1988.

362. I. Batarseh, R. Liu, C.Q. Lee, "State-Plane Analysis and Design of the Parallel Resonant Converter with LCC-Type Commutation," In the Conf. Rec. of SICE'88, Japan, pp. 831-835, 1988.

363. C.Q. Lee, I. Batarseh, R. Liu, A. Upadhyay, "Comparison of Capacitive and Inductive Coupled Parallel Resonant Converters," In the Conf. Rec. of IEEE-APEC'88, pp. 157-166, Feb. 1988.

ORGANIZED WORKSHOPS

As workshop technical organizer, served as an editor of the following six NSF workshop proceedings:

1. *Energy Education and Research Activities*, NSF Workshop, Texas A&M University, Qatar Campus, Dec. 13-16, 2009.
2. *Power Electronics and Drives*, NSF Workshop, American University of Sharjah, United Arab Emirates, Dec. 13-16, 2005.
3. *Modern Power Electronics Curriculum: Teaching and Research*, NSF Workshop, Amman-Jordan, Dec. 15-17, 2002.
4. *Multi-Media Delivery of Power Electronics*, NSF Workshop Proceedings, edited by Issa Batarseh, Nov. 9-11, 2000. *(110 pages).*
5. *Power Electronics Research and Teaching Activities*, NSF Workshop Proceedings, edited by Issa Batarseh, May 9-11, 1999. *(65 Pages).*
6. *Develop Power Electronics Curriculum and Laboratory*, Proceedings, edited by Issa Batarseh, Orlando, FL, March 24-26, 1996.

Organized and ran a USAID workshop entitled "Graduate Admissions, Scholarships and Industry Internship Opportunities in the U.S.," Jordan, August 9, 2015.

RESEARCH GRANTS *(All as Principal Investigator)*

1. **STTR-NSF** –*Multi-port PV Module Design,* $155,00, July. 1, 2023 – Dec.31, 2024, with ***FHTC Match.*** Nov. 1, 2022 – Nov. 1, 2025.

2. **NSF** – *Collaborative Research: Compact, Multi-port, GaN-Based Grid-Forming Inverter,* $270,000, Dec. 1, 2022 – Dec.1, 2025.

3. **A.F. Mensah** – *Enabling Advanced Battery and Inverter Design and Integration with Permanent Demonstration Installation at FSEC,* $900,000, including $450,000 ***FHTC Match.*** Nov. 1, 2022 – Nov. 1, 2025. *(Funded – contract is being finalized).*

4. ***Smart Charging Technologies (SCT) –*** *Design and Development of Multi-Level, Three-Phase Inverter based on the Flying Capacitor Architecture****,*** $300,000, including $150,000 ***FHTC Match.*** Nov. 1, 2022 – Nov. 1, 2025.

5. **A.F. Mensah** - Controller design and demonstration of Integrated battery-Inverter

storage system, $300,000, including $150,000 ***FHTC Match.*** Sept 1, 2021 – Aug. 31 31, 2022.

6. **NSF** – *Collaborative Research: Advanced and Highly Integrated Power Conversion Systems for Grid Stability and Resiliency*, **NSF-ECCS-2103442,** $280,628, June, 2021 – May, 2024.

7. ***Smart Charging Technologies (SCT) –*** *Exploring DC Chargers for Recommunication Applications***,** $96,000, including $48,000 ***FHTC Match.*** Jan 1, 2021 – Dec 31, 2021

8. **NSF** – *GOALI: Highly Integrated Grid-Tied Multi-Port Power Module for PV and Storage,* **NSF-ECCS-1810733,** $360,000, Co-PI Said Al-Hallaj, Sept. 1, 2018 – Sept. 1, 2021.

9. **NSF** – *Planning Grant: Engineering Research Center for Energy Storage System Enabled Society (ESSENSE)***, NSF-EEC-1840359,** $100,000, Sept. 1, 2018 – Sept. 1, 2019.

10. ***US-Navy Phase II SBIR:*** *High Density Soft-Switching Multi-Port Photovoltaic Power Manager,* $1,000,000 (UCF portion $200,000 with $50,000 Match FHTC), Oct. 2015 – Oct. 2017.

11. **Office of Technology Transfer (OTT)-UCF***: Interactive Technical Electronic Book Operating System,* $15000, June 2013 - April 1, 2014.

12. **NSF -** *US-Jordan Cooperative Science: Chaos Theory on Micro-Inverters for Photovoltaic (PV) Systems,* **NSF- ECCS-1156633**, $180,000, Oct. 1, 2012 – Sept. 30, 2016.

13. **Department of Energy (DoE):** Photovoltaic Power Electronics Research Initiative (PERI) for developing low cost, ultra-compact, three-phase micro inverters or "AC bricks", **DoE Award (DE-EE0003176.000),** $1.4 M, Jan. 1, 2011 – Dec. 31, 2013. (including 50% match)

14. **NSF -** *US-UAE Workshop: Energy Developments, Addressing the need of the energy industry*, NSF - **Office of International Science and Engineering,** $48,000, Jan. 1, 2011 – Dec. 31, 2012

15. **NSF** – *CCLI: Development of Modular Interactive Learning and Assessing Tools for Electrical 1. Circuit Core Course for Engineering Students*, **NSF-CCLI Phase I,** $199,000, June 1, 2009 – May 30, 2012.

16. **State of Florida Energy Program** - Florida Solar Energy Consortium (FESC), **$7.8M** (Dr. Batarseh's portion **$1.9M+$0.6M match)**, Jan. 1, 2009 – Dec. 31, 2013. Co-PIs: John Shen, Wasfy Mikhael, Zhihua Qu, Louis Chow, Thomas Wu, Peter Yuan.

17. **NSF -** *US-Qatar Workshop: Recent Research and Educational Activities in Power Electronics and Drives***,** NSF - **Office of International Science and Engineering,** Co-PI Ned Mohan, $49,370, Dec. 2009.

18. **US Army Phase III SBIR** – *High Power High Density Bi-directional DC-DC Converter*, **US Army TACOM**, $200,000 (Including $100k Match by I-4 Program), Feb. 2009 – Feb. 2010.

19. **Intel Corporation** "Dynamic Digital Power Techniques to improve Efficiency and Performance" **$100,000**, Jan. 2007 – Jan. 2009.

20. **Intel Corporation -** Dynamic Modeling of Portable Dc-dc Converters, $150,000, Jan. 1, 2006 – Dec. 31, 2009.

21. **NASA Phase II SBIR** – Integrated Three-Port Converters for Compact and Efficient Power Management, $400,000 Dec. 2007 – Dec. 2009.

22. **US Navy Phase I SBIR** – Low-Cost, High-Efficiency, High-Density, DC-DC Converter, $70,000 Jan. 2007 – July, 2007.

23. **NSF - International Research Experience for Student (IRES):** US-Jordan- In Photovoltaic Based Power Electronics Conversion Systems, $137033, April 2007 – April 2010.

24. **NASA Phase I SBIR** – Integrated Three-Port Converters for Compact and Efficient Power Management, $100,000 Jan. 2007 – July, 2007.

25. **US Navy Phase I STTR** – Energy Harvesting from Backpack, $100,000, July 1, 2006 – Jan. 2007.

26. **Intel Corporation** – *Design, Simulation, and Development of Voltage Regulators with Improved Efficiency at Light Load*, $55,880, Jan. 2006 – Dec. 31, 2006.

27. **US Army Phase II SBIR** – *High Power High Density Bi-directional DC-DC Converter*, **US Army TACOM**, $750,000, Feb. 2006 – Feb. 2008.

28. **US Army Phase I SBIR** – *High Power High Density Bi-directional DC-DC Converter*, **US Army TACOM**, $120,000, Feb. 23, 2005 – Jan. 22, 2006.

29. **ApECOR, Corp. –** *Developing Interactive Applets for the Design of High-Frequency DC-DC Converters for Communication*, $31,000**,** Feb. 2004 – Jan. 2005

30. **I-4 Match –** *Developing Interactive Applets for the Design of High-Frequency DC-DC Converters for Communication,* $15,000, **UCF-OSR**, Feb. 2004 – Jan. 2005.

31. **Intel Corp –** *Dynamic Modeling of Voltage Regulator Modules (VRMs)*, $200,000, Oct. 1. 2003 – Sept. 30, 2005.

32. **NSF – US – United Arab Emirates - Workshop** – *Power Electronics and Drives*, $22,000, **National Science Foundation – International Program,** Dec. 13-15, 2005

33. **NSF** – *Innovative Maximum Power Tracking Control*, **NSF International Program**, $35,000, Feb. 22, 2003 – Feb. 21, 2005.

34. **US Air Force, Phase II: SBIR** – *Maximum Power Point Tracking for Solar Array Systems,* $741,000, Feb. 7, 2003 – Feb. 6, 2005.

35. **Emerson Corp.** – *High-Efficiency DC-DC Converter Designs,* $1,500,000**,** Nov. 15, 2002 – Nov. 15, 2004.

36. **NSF** – *Hybrid Design of AC-DC Converters with PFC*, $180,000, **National Science Foundation- Division of Electrical and Communication Systems (ECS)-ECS-01-32965,** May 1, 2002 – May 1, 2004 (Including $30,000 as International Supplement).

37. **Presidential Equipment Grant,** $35,000, **UCF**, Feb. 25, 2003 – Feb. 26, 2004.

38. **ApECOR, Corp. –** *Electronic Ballast Design,* $38,200**,** Jan. 1, 2003 – Dec. 31, 2003.

39. **I-4 Match –** *Electronic Ballast Design,* $38,200, **UCF-OSR,** Research Park, UCF, Jan. 1, 2003 – Dec. 31, 2003.

40. **ApECOR, Corp. –** *AC-DC Power Factor Correction,* $32,600, Nov. 1, 2002 - Oct. 31, 2003.

41. **I-4 Match –** *AC-DC Power Factor Correction,* $32,600, **UCF-OSR,** Research Park, UCF, Nov. 1, 2002 – Oct. 31, 2003.

42. **US Air Force, Phase I: SBIR –***Maximum Power Point Tracking for Solar Array Systems,* $96,400, April 1, 2002 – March

30, 2003.

43. **NSF Workshop –** *Modern Power Electronics Curricula and Research Activities*, $19,500, **NSF-International Program,** Oct. 1, 2001 – Sept. 30, 2002.

44. **NSF–** *Bifurcation Analysis of Power Electronics Circuits,* **NSF-International Program**, $36,000, Jan. 25, 2002 – Dec. 31, 2003.

45. **NSF** – **RUE-Supplement –** *Dynamic Modeling and Design of High Frequency DC-DC Converters In Distributed Power Systems,* $12,000, **NSF-EECS Division**, June 1, 2000 to May 30, 2002.

46. **NSF – RUE-Supplement –** *High Frequency AC Distribution Systems, $12,000,* ***National Science Foundation*- Division of Electrical and Communication Systems (ECS)-ECS-99-79797,** Sept. 1, 1999 – Aug. 31, 2002.

47. **NSF** – *Dynamic Modeling and Design of High Frequency DC-DC Converters In Distributed Power Systems,* $54,000, **NSF-EECS Division**, June 1, 2000 to May 30, 2002.

48. **NSF – Jordan Joint Project** – *Experimental and Simulation studies of Power Factor Corrections*, **NSF International Program**, $12,000, June 1, 2000 to May 30, 2001.

49. **NASA-STTR, Phase II –** *Soft-switching Converters with Unity Power Factor Correction,* **NASA-Science and Technology Transfer Research (NAMASTE)**, $500,000, April 21, 2000 – April 22, 2002.

50. **NASA-STTR, Phase II –** *Soft-Switching Power Factor Correction Circuits,* **Match** $156,271, April 21, 2000 – April 22, 2002.

51. **I-4 Match –***Low Voltage Converters for New Generation of Computer Systems,* **UCF-OSR**, $30,000: PI: Issa Batarseh, Jan. 1, 2000 to Dec. 31, 2000.

52. **NSF –** *High Frequency AC Distribution Systems,* $130,000, **National Science Foundation - Division of Electrical and Communication Systems (ECS)-ECS-99-79797,** Sept. 1, 1999 – Aug. 31, 2002.

53. **NSF-Workshop** – *Development of Multi-Media Based Power Electronics Curriculum*, $16,000, **NSF-Division of Electrical and Communication Systems (ECS-9985605),** Sept. 1, 1999 – Aug. 31, 2001.

54. **NSF-STTR –***Low Voltage Converters for New Generation of Computer Systems*, $100,000, **NSF**, Jan. 1, 2000 – Dec. 31, 1999.

55. **NSF**– *High Frequency AC Power Distribution Systems,* **UCF Match,** $32,000, Sept. 1, 1999 – Aug. 31, 2001.

56. **I-4 Match**: *Soft-Switching Unity Power Factor Correction Circuits,* **UCF-OSR**, $60,000: Oct. 22, 1998 – Oct. 21, 1999.

57. **NSF – US-Jordan NSF-Workshop** – *Power Electronics Curricula and Applications*, $18,000, **National Science Foundation – International Program and the Division of Electrical and Communication Systems (ECS),** May 18-24, 1998.

58. **NASA** – *Soft-Switching Unity Power Factor Correction Circuits,* **NASA-Science and Technology Transfer Research *(NASA-STTR* –NAS10-98064*)*;** $99,600, Oct. 22, 1998 to Oct. 21, 1999.

59. **Florida Space Grant Consortium-NASA** – *Power Factor Correction Circuits,* $20,000; P.I.: Issa Batarseh, Co-PI Chester Kennedy, Martin Marietta**,** May 1, 1998 to June 1, 1999.

60. **Florida Space Grant Consortium-NASA** – *Design of Parallel Connected DC-to-DC Power Converters for Distributed Power Systems to Be Used in the Space Station*, $ 4,500; May 1, 1998 to May 31, 1999.

61. **Small-Business Initiative Program (SBIR) –** *Brushless DC Machines*, $25,000; **Electrodynamics Co,** Orlando, FL, June 1, 1997 to Dec. 31, 1998.

62. **Strategic Initiative Program –** *Developing Power Engineering Curriculum*, $40,000; **UCF**; P.I. Issa Batarseh; Co-P.I.: Qu, Yuan, Mosley, Liou, Jan. 31, 1996 – July 31, 1997.

63. **NSF – Research Equipment Grant:** *Experimental Investigation of High Frequency Power Converters*, $42,565; **National Science Foundation - Division of Electrical and Communication Systems (ECS),** ECS-9500465, Sept. 30, 1995 – Aug. 31, 1996.

64. **NSF – Developing Power Electronics Curricula:** *Courses, Hardware, and Software Laboratory (workshop)*, $21,000, **National Science Foundation - Division of Electrical and Communication Systems (ECS),** ECS-9523167, March 24-26, 1996.

65. **Florida Space Grant Consortium-NASA** – *Control Design for Distributed Power Systems for Space Applications*, $20,000; P.I.: Batarseh, Co-PI Chester Kennedy, Martin Marietta**,** May 1, 995 - June 1, 1996.

66. **Incandescent Disposal Systems (IDS)** – *Design of a 9kW, 100kHz ZVS Flyback PWM Converter for Incandescent Disposal Systems Applications*, $22,500;, Altamonte Springs, FL, June 1, 1995 - June 1, 1996.

67. **Florida Space Grant Consortium-NASA** – *Simulation of High Frequency Power Converters For Space Applications*, $4,500; Aug. 24, 1995 - May 29, 1996.

68. **Florida Space Grant Consortium-NASA** – *Design of Parallel Connected DC-to-DC Power Converters for Distributed Power Systems to be used in the Space Station*, $4,500; Aug. 24, 1995 - May 29, 1996.

69. **Division of Sponsored Research** – *Distributed Power Systems for Space Station*, $7,500; **UCF**; June 1, 1995 - June 30, 1996.

70. **Florida Space Grant Consortium-NASA** – *Simulation of High Frequency Power Converters For Space Applications*, $4,000; May 25, 1995 - Oct. 31, 1995.

71. **Division of Sponsored Research** – *Modeling and Design of Distributed Power Systems for Space Station,* $5,249; **UCF**; June 1, 1994 - June 30, 1995.

72. **Myron Zucker Research Award –***Analysis and Design of Resonant Power Factor Correction Circuits*, $27,949; **IEEE Industrial Application Society;** Jan. 1, 1994 – Dec. 31, 1994.

73. **Allied Signal Inc**. **–***Magnetic for the Boost-Derived ZVS Power Factor Correction Circuit,* $8,972; March 31, 1994-March 30, 1996.

74. **Florida Space Grant Consortium-NASA** – *Modified Power Electronics Course to Include Distributed Power Systems for Space Applications*, $4,000; June 1, 1994 - May 1, 1995.

75. **Florida Space Grant Consortium-NASA** – *Simulation of High Frequency Power Converters*, $5,000; May 25, 1993 to Oct. 31, 1994.

76. **NASA-College of Engineering** – Minority Engineering Program-Mentor, $1000/year, 1993-1997.

77. **Florida Space Grant Consortium-NASA** – *Simulation of Family of DC-to-DC Resonant Converters,* $4,273; May 7, 1993 – Oct. 15, 1993.

78. **EIES** – *Generalized Small-Signal Analysis of Resonant Converters,* $6,976; **UCF,** Orlando, Florida, August 23, 1992 – May 7, 1993.

79. **Division of Sponsored Research** – *Generalized Analysis of Resonant Converter Topologies,* $5,000; **UCF**, May 7, 1992 – Aug. 8, 1993.

RESEARCH GRANTS *(as a Co-Principal Investigator)*

80. **DNA Sports Training LLC** - *Advanced Golf Stroke Training System*, $117,333; Oct. 2013 – Dec. 2016, (PI: Thomas Wu, Co-PI: Louis Chow and Issa Batarseh). In addition, FHTC match of $46,733.

81. **US Department of Energy – ARRA-SEGIS Phase I and II,** "Development, Demonstration and Commercialization of Smart-Grid Inverters for Wider PV Technology Utilization", $2.3M, June 2008 – Feb. 2011. (P.I. Robert Reedy, Co-P.Is. Gobind Atmaram, (Batarseh's Share $100k).).

82. **Petra Sola, Inc**, "Research and Development Activities on Grid Tied Inverters," $900,000 Dec. 2007 – Dec. 2011. (P.I. John Shen, Co-P.I.: Issa Batarseh).

83. **NASA – SRI** – Radiation Hard Power System-on-Chip for Space Applications, NASA-UCF-UF joint Project, $160,000, June 2006 – June 2007. P.I. John Shen (Batarseh's Share $40k).

84. **Orange County Express Way Authority; Orlando**– *West African Graduate Engineering Exchange Program,* $81,250/year for four years, June 2000 – June 2004.

85. **Florida Dept. of Energy** – Project funded through Solar Energy Center, $20,000, Co-PIs: Zhihua Qu and Issa Batarseh, 1997-1998.

86. **Lockheed Martin** – *Miniature Heat Pump Design and Cooling Analysis for MOSFET Devices,* $35,000**;** PI: Louis Chow, Co-PI: Issa Batarseh, Kalpathy Sundaram, UCF, Nov. 1, 1998 – Nov. 1, 1999.

INVITED PRESENTATIONS/SEMINARS

Dr. Batarseh made more than 50 national and international invited talks, conference presentation, seminars and keynote speeches.

SERVICE

PROFESSIONAL SERVICE HONORS & AWARDS

- Selected as Fellow Advisory Committee, National Academy of Inventors (NAI), 2017.
- Founder and President of the UCF Chapter of the National Academy of Inventors (NAI), 2017.
- Recognition by the Institute of International Education (IIE) for the excellent work in the Rescue Funds Program at PSUT, New York, 2012.
- Elected President of the Electrical and Computer Engineering Department Heads Association (ECEDHA). ECEDHA represents more than 700 Electrical and Computer Engineering Departments in the USA and Canada, 2009-2010.
- Served as VP and Secretary of the Southeastern Section of ECEDHA, 2007-2009.
- IEEE Outstanding Service Award, Florida Council, February 2004.
- IEEE Outstanding Service Award, Orlando Section, March 2003.

- College Professional Service Award, January 2001.
- IEEE International Future Energy Challenge Award, Department of Energy, 2001.
- Recipient of the Outstanding Contribution in Power Systems, IEEE Power Engineering Society, Orlando, Florida, USA, 1997.
- Fulbright US Scholar Fellowship on Power Electronics, Jordan 1997-1998.
- Outstanding Engineering Educator of the Year, IEEE, 1998.
- Received the IEEE Outstanding Chapter Award, IEEE Orlando Section, 1995.
- Received the Certificate of Appreciation, Chairman, Power Engineering Society, IEEE Orlando Section, 1994.
- Outstanding Faculty Advisor Award, College of Engineering, February 1998.
- Outstanding IEEE Power Engineering Orlando Chapter, 1997.
- IEEE Outstanding Service Award, IEEE Orlando Section, June 12, 1994.
- Certificate of Appreciation as Conference Chairman, IEEE Orlando Section, June 1994.
- Outstanding Chapter Award, 1991-1992, Eta Kappa Nu Honor Society.

PROFESSIONAL SERVICE

AFFILIATIONS

- Florida Inventors Hall of Fame, Inducted on Nov. 6, 2017.
- NAI – Fellow.
- IEEE – Fellow Member.
- AAAS- Fellow.
- IEEE – Power Electronics Society, Aerospace and Electronics Systems, Member.
- Florida Engineering Society – Member.
- *Eta Kappa Nu,* Faculty Initiate.
- *Tau Beta Pi*, Member.

BOARD MEMBER

- NASA Electrical Power TDT, Member, 2009-Present
- Petra System, Inc., New Jersey, 2012-Present
- ApECOR, 2011- Present.
- Innovation Solution Board, Royal Court, Jordan, 2016-Present.
- Fulbright Commission, Amman, Jordan 2011 – 2014.
- Arab Scientists and Technologist Foundation (ASTF), 2007-2009.

IEEE

- Chair, PELS-IEEE Technical Committee on Energy Access, Starting on Jan. 1, 2024.
- Vice Chair, PELS-IEEE Technical Committee on Energy Access, 2020-Present.
- Global Steering Committee, Empower A Billion Lives (EBL). 2019-Present
- Education Chair, Power Electronics Society (PELS), 2015 – 2019
- General Chair of PELS 2007 Conference.
- Associate Editor, IEEE Transaction on Circuits and Systems, 2001 – 2005.
- Associate Editor, IEEE Transaction on Aerospace and Electronic Systems, 1989 – 2003.
- AdCom Member, IEEE Power Electronics Society, 2003 – 2009.
- Section Chair, IEEE Orlando Section, 1999 – 2001.
- Executive Board, IEEE Orlando Section, 1994 – 1997.
- Power Engineering Society, Chairman, IEEE Orlando Section, 1993 – 1995
- Chapters Chair, Chairman, IEEE Orlando Section, 1995 – 1997.
- Conference Committee, Chairman, IEEE Orlando Section, 1993 – 1999.

- Education Committee, Chairman, IEEE Orlando Section, 1992 – 1993.

REVIEWER

- National Academy of Inventors
- AAAS
- National Science Bowl Competition.
- NSF Graduate Research Fellow Program
- Fulbright Program, Jordan.
- California Energy Commission.
- Canadian Research Council.
- U.S. Department of Education.
- NSF – *Panel and Site Reviewer (ERC,* CAREER, IGERT, SBIR, Education, International Programs)
- IEEE – Several Transactions and International Conferences.
- Orlando Science Center.
- Florida Space Grant Consortium (FSGC).
- City University of Hong Kong-Science Council.
- Florida Foundation for Future Scientists, Captain.
- Textbooks on Power Electronics, Microelectronics, Energy Power Systems.

ADVISOR

- IEEE Student Chapter at UCF, 1995 – 1997.
- Honor's Program, Theses Advisor, 1992 – 2002.
- Youth Motivator, Oviedo High School, FL, 1993 – 1994.
- Eta Kappa Nu, Advisor, 1991 – 1993.
- Volleyball Club, Advisor, 1991 – 1992.

CONTINUING EDUCATION

- Help Organize Webinars for IEEE-PELS Professional Society.
- Organize and teach the Professional Engineering (PE) Review Course for engineers interested in obtaining Florida's PE license. UCF, 1994 – 2008.
- Organize and teach part of the Engineering Fundamentals (EF) Review Course for engineers interested in obtaining Florida's PE license. UCF, 1994 – 2008.

CONFERENCE & WORKSHOP COMMITTEES

WORKSHOPS ORGANIZATION

- NSF Workshop, Chairman, "**NSF -** *US-UAE Workshop: Energy Developments, Addressing the need of the energy industry,*" Abu Dhabi, Nov. 2012.
- NSF Workshop, Co-Chairman, "Recent Research and Educational Activities in Power Electronics and Drives," Qatar, Dec. 2009.
- **C**hairman, "Delivery of Modern Power Electronics," University of Salerno, Italy, Sept. 2-5, 2003.
- NSF Workshop, Chairman, "Modern Power Electronics Curriculum: Teaching and Research," Amman-Jordan, Dec. 11-14, 2002.
- NSF Workshop, Chairman, "Multi-media Delivery of Power Electronics," Nov. 11-13, 2000.
- NSF Workshop, Chairman, "Teaching and Research in Power Electronics," Amman, Jordan, May 1999.
- IEEE Student Chapters Leadership Workshop, Orlando, FL, 1996, 1997, 1998.
- NSF Workshop to develop Power Electronics Curriculum, Orlando, FL, 1996.

CONFERENCE AND SESSION CHAIRING

- IEEE Power Electronics Specialist Conference 2007 (PESC), General Chair, 2007.
- NSF Workshop on Multimedia Delivery of Power Electronics Education, Chairman, 2000.
- IEEE ISCAS 1999 Local Arrangement Chairman, May 1999.
- NSF Workshop on Power Electronics Education, Chairman, March 24-26, 1996.
- IEEE Southcon 1995, and 1994.
- Conference Co-Chairman for UNESCO sponsored conference.
- Invited Session Chair for several IEEE-PESC, APEC, ISCAS, IECON, SoutheastCon, and other conferences.
- Served as Technical Committee Chairman and/or member for numerous IEEE sponsored and other international conferences.

UNIVERSITY COMMITTEES

DEPARTMENT COMMITTEES

- ECE Tenure and Promotion Committee, Chair, 2016-18.
- ECE Executive Committee, Member 2010-Present
- EECS Executive Committee, Chair, 2005 – 2010.
- EECS Academic Coordinators Committee, 2006 – 2008.
- ECE Fellowship Committee, Chairman, January, 2000 – 2002.
- Undergraduate Affairs Committee, Chairman, 1997 – 2001.
- Administrative Committee, Chairman, 1996 – 1997.
- Tenure and Promotion Committee, Member, 1996 – 2002.
- Graduate Affairs Committee, member, 1995 – 2010.
- Electronics Committee, *Chairman*, August 1994 – July 1995.
- Space Management Committee, 1994 –1996.

COLLEGE COMMITTEES

- SoTL Awards Committee, 2021-2022.
- Dean's Graduate Recruitment Committee, 2014-2019.
- Deans and Chairs Committee, 2003 – 2010.
- Search Committee Chair, Chairman for the MMAE, 2001 – 2002.
- Awards and Scholarship Committee, Chairman, August 1989 – 1995.
- COE Honor's Committee, 1995 – 2002.
- COE Teaching Incentive Program (TIP), 1995 – 1996.
- COE Diversity Team, and Minority Faculty Advisory Committee, 1993 – 1998.
- International Affairs Committee, Chair and Member
- Dean Faculty and Staff Advisory Committee, member, 1992 – 1993.
- United Way, coordinator for several years.

UNIVERSITY COMMITTEES

- University Conflict of Interest (COI) and Commercialization, 2021-Present.
- Research Incentive Awards Committee, 2014-2015.
- Sabbatical Committee, 2000 – 2002.
- Interdisciplinary Council, 1998 – 2000.
- University Freshman Experience, 1998 – 1999.
- International Affairs Committee – Curriculum Subcommittee, 1997 – 2001.
- University Graduate Affairs Committee, 1998 – 2003.
- International Outreach Subcommittee, 1998 – 2001.

- Distance Learning Committee, Member, 1995 – 2000.
- University Senate, 1994 – 1996.
- Undergraduate Policy and Curriculum Committee, 1994 – 1995.
- Graduate Policy and Curriculum Committee, 1995 – 1996.

Dr. Batarseh has served on many other department, college and university search committees since joining UCF.

PERSONAL

Dr. Batarseh has a passion for educating future technical leaders and empowering entrepreneurs and enjoys engaging in interactive and adaptable educational delivery systems. References available upon request.