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WILCOX SKINNER

Innovations in Electrical and Electronic Engineering CRC Press

This book presents a series of new topologies and modulation schemes for soft-switching in isolated DC-DC converters. Providing detailed analyses and design procedures for converters used in a broad range of applications, it offers a wealth of engineering insights for researchers and students in the field of power electronics, as well as stimulating new ideas for future research.

New Topologies and Modulation Schemes for Soft-Switching Isolated DC-DC Converters MDPI

DC/DC conversion techniques have undergone rapid development in recent decades. With the pioneering work of authors Fang Lin Luo and Hong Ye, DC/DC converters have now been sorted into their six generations, and by a rough count, over 500 different topologies currently exist, with more being developed each year. Advanced DC/DC Converters off

Advances in Renewable Energy and Sustainable Environment Springer

Power Supply design is all about detail. And a large part of that detail lies in the practical domain, largely because of the typically small number of microseconds of switching periods involved, and the even smaller tens of nanoseconds of switch transition times --- all these, in effect accentuating various "second-order" effects, that eventually end up playing prime havoc with "normal" expectations of how the circuit should behave. So not unsurprisingly, even after reading several books, most readers still find themselves no closer to the ultimate goal of designing an actual power supply. Sooner or later, all engineers start realizing the hard fact that designing a switching power supply isn't the trivial task it once seemed to be. But even after years of successfully mastering the underlying theory, the ultimate goal of creating a cost-effective, reliable and commercially viable power supply may still remain a distant dream, since success ultimately hinges on experience. That is, in fact, what clearly differentiates a senior and seasoned power supply engineer from the others --- the ability to navigate and surmount a veritable minefield of tricky issues that can only be learned the hard way, by actual hands-on experience on the job. This book presents practical knowledge the author acquired rather painfully, while working "in the trenches" for several years in major engineering companies scattered across several continents. This is intended to be the mythical senior engineer's "bag of tricks," finally made available in the form of an easy-to-read book on your shelf. This book will make life for the ambitious power supply engineer much simpler --- besides reducing significantly, the rigorous requirement of having to be a senior engineer's protégé for years on end, just to gain a small measure of real success in this field. * A practical presentation that answers the important question: why is my switching converter behaving so differently than what I was expecting on the basis of my paper design? And how do I bridge that huge gap? * For the first time, a systematic and thorough discussion of troubleshooting switching power supplies. * Coverage of AC/DC and DC/DC power supplies. * Bench Evaluation of semiconductor ICs used in power conversion --- describing standard and unusual techniques mastered by the author, while testing similar chips at National Semiconductor. * Detailed coverage of vital topics that haven't been covered by available sources --- grounding systems, the subtleties of component datasheets, and using instruments and probes effectively. * Systematic investigation (type of failure mechanism, topology, etc.) and solutions for 5 years of reported power supply issues on a prominent, public web forum. This approach will ensure that engineers will not repeat the same mistakes. * A unique, readable style: personal and direct; no mystification--- just the plain truth, easily and logically explained, with plenty of pictures, graphs and plots.

The Power Electronics Handbook CRC Press

Power Converters for Electric Vehicles gives an overview, topology, design, and simulation of different types of converters used in electric vehicles (EV). It covers a wide range of topics ranging from the fundamentals of EV, Hybrid EV and its stepwise approach, simulation of the proposed converters for real-time applications and corresponding experimental results, performance improvement paradigms, and overall analysis. Drawing upon the need for novel converter topologies, this book provides the complete solution for the power converters for EV applications along with simulation exercises and experimental results. It explains the need for power electronics in the improvement of performance in EV. This book: Presents exclusive information on the power electronics of EV including traction drives. Provides step-by-step procedure for converter design. Discusses various topologies having different isolated and non-isolated converters. Describes control circuit design including renewable energy systems and electrical drives. Includes practical case studies incorporated with simulation and experimental results. Power Converters for Electric Vehicles will provide researchers and graduate students in Power Electronics, Electric Drives, Vehicle Engineering a useful resource for stimulating their efforts in this important field of the search for renewable technologies.

Advanced DC/DC Converters BoD - Books on Demand

Reliable, high-efficient and cost-effective energy storage systems can undoubtedly play a crucial role for a large-scale integration on power systems of the emerging "distributed generation" (DG) and for enabling the starting and the consolidation of the new era of so called smart-grids. A non-exhaustive list of benefits of the energy storage properly located on modern power systems with DG could be as follows: it can increase voltage

control, frequency control and stability of power systems, it can reduce outages, it can allow the reduction of spinning reserves to meet peak power demands, it can reduce congestion on the transmission and distributions grids, it can release the stored energy when energy is most needed and expensive, it can improve power quality or service reliability for customers with high value processes or critical operations and so on. The main goal of the book is to give a date overview on: (I) basic and well proven energy storage systems, (II) recent advances on technologies for improving the effectiveness of energy storage devices, (III) practical applications of energy storage, in the emerging era of smart grids.

Energy Storage in the Emerging Era of Smart Grids Springer

Electric vehicles are changing transportation dramatically and this unique book merges the many disciplines that contribute research to make EV possible, so the reader is informed about all the underlying science and technologies driving the change. An emission-free mobility system is the only way to save the world from the greenhouse effect and other ecological issues. This belief has led to a tremendous growth in the demand for electric vehicles (EV) and hybrid electric vehicles (HEV), which are predicted to have a promising future based on the goals fixed by the European Commission's Horizon 2020 program. This book brings together the research that has been carried out in the EV/HEV sector and the leading role of advanced optimization techniques with artificial intelligence (AI). This is achieved by compiling the findings of various studies in the electrical, electronics, computer, and mechanical domains for the EV/HEV system. In addition to acting as a hub for information on these research findings, the book also addresses the challenges in the EV/HEV sector and provides proven solutions that involve the most promising AI techniques. Since the commercialization of EVs/HEVs still remains a challenge in industries in terms of performance and cost, these are the two tradeoffs which need to be researched in order to arrive at an optimal solution. Therefore, this book focuses on the convergence of various technologies involved in EVs/HEVs. Since all countries will gradually shift from conventional internal combustion (IC) engine-based vehicles to EVs/HEVs in the near future, it also serves as a useful reliable resource for multidisciplinary researchers and industry teams.

Troubleshooting Switching Power Converters Springer Nature

This two-volume book presents outcomes of the 7th International Conference on Soft Computing for Problem Solving, SocProS 2017. This conference is a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), the Indian Institute of Technology Roorkee, the South Asian University New Delhi and the National Institute of Technology Silchar, and brings together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book presents the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers in the areas including, but not limited to, algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It is a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems for which finding a solution by traditional methods is a difficult task.

Proceedings of Symposium on Power Electronic and Renewable Energy Systems Control Springer Science & Business Media

The book presents the analysis and control of numerous DC-DC converters widely used in several applications such as standalone, grid integration, and motor drives-based renewable energy systems. The book provides extensive simulation and practical analysis of recent and advanced DC-DC power converter topologies. This self-contained book contributes to DC-DC converters design, control techniques, and industrial as well as domestic applications of renewable energy systems. This volume will be useful for undergraduate/postgraduate students, energy planners, designers, system analysis, and system governors.

Fundamentals of Power Electronics Springer Science & Business Media

Like most industries around the world, the energy industry has also made, and continues to make, a long march toward "green" energy. The science has come a long way since the 1970s, and renewable energy and other green technologies are becoming more and more common, replacing fossil fuels. It is, however, still a struggle, both in terms of energy sources keeping up with demand, and the development of useful technologies in this area. To maintain the supply for electrical energy, researchers, engineers and other professionals in industry are continuously exploring new eco-friendly energy technologies and power electronics, such as solar, wind, tidal, wave, bioenergy, and fuel cells. These technologies have changed the concepts of thermal, hydro and nuclear energy resources by the adaption of power electronics advancement and revolutionary development in lower manufacturing cost for semiconductors with long time reliability. The latest developments in renewable resources have proved their potential to boost the economy of any country. Green energy technology has not only proved the concept of clean energy but also reduces the dependencies on fossil fuel for electricity generation through smart power electronics integration. Also, endless resources have more potential to cope with the requirements of smart building and smart city concepts. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.

High Efficiency Non-isolated DC-DC Converters with Wide Voltage Gain Range for Renewable Energies Springer Nature

This book presents the select proceedings of the International Conference on Automation, Signal Processing, Instrumentation and Control (i-CASIC)

2020. The book mainly focuses on emerging technologies in electrical systems, IoT-based instrumentation, advanced industrial automation, and advanced image and signal processing. It also includes studies on the analysis, design and implementation of instrumentation systems, and high-accuracy and energy-efficient controllers. The contents of this book will be useful for beginners, researchers as well as professionals interested in instrumentation and control, and other allied fields.

[Dynamic Analysis of Switching-Mode DC/DC Converters](#) Elsevier

Fundamentals of Power Electronics, Second Edition, is an up-to-date and authoritative text and reference book on power electronics. This new edition retains the original objective and philosophy of focusing on the fundamental principles, models, and technical requirements needed for designing practical power electronic systems while adding a wealth of new material. Improved features of this new edition include: A new chapter on input filters, showing how to design single and multiple section filters; Major revisions of material on averaged switch modeling, low-harmonic rectifiers, and the chapter on AC modeling of the discontinuous conduction mode; New material on soft switching, active-clamp snubbers, zero-voltage transition full-bridge converter, and auxiliary resonant commutated pole. Also, new sections on design of multiple-winding magnetic and resonant inverter design; Additional appendices on Computer Simulation of Converters using averaged switch modeling, and Middlebrook's Extra Element Theorem, including four tutorial examples; and Expanded treatment of current programmed control with complete results for basic converters, and much more. This edition includes many new examples, illustrations, and exercises to guide students and professionals through the intricacies of power electronics design. Fundamentals of Power Electronics, Second Edition, is intended for use in introductory power electronics courses and related fields for both senior undergraduates and first-year graduate students interested in converter circuits and electronics, control systems, and magnetic and power systems. It will also be an invaluable reference for professionals working in power electronics, power conversion, and analogue and digital electronics.

[Electric Vehicles and the Future of Energy Efficient Transportation](#) CRC Press

This conference offers a platform for researchers and Engineers from different backgrounds to present and discuss their latest research ideas, results, potential applications and possible road ahead broadly in the areas of Electronics, Communication, Electrical Engineering and interdisciplinary areas of Control Engineering, Robotics, Internet, Network Security and Cloud Technologies and others

[Essential DC/DC Converters](#) Springer Science & Business Media

Less expensive, lighter, and smaller than its electromechanical counterparts, power electronics lie at the very heart of controlling and converting electric energy, which in turn lies at the heart of making that energy useful. From household appliances to space-faring vehicles, the applications of power electronics are virtually limitless. Until now, however, the same could not be said for access to up-to-date reference books devoted to power electronics. Written by engineers for engineers, The Power Electronics Handbook covers the full range of relevant topics, from basic principles to cutting-edge applications. Compiled from contributions by an international panel of experts and full of illustrations, this is not a theoretical tome, but a practical and enlightening presentation of the usefulness and variety of technologies that encompass the field. For modern and emerging applications, power electronic devices and systems must be small, efficient, lightweight, controllable, reliable, and economical. The Power Electronics Handbook is your key to understanding those devices, incorporating them into controllable circuits, and implementing those systems into applications from virtually every area of electrical engineering.

[Sixth International Conference on Intelligent Computing and Applications](#) John Wiley & Sons

There is not a single industry which will not be transformed by machine learning and Internet of Things (IoT). IoT and machine learning have altogether changed the technological scenario by letting the user monitor and control things based on the prediction made by machine learning algorithms. There has been substantial progress in the usage of platforms, technologies and applications that are based on these technologies. These breakthrough technologies affect not just the software perspective of the industry, but they cut across areas like smart cities, smart healthcare, smart retail, smart monitoring, control, and others. Because of these "game changers," governments, along with top companies around the world, are investing heavily in its research and development. Keeping pace with the latest trends, endless research, and new developments is paramount to innovate systems that are not only user-friendly but also speak to the growing needs and demands of society. This volume is focused on saving energy at different levels of design and automation including the concept of machine learning automation and prediction modeling. It also deals with the design and analysis for IoT-enabled systems including energy saving aspects at different level of operation. The editors and contributors also cover the fundamental concepts of IoT and machine learning, including the latest research, technological developments, and practical applications. Valuable as a learning tool for beginners in this area as well as a daily reference for engineers and scientists working in the area of IoT and machine technology, this is a must-have for any library.

[DC-DC Converter Topologies](#) John Wiley & Sons

The most critical part of the modern switching-mode power supply is the regulated dc/dc converter. Its dynamic behavior directly determines or influences four of the important characteristics of the power supply: • Stability of the feedback loop • Rejection of input-voltage ripple and the closely-

related transient re sponse to input-voltage perturbation • Output impedance and the closely-related transient response to load perturbation • Compatibility with the input EMI filter Due to the complexity of the operation of the converter, predicting its dynamic behavior has not been easy. Without accurate prediction, and depending only on building the circuit and tinkering with it until the operation is satisfactory, the engineering cost can easily escalate and schedules can be missed. The situation is not much better when the circuit is built in the computer, using a general-purpose circuit-simulation program such as SPICE. (At the end of this book is a form for obtaining information on a computer program especially well suited for dynamic analysis of switching-mode power converters: DYANA, an acronym for "DYNAMIC ANALYSIS. " DYANA is based on the method given in this book.) The main goal of this book is to help the power-supply designer in the prediction of the dynamic behavior by providing user-friendly analytical tools, concrete results of already-made analyses, tabulated for easy application by the reader, and examples of how to apply the tools provided in the book.

[2021 IEEE 12th Energy Conversion Congress & Exposition - Asia \(ECCE-Asia\)](#). Springer Nature

Innovative Smart Grid Technologies

[Application Manual Power Semiconductors](#) Springer

Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analysing compounds that can be vaporized without decomposition. In gas chromatography, the components of a sample are dissolved in a solvent and vaporized so as to separate the analytes by distributing the sample between two phases: a stationary phase and a mobile phase. Gas chromatography is in principle similar to column chromatography, but has several notable differences. as chromatography is also similar to fractional distillation, since both processes separate the components of a mixture primarily based on boiling point (or vapour pressure) differences. The mobile phase is a chemically inert gas that serves to carry the molecules of the analyte through the heated column. Gas chromatography is one of the sole forms of chromatography that does not utilize the mobile phase for interacting with the analyte. The stationary phase is either a solid adsorbant, termed gas-solid chromatography (GSC), or a liquid on an inert support, termed gas-liquid chromatography (GLC). In organic chemistry, liquid-solid column chromatography is frequently used to separate organic compounds in solution. Among the various types of gas chromatography, gas-liquid chromatography is the method most commonly used to separate organic compounds. The combination of gas chromatography and mass spectrometry is a vital tool in the identification of molecules. A typical gas chromatography comprises an injection port, a column, carrier gas flow control equipment, ovens and heaters for maintaining temperatures of the injection port and the column, an integrator chart recorder and a detector. The book, Advanced Gas Chromatography, is intended to cover numerous facets of applications ranging from basic biological, biomedical applications to industrial applications. The book analyse new developments in chromatographic columns, micro extraction techniques, derivatisation techniques and pyrolysis techniques. The book also focuses on various features of basic chromatography techniques and is appropriate for both young and advanced chromatographers. It includes some new developments in chromatography. This book is an invaluable tool for chemists as well as non-chemists employed in gas chromatography.

[Proceedings of 2nd International Conference on Intelligent Computing and Applications](#) Springer Nature

ic ETITE 20 expresses its concern towards the upgrading of research in Information Technology and Engineering It motivates to provide a worldwide platform to researchers far and widespread by exploring their innovations in the field of science and technology The mission is to promote and improve the research and development related to the topics of the conference The essential objective of the conference is to assist the researchers in discovering the global linkage for future joint efforts in their academic outlook

[2020 International Conference on Emerging Trends in Information Technology and Engineering \(ic ETITE\)](#) IGI Global

Written by experts, this book is based on recent research findings in high-frequency isolated bidirectional DC-DC converters with wide voltage range. It presents advanced power control methods and new isolated bidirectional DC-DC topologies to improve the performance of isolated bidirectional converters. Providing valuable insights, advanced methods and practical design guides on the DC-DC conversion that can be considered in applications such as microgrid, bidirectional EV chargers, and solid state transformers, it is a valuable resource for researchers, scientists, and engineers in the field of isolated bidirectional DC-DC converters.

[2018 International Conference on Electrical, Electronics, Communication, Computer, and Optimization Techniques \(ICECCOT\)](#) Institute of Electrical & Electronics Engineers(IEEE)

Successful applications of smart grid Integration of renewable energy sources to smart grid Production of energy using smart grid technologies Hybrid smart grid energy system technologies Novel energy conversion studies in smart grid systems Control techniques for smart grid energy systems Performance analysis of smart grid energy systems under different loads Computational methods and artificial intelligence studies in smart grids Optimized power delivery and generation Self healing Distributed Power Energy Systems and Sources, Renewable Energy, Conventional Power Sources New Trends and Technologies for Smart Grid Policies and Strategies for Smart Grid Microgrids for transportation electrification Energy Transformation from Renewable Energy System to Smart Grid HVDC for Smart Grid Power Devices and Driving Circuits for Smart Grid Decision Support Systems for Smart Grid ICT, IoT, Real time monitoring and control Applications for Industries Smart Grid for Electrical Vehicles, components