

CODE	TITLE	APPLICATION / DESCRIPTION
VTPW01	A Comprehensive Review of Microgrid Control Mechanism and Impact Assessment for Hybrid Renewable Energy Integration	Application: Hybrid renewable energy, grid-integration, control strategy Description: To identify the right design, control strategy, and economic analysis for microgrid systems for hybrid biomass-solar solar photovoltaic wind turbines
VTPW02	An Active Voltage Stabilizer for a DC Microgrid System	Application: Active stabilizer, DC microgrid, dual active bridge (DAB) Description: An improved grouping approach is proposed to categorize the converters in a DC microgrid. A new converter category called "Indirect Bus Impedance Converters (IBIC)" is introduced
VTPW03	An Improved Three-Stages Cascading Passivity-Based Control of Grid-Connected LCL Converter in Unbalanced Weak Grid Condition	Application: LCL converter, unbalanced weak grid. Description: An improved three-stages cascading PBC, a traditional PBC with six-variables is decomposed to three cascading PBCs with two-variables, and each PBC has only one parameter, which makes it easy to use in practical application
VTPW04	Design and Application of a Self-Powered Dual-Stage Circuit for Piezoelectric Energy Harvesting Systems	Application: Piezoelectric energy harvesting, self-powered H-Bridge circuit, dual-stage H-Bridge Description: The proposed DSHBR includes two stages Stage 1: AC-DC conversion with reduced conversion rectification losses, Stage 2: DC-DC conversion with rectified voltage stabilisation.
VTPW05	Fuzzy Logic Control for Solar PV Fed Modular Multilevel Inverter Towards Marine Water Pumping Applications	Application: Field programmable gate array, Fuzzy Logic Controller, induction motor drive Description: A novel symmetric multilevel module established on cascade category which does not require the necessity of any additional circuit to create negative voltage levels. A solar fed eleven level inverter with intelligent control techniques aimed to attain improved performance
VTPW06	Modified Phase-Shift Scheme for Optimal Transient Response of Dual-Active-Bridge DC/DC Converters Considering the Resistive Impact	Application: Current bias, dual-active-bridge (DAB) Description: A comprehensive analysis of the detrimental influence on the transient performance of a DAB converter due to resistive elements is presented
VTPW07	Parameter Adjustment for the Droop Control Operating a Discharge PEC in PMG-Based WECSs With Generator-Charged Battery Units	Application: Permanent magnet generators, wind energy conversion systems, battery storage systems, Description: A method to adjust the droop constants of a battery discharge PEC (based on the SOC of battery units). Evaluating the performance of droop controllers with adjusted constants under different operating conditions
VTPW08	WBG-Based PEBB Module for High Reliability Power Converters	Application: Semiconductor device reliability, power MOSFETs, reliability engineering. Description: A DfR procedure suitable for short TTM projects, A Reliability Oriented Control (ROC) algorithm for WBG-based power converters
VTPW09	A Method for Analyzing the Voltage Deviation Isolation Performance With an Application in Two-Stage High-Frequency Isolated AC-DC Converters in LVDC Systems	Application: High-frequency isolated AC-DC converter, Voltage Deviation Isolation (VDI), Description: A method is proposed to analyze the VDI performance and applied in two-stage high-frequency isolated AC-DC converters in LVDC systems

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VTPW10	Multicell AFE Rectifier Managed by Finite Control Set-Model Predictive Control	Application: Predictive control, AC-DC power converters, Description: The use of a control scheme based on finite control set-model predictive control (FCS-MPC) for multicell converters based on AFE rectifiers with the replacement of the input multi-pulse transformer for standard ones
VTPW11	Analysis and Design of Four-Plate Capacitive Wireless Power Transfer System for Undersea Applications	Application: Wireless power transfer system, capacitive, underwater applications Description: A four-plate CPT system which based on the virtual electrons periodic reciprocating flow theory for the undersea application. The resonant compensation network is only one inductor. The dielectric between the four metal plates is seawater
VTPW12	State-of-the-Art Review on Soft-Switching Technologies for Non-Isolated DC-DC Converters	Application: Non-Isolated DC-DC converter Description: Soft-switching technologies used for Buck, Boost, Buck-Boost and their derived converters. And most of these soft-switching technologies can also be applied in Cuk, Sepic, and Zeta converters
VTPW13	Discrete-State Event-Driven Numerical Prototyping of Megawatt Solid-State Transformers and AC/DC Hybrid Microgrids	Application: Communication delays, grid-connected, hybrid microgrid Description: An AC/DC hybrid MG with a megawatt SST as a targeted case to study the applicability of the DSED approach in practical MG system. The MG consists of a 1MW SST together with multiple DC/DC converters and various kinds of renewable resources and loads
VTPW14	Active Capacitors with Ripple Cancellation Control for AC-DC Converter Applications	Application: Active capacitors, Ripple Cancellation control, Energy Storage capability Description: A novel and simple control method, Ripple Cancellation Control (RCC), which can be applied to all kinds of active capacitors
VTPW15	Design and Application of a Self-Powered Dual-Stage Circuit for Piezoelectric Energy Harvesting Systems	Application: Piezoelectric energy harvesting, self-powered H-Bridge circuit Description: The design and practical application of a dual-stage H-Bridge (DSHBR) circuit to reduce the rectification losses and mitigate ripples in piezoelectric energy harvesting
VTPW16	A Common DC-Bus-Configured Traction Motor Emulator Using a Virtually Isolated Three-Phase AC-DC Bidirectional Converter	Application: AC-DC, bidirectional converter, buck-boost, DC-AC Description: A virtually isolated bidirectional two-level three-phase AC-DC converter is proposed as the regenerative emulator converter in a common DC-Bus-configured ME system
VTPW17	A Single Phase, Single Stage AC-DC Multilevel LLC Resonant Converter with Power Factor Correction	Application: LLC resonant converters, AC-DC converters Description: A novel bridgeless topology based on a three-level flying capacitor inverter. The multilevel configuration reduces the voltage stress across switching devices. The bridgeless operation reduces conduction loss. The three-level voltage waveform of the topology gives additional freedom to control the duty ratio of the PFC stage
VTPW18	Three-Phase Impedance-Source Inverter with Common-Mode Voltage Reduction	Application: Impedance-source inverter, common-mode voltage, quasi-switched boost inverter Description: The two-level three-phase impedance source inverter (ISI) solution that builds on the concepts of the existing two-level three-phase impedance-source inverter topologies to decrease the CMV. The amplitude CMV of the proposed solution is one-sixth of the DC-link voltage

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VTPW19	A High Step-up Sextuple Voltage Boosting 13S-13L Inverter With Fewer Switch Count	Application: 13S- 13L inverter, switched capacitor, SHE PWM technique, Description: A high step-up sextuple voltage boosting 13 switches - 13 level inverter (SVB- 13S -13LI) structure was proposed through a pulse width modulation technique with selective harmonic elimination. This topology can deliver six times of voltage boosting capability
VTPW20	Analysis and Design of a Zero-Current Switching Non-Isolated High Gain Inverter	Application: Current-fed switched inverter (CFSI), PWM, inverter, soft switching Description: The conventional topology of CFSI is modified to achieve ZCS of the boost stage devices. The modified circuit (ZCS-CFSI) contains an auxiliary sub-circuit which includes a resonating inductor, capacitor, and an additional switch
VTPW21	Improving Inverter Output Current Controller Under Unbalanced Conditions by Using Virtual Impedance	Application: Current controller, Three-Phase Inverter, unbalanced system Description: A new method to improve the performance of inverter output current controller under unbalanced conditions without using sequence transformation and changing the transient response
VTPW22	A Modulated Model-Free Predictive Current Control for Four-Switch Three-Phase Inverter-Fed SynRM Drive Systems	Application: Four-switch three-phase inverter, modulated model-free predictive current control Description: A modulated model-free predictive current control for four-switch three-phase inverter-fed synchronous reluctance motor drive systems to improve performance against existing methods. The study focuses on six switching modes modulated with variable duty ratios that are optimized and computed in real-time
VTPW23	Performance Evaluation of Three-Phase Grid-Tied SPV-DSTATCOM With DC-Offset Compensation Under Dynamic Load Condition	Application: DSTATCOM, MPPT, reactive power compensation Description: A novel CESOGI-FLL-WPF controller is proposed for the SPV-DSTATCOM. The proposed controller is constituted by connecting two ESOGI-FLL controllers in a cascade manner.
VTPW24	A Low Voltage Single Phase Online Uninterruptible Power Supply System Based on APFC and Fuzzy PID Algorithm	Application: Low voltage, single phase, online UPS system, active power factor correction Description: We propose a voltage-current double closed-loop active power factor correction (APFC) method, which can effectively improve the power factor and reduce the harmonic pollution in the power grid
VTPW25	Analysis of 0-9 kHz Current Harmonics in a Three-Phase Power Converter Under Unbalanced-Load Conditions	Application: Power quality, ASD, motor drive, inverter, PWM, unbalanced-load, Description: Proposing an analytical equation for estimating i_{inv} at unbalanced-load condition. Developing equations for the current harmonic orders of i_{inv} that are affected by negative-sequence current. Studying the impact of positive- and negative-sequence currents on the 2-9 kHz current
VTPW26	Overmodulation Strategy Using DC-Link Shunt Resistor Inverters to Maintain Output Voltage Linearity	Application: Field-oriented control, permanent magnet synchronous motor, three-phase inverter Description: A current recovery algorithm with low THD and a high output voltage utilization rate is proposed for use in a DSI. And, an overmodulation algorithm that can be implemented with relatively simple calculations up to 12-step is proposed.
VTPW27	Power Quality Enhancement Using Dynamic Voltage Restorer (DVR)-Based Predictive Space Vector Transformation (PSVT) With Proportional Resonant (PR)-Controller	Application: DVR, predictive space vector transformation (PSVT), PR-controller Description: This paper deals with the implementation of PR controller in DVR-PSVT technology with VSI. The load side converter, called series converter, is a three-phase PWM inverter, injecting the voltage in series with grid voltage.

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VTPW28	Control Strategy Research of D-STATCOM Using Active Disturbance Rejection Control Based on Total Disturbance Error Compensation	Application: Distribution static synchronous compensator (D-STATCOM), total disturbance, linear active disturbance rejection control (LADRC), Description: A controller with LADRC that compensates the error of the total disturbance is proposed, and the stability of the improved first-order LADRC is proved by the Lyapunov stability theory.	IEEE 2021 - POWER ELECTRONICS
VTPW29	Near-Optimal PI Controllers of STATCOM for Efficient Hybrid Renewable Power System	Application: Renewable energy, hybrid power systems, wind energy Description: Two optimized PI controllers for STATCOM to regulate the connection of two RESs, namely WECS based-SRG and PV systems, to the electrical grid. STATCOM is integrated into RES at the PCC to handle voltage fluctuation during grid side disturbance by interchanging the reactive power flow between the STATCOM and the system	
VTPW30	Energy Management of a Battery Storage and D-STATCOM Integrated Power System Using the Fractional Order Sliding Mode Control	Application: Battery storage, D-STATCOM, energy management system Description: A novel EMS for a combined BS and D-STATCOM integrated radial distributor is proposed with two VSCs such that active power is independently absorbed/injected by the BS, whereas the reactive power is independently absorbed/injected by the D-STATCOM as well.	
VTPW31	High-performance and Multi-functional Control of Transformerless Single-phase Smart Inverter for Grid-connected PV System	Application: Distributed generation (DG), inverter, converter, fuzzy-sliding mode controller (F-SMC), Description: An energy-based single-phase voltage-source smart inverter (SPV-SSI) of 5 kVA is designed and analyzed. SPV-SSI is capable of supplying the power to local load and the utility load up to the rated capacity of the inverter	
VTPS01	An Improved Bipolar Voltage Boost AC Voltage Controller with Reduced Switching Transistors	Application: AC converter, bipolar voltage, grid voltage compensator Description: To develop a direct ac-ac power converter having bipolar voltage boost characteristics with the conduction of two transistors and three diodes at any time instant.	IEEE 2021 - POWER SYSTEMS
VTPS02	Analytical Approach for Fast Frequency Response Control of VSC HVDC	Application: Droop constant, fast frequency support control (FFSC) Description: The SFR model with the VSC HVDC FFSC scheme. The superiority of support termination time (STT)-based discontinuous temporary frequency support control over a continuous scheme was described based on the analysis.	
VTPS03	Effect of Various Incremental Conductance MPPT Methods on the Charging of Battery Load Feed by Solar Panel	Application: Renewable energy, maximum power point tracking, photovoltaic system Description: The different method DFS and DVS of INC Method has been compared under different Irradiance conditions. The response also has been recorded of the DC-DC converter, when the solar panel exposed under 1000 W/m ²	

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VTPW01	Research on the Module Power Equalization Control Strategy of Three-Phase Common DC-Bus Cascaded H-Bridge Multilevel Inverter for Large-Scale PV Power Plants	Application: Renewable Energy Power Generations, Distributed Generation Systems Description: Featured with the characteristics of expandable modular structure, no need for line-frequency transformer directly connected to medium voltage grid and the same active power of each phase, three-phase common dc-bus cascaded H-bridge multilevel inverter has great advantages in high-voltage and high-power photovoltaic (PV) power generation application
VTPW02	Power Quality Improvement in Solar Fed Cascaded Multilevel Inverter with Output Voltage Regulation Techniques	Application: Renewable Energy Power Generations, Power Quality improvement Description: This paper aims to investigate the elimination of harmonics in a solar fed cascaded fifteen level inverters with aid of Proportional Integral (PI), Artificial Neural Network (ANN) and Fuzzy Logic (FL) based controllers
VTPW03	DC Power Control Strategy of MMC for Commutation Failure Prevention in Hybrid Multi-Terminal HVDC System	Application: Hybrid Power Systems, Energy Storage Systems, FACTS Devices Description: This article presents a control strategy for a modular multilevel converter (MMC) to prevent commutation failure of a line-commutated converter (LCC), forming a three-terminal hybrid HVDC transmission system, where one LCC sending end is connected to the large generation and two receiving ends (LCC inverter and MMC) are located near the load center
VTPW04	A Generalized Multilevel Inverter Topology with Reduction of Total Standing Voltage	Application: Hybrid Power Systems, Energy Storage Systems, Renewable Energy Power Generations Description: This paper presents a new multilevel inverter topology with reduced active switches and total standing voltage. The proposed topology can generate a high number of voltage levels in the symmetric configuration
VTPW05	Five-level one-capacitor boost multilevel inverter	Application: Renewable Energy Power Systems, Power Quality improvement Description: This study presents a new one-capacitor-based five-level ($2V_{dc}$, V_{dc} , 0 , $-V_{dc}$, $-2V_{dc}$) boost multilevel inverter. The single-phase version of the proposed formation has one dc-source, eight switches and one capacitor
VTPW06	Four-Channel Buck Converter in Asymmetrical Continuous Current Conduction Mode	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: The proposed control strategy allows us to directly control the power flow in each channel without any unwanted consequences for the rest of the channels among these conditions.
VTPW07	Single-phase boost DC-link integrated cascaded multilevel inverter for PV applications	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: This study presents a new Boost DC-link Integrated Multilevel Inverter (BDIMLI) topology for single-phase stand-alone photovoltaic applications. The BDIMLI is realized by the integration of two two-level boost DC-link converters (TBDCs) with a hybrid H-bridge inverter using symmetrical voltage sources
VTPW08	Seven-Level Packed U-Cell (PUC) Converter with Natural Balancing of Capacitor Voltages	Application: Hybrid Power Systems, : Renewable Energy Power Generations, High Voltage Applications Description: The converter uses a single dc source and two floating capacitors, whose voltages are balanced in open loop, to produce multilevel output voltage. Peak magnitude of the output phase voltage is equal to the magnitude of dc source. Voltages across floating capacitors add intermediate voltage-levels by establishing an asymmetric ratio
VTPW09	Development of Cascaded Multilevel Inverter Based Active Power Filter With Reduced Transformers	Application: Renewable Energy Power Generations, Power Quality improvement Description: This paper recommends a concept for shunt active power filter (SAPF) using a single power source fed to a cascaded multilevel inverter (CMI) with 3- ϕ transformers.

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VTPW10	Switched-capacitor multilevel inverter with self-voltage-balancing for high-frequency power distribution system	Application: Renewable Energy Power Generations, Distributed Generation Systems Description: A new family of hybrid Switched Capacitor Multi-Level Inverter (SCMLI) for high frequency power distribution system is presented to eliminate the intermediate power conversion. Firstly, a five-level SCMLI employing a single voltage source is proposed, which is further extended to nine-level (9L) with its operation
VTPW11	Computationally Efficient Distributed Predictive Controller for Cascaded Multilevel Impedance Source Inverter with LVRT Capability	Application: Renewable Energy Power Generations, Power Quality improvement Description: The proposed control scheme is based on an enhanced finite-set model predictive control (MPC) to harvest the desired active power from PV modules with the ability to provide ancillary services for the grid. The proposed control scheme has two modes of operation: normal grid mode and low voltage ride through (LVRT) mode
VTPW12	A Scheme-Based Review of MPPT Techniques with Respect to Input Variables Including Solar Irradiance and PV Arrays' Temperature	Application: Hybrid Power Systems, Energy Storage Systems, FACTS Devices Description: The aim of this paper is to present a new principal scheme-based review of the categorized MPPT methods (conventional, novel, and hybrid) with respect to the deployment of their input variables (solar irradiance, PV arrays' temperature, and PV arrays' terminal voltage and current)
VTPW13	Impact of Partial Shading on Various PV Array Configurations and Different Modeling Approaches: A Comprehensive Review	Application: Hybrid Power Systems, Energy Storage Systems, Renewable Energy Power Generations Description: This paper presents a comprehensive review of various PV array configuration models for PV systems and metaheuristic approaches for shade dispersion effectively.
VTPW14	A Current Sensorless Delay-Based Control Scheme for MPPT-Boost Converters in Photovoltaic Systems	Application: Renewable Energy Power Systems, Power Quality improvement Description: The proposed approach uses a geometric point of view which allows the partitioning of the controller parameters space into regions with similar stability characteristics
VTPW15	A Multi-Producer Group-Search-Optimization Method-Based Maximum-Power-Point-Tracking for Uniform and Partial Shading Condition	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: Considering the non-linearity and the multi-peak characteristics of PV array output curve under the condition of partial shadow, a multi-producer group search optimization (MGSO) method for maximum power point tracking (MPPT) is proposed.
VTPW16	A New Multilevel Inverter Topology with Reduced Power Components for Domestic Solar PV Applications	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: A new multilevel inverter topology called Dual Source Multilevel Inverter (DS-MLI) with fewer power switches is proposed for solar PV power conversion systems. It can operate in symmetric and asymmetric operating modes with no cascading
VTPW17	A Novel 5-level Flying Capacitor Bridgeless PFC Converter Based on Cost-effective Low-voltage eGaN FETs	Application: Hybrid Power Systems, : Renewable Energy Power Generations, High Voltage Applications Description: A type of multilevel flying capacitor bridgeless PFC converter is proposed that permits the use of economical and efficient 100 V GaN transistors
VTPW18	A Subthreshold Cross-Coupled Hybrid Charge Pump for 50-mV Cold-Start	Application: Renewable Energy Power Generations, Power Quality improvement Description: A fully-integrated switched-capacitor DC-DC converter based on a Dickson charge pump able to work with input voltage levels that force the transistors working in subthreshold region is presented. The proposed topology exploits resistors in the charge transfer switch in order to overcome the limits of conventional solutions when working in the subthreshold regime.

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VTPW19	Adaptive Bidirectional Droop Control for Electric Vehicles Parking with Vehicle-to-grid Service in Microgrid	Application: Renewable Energy Power Generations, Distributed Generation Systems Description: This paper proposes a multiport DC-DC solid state transformer topology for bidirectional photovoltaic/battery-assisted EV parking lot with vehicle-to-grid service (V2G-PVBP).
VTPW20	Adaptive Virtual Capacitor Control for MTDC System with Deloaded Wind Power Plants	Application: Renewable Energy Power Generations, Power Quality improvement Description: This paper reports an improved adaptive virtual capacitor control strategy that can provide inertial support for the system. Instead of increasing the capacitance of the physical capacitor, a virtual capacitor is generated by utilizing the rest energy of the deloaded wind farm
VTPW21	An Adaptive Model Predictive Controller for Current Sensorless MPPT in PV Systems	Application: Hybrid Power Systems, Energy Storage Systems, FACTS Devices Description: This paper utilizes the model-based framework of MPC to develop a sensorless current maximum power point tracking (MPPT) algorithm. Eliminating the current sensor can reduce the cost and improve the reliability of the photovoltaic system
VTPW22	An Algorithm for Enhanced Performance of Photovoltaic Array Under Partial Shading Condition	Application: Hybrid Power Systems, Energy Storage Systems, Renewable Energy Power Generations Description: The partial shading on photovoltaic (PV) modules causes a reduction in generated power and multiple peak points in their electrical characteristics. If the number of shaded modules of two or more rows are different then electrical characteristics exhibit multiple peaks. Also, as the number of shaded modules in a row increases the generated power decreases.
VTPW23	An Efficient Reactive Power Dispatch Method for Hybrid Photovoltaic and Superconducting Magnetic Energy Storage Inverters in Utility Grids	Application: Renewable Energy Power Systems, Power Quality improvement Description: This paper proposes an efficient reactive power dispatch method between hybrid renewable energy generation and energy storage systems. The proposed method enhances the energy efficiency of the utility grid by adopting the reactive power share between interfacing inverters according to the estimated power losses
VTPW24	An MMC Circulating Current Suppressing Controller Based on Bridge Arm Common-Mode Voltage	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: Based on the average value of the switching function of Modular Multilevel Converter (MMC), the mathematical relationship between the second harmonic component of the Bridge Arm Common-Mode Voltage (BACMV) and the Circulating Current Suppressing Controller (CCSC) is derived in the d^2q^2 rotating coordinate system
VTPW25	An Optimized Parameter Design Method for Passivity-Based Control in a LCL-Filtered Grid-Connected Inverter	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: An intelligent Particle Swarm Optimization (PSO) algorithm is utilized to simplify the parameters design of the PBC controller, where the difficulty of manual calculations is avoided and the parameters can be more easily and efficiently obtained using MATLAB
VTPW26	Coordinated Two-Stage Operation and Control for Minimizing Energy Storage Capacitors in Cascaded Boost-Buck PFC Converters	Application: Hybrid Power Systems, : Renewable Energy Power Generations, High Voltage Applications Description: A coordinated two-stage operation and control strategy is proposed to significantly minimize the capacitor requirement without any other hardware changes. In the proposed method CBBPFC converter operates the two boost and buck stages in a concerted manner, so it is possible to use the dc-link capacitor with certain voltage fluctuation to buffer the power imbalance between the AC input and DC output.
VTPW27	Design and Experimental Analysis of a Three-Phase Active CM/DM Conducted EMI Noise Separator	Application: Renewable Energy Power Generations, Power Quality improvement Description: This work investigates three-phase electromagnetic interference (EMI) conducted emission (CE) measurements with the aim to separate the noise voltages in their common-mode (CM) and differential-mode (DM) parts

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VTPW28	Design and Implementation of Multilevel Inverters for Fuel Cell Energy Conversion System	Application: Renewable Energy Power Generations, Distributed Generation Systems Description: This article proposes a converter topology as a power interface and also introduced a multilevel inverter topology for various levels of operation. The converter steps up the input voltage to the rated voltage and transforms to the DC bus, the multilevel inverter converts the voltage to AC and feeds to AC loads.
VTPW29	Design Method of 6-Element Boundary Gain for LLC Resonant Converter of Electric Vehicle	Application: Renewable Energy Power Generations, Power Quality improvement Description: For the most commonly used single-phase and three-phase LLC topologies, the time domain expressions of all possible operating modes are introduced to predict voltage and current behaviors. Based on the mode analysis, the 6-element boundary gain design method is proposed to design a wide gain range LLC resonant converter.
VTPW30	Comprehensive Analysis and Design of Current-Balance Loop in Constant On-Time Controlled Multi-Phase Buck Converter	Application: Hybrid Power Systems, Energy Storage Systems, FACTS Devices Description: Comprehensive analysis and design guide of the current-balance loop in COT control, resulting in possible low efficiency, per-phase current protection false-trigger, and stability issue. To solve, dc inductor current equations and small-signal models are proposed for COT control with the current-balance loop
VTPW31	Duty-Cycle Predictive Control of Quasi-Z-Source Modular Cascaded Converter Based Photovoltaic Power System	Application: Hybrid Power Systems, Energy Storage Systems, Renewable Energy Power Generations Description: The proposed control uses the derived circuit model to predict the global active-state duty cycle for grid-connected current control and predict the shoot-through duty cycles for dc-link voltage balance, achieving a fast and accurate tracking target.
VTPW32	A fault Diagnosis of Photovoltaic Array Based on Deep Belief Network Optimized by Genetic Algorithm	Application: Renewable Energy Power Systems, Power Quality improvement Description: A fault diagnosis method based on a deep belief network optimized by genetic algorithm (GA-DBN) is proposed. The method uses the restricted Boltzmann machine reconstruction error to structure the fitness function, and uses the genetic algorithm to optimize the network bias and weight, thus improving the network accuracy and convergence speed.
VTPW33	Dual-Regulating Feedback Optimization Control of Distributed Energy Storage System in Power Smoothing Scenario Based on KF-MPC	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: Taking the photovoltaic (PV)-hybrid energy storage system (HESS) composed of the distributed PV power generation and the distributed energy storage a dual-regulating feedback optimization control strategy of the PV-HESS based on double Kalman filters (KFs) and model predictive control (MPC) is proposed.
VTPW34	Flexible Power-Sharing Control for Inverters-Based Microgrid Systems	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: This paper proposes a flexible method for power-sharing control of single-phase AC Microgrid or sub-system that operate inverters in parallel to supply the demand. The Photovoltaic (PV) system, coupled with batteries, energized each inverter.
VTPW35	Generalized Design Approach of a Family of Grid-Connected Converters Based on Active Virtual Ground Technique for Single-Phase AC Microgrid Applications	Application: Hybrid Power Systems, : Renewable Energy Power Generations, High Voltage Applications Description: The paper presents the state-of-the-art technique Active Virtual Ground (AVG) in the design of single-phase grid-connected converters which fully covers the entire applications on AC microgrids.
VTPW36	Impacts of grid integration of solar PV and electric vehicle on grid stability, power quality and energy economics: a review	Application: Renewable Energy Power Generations, Power Quality improvement Description: With the increasing penetration of PVs and EVs, the power grid will be experiencing the combined impact of PV-EV integration. This study first presents a detailed study on the impact of grid integration of PVs and EVs individually, followed by combined impact of PV and EV, on the aspects of grid stability, power quality and energy economics.

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VTPW37	Mitigating Power Fluctuations for Energy Storage in Wind Energy Conversion System Using Supercapacitors	Application: Renewable Energy Power Generations, Distributed Generation Systems Description: This paper proposes a wind energy conversion system that involves a HESS composed of supercapacitors and batteries. It emphasizes the assessment of impact due to power fluctuations of WECS on battery life during a charging cycle.
VTPW38	Parallel Coordination Control of Multi-Port DC-DC Converter for Stand-Alone Photovoltaic-Energy Storage Systems	Application: Renewable Energy Power Generations, Power Quality improvement Description: An improved virtual capacitor (IVC) parallel coordination control strategy based on multi-port isolated DC-DC converter is proposed. First, MPIC is used to replace the traditional Buck/Boost circuit. Secondly, by analogy of IVC control, design the control frame of single voltage outside circle and multiple currents inside the ring.
VTPW39	PCC Voltage Compensation Scheme of MMC-MTDC System for Transient Stability Enhancement Under Communication Delay	Application: Hybrid Power Systems, Energy Storage Systems, FACTS Devices Description: In order to improve the transient stability of hybrid AC/DC networks, the point of common coupling (PCC) voltage compensation scheme is proposed for MMC-MTDC to maintain stable operation when communication delay occurs.
VTPW40	Performance Analysis of APSO and Firefly Algorithm for Short Term Optimal Scheduling of Multi-Generation Hybrid Energy System	Application: Hybrid Power Systems, Energy Storage Systems, Renewable Energy Power Generations Description: This paper presents a modified and novel form of the conventional short-term hydrothermal scheduling problem by incorporating the effects of adding the photovoltaic energy source to the conventional grid. The proposed design method includes the forecasting of the photovoltaic system's parameters using the Auto-Regressive Integrated Moving Average (ARIMA) model.
VTPW41	Primary Frequency Response of Microgrid Using Doubly Fed Induction Generator with Finite Control Set Model Predictive Control Plus Droop Control and Storage	Application: Renewable Energy Power Systems, Power Quality improvement Description: This paper presents a new methodology for primary frequency response (PFR) in a microgrid through the finite control set-model predictive control (FCS-MPC) plus droop control applied to the grid side converter (GSC) of a doubly fed induction generator (DFIG).
VTPW42	Reactive Current Constraints and Coordinated Control of DFIG's RSC and GSC During Asymmetric Grid Condition	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: This article puts forward a coordinated control strategy that can simultaneously satisfy the positive- and negative-sequence reactive current requirement by the grid codes and eliminate the harmful oscillations in the electromagnetic torque, with the maximum active power delivery capability being fully considered.
VTPW43	Real-Time Implementation of Input-State Linearization and Model Predictive Control for Robust Voltage Regulation of a DC-DC Boost Converter	Application: Hybrid Power Systems and Renewable Energy Power Generations Description: This work proposes an MPC algorithm based on an exactly linearized converter model. The converter model is linearized according to an exact input-state linearization control (ILC).
VTPW44	Reduced-Order Thermal Modeling for Photovoltaic Inverters Considering Mission Profile Dynamics	Application: Hybrid Power Systems, : Renewable Energy Power Generations, High Voltage Applications Description: A reduced-order thermal model for PV inverters is proposed in this paper, where the model simplification is based on the thermal impedance characteristic and the mission profile dynamics. The modeling accuracy is evaluated by comparing the estimated thermal stress from a PV inverter test-bench
VTPW45	Research and Simulation of DC Microgrid Three-Phase AC-DC Converter Control Strategy Based on Double Loop	Application: Renewable Energy Power Generations, Power Quality improvement Description: The new voltage and current double loop control strategy is proposed to solve the DC microgrid bus voltage fluctuation caused by loads fluctuation, parameters perturbation and unbalanced three-phase power supply.