IEEE Project Titles for Electrical Engineering (B.Tech/MTech)
(Power Electronics & Power Systems)

SOLAR ENERGY/PV

1. Leakage Current Suppression of Three-Phase Flying Capacitor PV Inverter With New Carrier Modulation and Logic Function
2. A Grid-Connected Single-Phase Transformerless Inverter Controlling Two Solar PV Arrays Operating Under Different Atmospheric Conditions
3. Modified Single-Phase Single-Stage Grid-Tied Flying Inductor Inverter With MPPT and Suppressed Leakage Current
4. High-Efficiency Two-Stage Three-Level Grid-Connected Photovoltaic Inverter
5. H8 Inverter to Reduce Leakage Current in Transformer less Three-Phase Grid-Connected Photovoltaic systems
6. Proposal of a Photovoltaic AC-Module With a Single StageTransformerless Grid-Connected Boost Microinverter
7. A Buck and Boost Based Grid Connected PV Inverter Maximizing Power Yield From Two PV Arrays in Mismatched Environmental Conditions
8. Integrated DC–DC Converter Based Grid-Connected Transformerless Photovoltaic Inverter With Extended Input Voltage Range
9. A New Soft-Switching Configuration and Its Application in Transformer less Photovoltaic Grid-Connected Inverters
10. A Transformer less Single-Phase Symmetrical Z Source HERIC Inverter with Reduced Leakage Currents for PV Systems
11. An Improved H5 Topology with Low Common- Mode Current for Transformer less PV Grid-Connected Inverter
12. A Distributed Power Control of Series-Connected Module-Integrated Inverters for PV Grid-Tied Applications
13. An Improved Hybrid Modulation Method for the Single-Phase H6 Inverter With Reactive Power Compensation
14. A Three-Phase Grid-Connected Microinverter for AC Photovoltaic Module Applications
15. Novel Control Method for Multimodule PV Microinverter With Multiple Functions

WIND ENERGY

16. Analysis of a High-Power, Resonant DC–DC Converter for DC Wind Turbines
17. Low Dissipative Snubber Using Flyback-Type Transformer for Wind Turbine Systems

18. A Novel Design of PI Current Controller for PMSG-Based Wind Turbine Considering Transient Performance Specifications and Control Saturation

19. A Hybrid Resonant ZVZCS Three-Level Converter for MVDC-Connected Offshore Wind Power Collection Systems

HYBRID SYSTEMS AND ENERGY STORAGE

20. Soft-switched Non-Isolated High Step-up Three-port DC-DC converter for Hybrid Energy Systems
21. Design and Control of Autonomous Wind–Solar System With DFIG Feeding 3-Phase 4-Wire Loads
22. Stability Improvement of a Multimachine Power System Connected With a Large-Scale Hybrid Wind-Photovoltaic Farm Using a Supercapacitor

23. Hybrid Energy Storage System Microgrids Integration for Power Quality Improvement Using Four-Leg Three-Level NPC Inverter and Second-Order Sliding Mode Control
24. Efficiency Improvement of Three Port High Frequency Transformer Isolated Triple Active Bridge Converter
25. Frequency Division Based Coordinated Control of Three-Port Converter Interfaced Hybrid Energy Storage Systems in Autonomous DC Microgrids

26. Partially-Isolated Single-Magnetic Multi-Port Converter Based on Integration of Series-Resonant Converter and Bidirectional PWM Converter

27. Fuzzy Logic-Based Energy Management System Design for Residential Grid-Connected Microgrids
28. Isolated Single Stage Bidirectional AC-DC converter with power decoupling and reactive power control to interface battery with the single phase grid

29. A Uniform Control Strategy for the Interlinking Converter in Hierarchical Controlled Hybrid AC/DC Microgrids
30. Supervisory Power Quality Control Scheme for a Grid-Off Microgrid

31. A Battery/Ultracapacitor Hybrid Energy Storage System for Implementing the Power Management of Virtual Synchronous Generators

32. Instantaneous Symmetrical Component Theory based Parallel Grid Side Converter Control Strategy for Microgrid Power Management

33. Supervisory Control for Power Management of an Islanded AC Microgrid Using Frequency Signalling-Based Fuzzy Logic Controller

INVERTER AND MULTILEVEL INVERTERS

34. A Single-Phase Single-Stage Switched-Boost Inverter With Four Switches
35. Decentralized Control for Fully Modular Input-Series Output-Parallel (ISOP) Inverter System Based on the Active Power Inverse-Droop Method
36. Buck–Boost Dual-Leg-Integrated Step-Up Inverter With Low THD and Single Variable Control for Single-Phase High-Frequency AC Microgrids

37. Performance Evaluation of the Single-Phase Split-Source Inverter Using an Alternative DC–AC Configuration
38. Multistage and Multilevel Power Electronic Converter-Based Power Supply for Plasma DBD Devices
39. A Single-Phase Asymmetrical T-Type Five-Level Transformerless PV Inverter
40. An Isolated Multi-Input ZCS DC–DC Front-End-Converter Based Multilevel Inverter for the Integration of Renewable Energy Sources
41. A 5-level High Efficiency Low Cost Hybrid Neutral Point Clamped Transformerless Inverter for Grid Connected Photovoltaic Application

42. A Novel Step-Up Single Source Multilevel Inverter: Topology, Operating Principle and Modulation
43. A Switched-Capacitor-Based Multilevel Inverter Topology With Reduced Components
44. Multi-Input Switched-Capacitor Multilevel Inverter for High-Frequency AC Power Distribution

WIRELESS POWER TRANSFER

45. A New Controller for Bidirectional Wireless Power Transfer System
46. Implementation of the Constant Current and Constant Voltage Charge of Inductive Power Transfer Systems with the Double-Sided LCC Compensation

47. Topology for Electric Vehicle Battery Charge Applications High Power Density Z-Source Resonant Wireless Charger with Line
48. Frequency Sinusoidal Charging Single-Stage Wireless-Power-Transfer Resonant Converter With Boost Bridgeless Power-Factor-Correction Rectifier

DRIVES

49. Quasi-Z-Source Indirect Matrix Converter Fed Induction Motor Drive for Flow Control of Dye in Paper Mill
50. BLDC Motor Drive Based on Bridgeless Landsman PFC Converter With Single Sensor and Reduced Stress on Power Devices
51. DC-Link Capacitor-Current Ripple Reduction in DPWM-Based Back-to-Back Converters
52. Power Factor Correction in Modified SEPIC Converter fed Switched Reluctance Motor Drive
53. A Single-Stage Sensorless Control of a PV based Bore-Well Submersible BLDC Motor
54. Improved Finite Control-Set Model-Based Direct Power Control of BLDC Motor with Reduced Torque Ripple
55. High-Precision Sensorless Drive for High-Speed BLDC Motors Based on the Virtual Third Harmonic Back-EMF
56. Commutation Torque Ripple Reduction in the BLDC Motor Using Modified SEPIC and Three-Level NPC Inverter

ELECTRIC VEHICLE

57. On an Electric Scooter With G2V/V2H/V2G and Energy Harvesting Functions
58. PV Battery Charger Using an L3C Resonant Converter for Electric Vehicle Applications
59. High Efficiency Bridgeless Single-Power-Conversion Battery Charger for Light Electric Vehicles
60. A PWM LLC Type Resonant Converter Adapted to Wide Output Range in PEV Charging Applications.
61. Plug-in Hybrid Electric Vehicles (PHEVs): Replacing Internal Combustion Engine with Clean and Renewable Energy Based Auxiliary Power Sources
62. Implementation of a Grid-Integrated PV-Battery System for Residential and Electrical Vehicle Applications
63. Modeling, Design, Control, and Implementation of a Modified Z-Source Integrated PV/Grid/EV DC Charger/Inverter

BI DIRECTIONAL CONVERTER

64. Improved Modulation Strategy Using Dual Phase Shift Modulation for Active Commutated Current-Fed Dual Active Bridge
65. A Switched-Capacitor Bidirectional DC-DC Converter with Wide Voltage GainRange for Electric Vehicles with Hybrid Energy Sources

66. A Common Ground Switched-Quasi-Z-Source Bidirectional DC–DC Converter With Wide-Voltage-Gain Range for EVs With Hybrid Energy Sources
67. A Quadruple Active Bridge Converter for the Storage Integration on the More Electric Aircraft

CUK AND RESONANT CONVERTER

68. Nonisolated Harmonics-Boosted Resonant DC/DC Converter With High-Step-Up Gain
69. Modified High-Efficiency LLC Converters With Two Split Resonant Branches for Wide Input-Voltage Range Applications
70. A Voltage Quadrupler Rectifier Based Pulse–Width–Modulated LLC Converter with Wide Output Range
71. Dynamic Modeling and Controller Design of Dual-Mode Cuk Inverter in Grid-Connected PV/TE Applications
72. Improved Power Quality Switched Inductor Cuk Converter for Battery Charging Application
73. Isolated Bidirectional DC–DC Converter with Quasi-Resonant Zero-Voltage Switching for Battery Charge Equalization
74. Photovoltaic AC Module Based on a Cuk Converter with a Switched-Inductor Structure

HIGH VOLTAGE

75. Improvement of Power-Conversion Efficiency of AC–DC Boost Converter Using 1:1 Transformer
76. High Step-Up DC–DC Converter with Active Soft-Switching and Voltage-Clamping for Renewable Energy Systems
77. High-Efficiency High Step-Up DC–DC Converter With Dual Coupled Inductors for Grid-Connected Photovoltaic Systems
78. High Step-Up Resonant DC–DC Converter With Ripple-Free Input Current for Renewable Energy Systems
79. Analysis and Design of High-Efficiency Hybrid High Step-Up DC-DC Converter for Distributed PV Generation Systems
80. Voltage-Lift Technique Based Non isolated Boost DC–DC Converter: Analysis and Design
81. High Step-Up Coupled-Inductor Cascade Boost DC–DC Converter With Lossless Passive Snubber Synthesis and Comparative Analysis of Very High Step-Up DC–DC
82. Converters Adopting Coupled-Inductor and Voltage Multiplier Cells

83. A Three-Winding Coupled-Inductor DC–DC Converter Topology With High Voltage Gain and Reduced Switch Stress

PFC AND INTERLEAVED CONVERTER

84. Interleaved-Input Series-Output Ultra High Voltage Gain DC-DC Converter

85. Advanced Digital Controller for Improving Input Current Quality of Integrated Active Virtual Ground-Bridgeless PFC
86. Multitrack Power Factor Correction Architecture
87. Family of ZVT Interleaved Converters With Low Number of Components

88. Combined Multilevel and Two-Phase Interleaved LLC Converter With Enhanced Power Processing Characteristics and Natural Current Sharing

89. Interleaved Current-Driven Phase-Shift Full-Bridge Converter With Magnetic Integration and Voltage Doubler Rectifiers
90. New Bridgeless Buck PFC Converter with Improved Input Current and Power Factor
91. A Wide-Input-Range High-Efficiency Step-down Power Factor Correction Converter Using Variable Frequency Multiplier Technique

SOFT SWITCHING ANG MULTIPLE OP CONVERTER

92. Zero-Voltage and Zero-Current Switching PWM DC–DC Converter Using Controlled Secondary Rectifier With One Active Switch and Non dissipative Turn-Off Snubber
93. Hybrid Control of Single-Inductor Multiple-Output Converters
94. Analysis and Design of an Input-Series Two-Transistor Forward Converter For High-Input Voltage Multiple-Output Applications
95. An Independently Controlled Single-PWM Multiple-Output Narrow-Band Resonant Converter
96. A Hybrid Resonant ZCS PWM Converter for Renewable Energy Sources Connecting to MVDC Collection System
97. A New ZVS Full-Bridge DC–DC Converter for Battery Charging With Reduced Losses Over Full-Load Range

Z SOURCE AND SEPIC CONVERTER

98. Isolated SEPIC DC–DC Converter With Ripple-Free Input Current and Lossless Snubber

99. A High Performance Impedance-Source Converter with Switched Inductor

100. High Step-Up Quasi-Z Source DC-DC Converter

101. Study on A High Voltage Gain SEPIC-Based DC-DC Converter with Continuous Input Current for Sustainable Energy Applications

102. Single-Phase Hybrid Switched-Capacitor Voltage-Doubler SEPIC PFC Rectifiers

103. Hybrid Switched-Capacitor/Switched-Quasi-Z-Source Bidirectional DC-DC Converter With Wide-Voltage-Gain Range for Hybrid Energy Sources EVs

LED APPLICATIONS

104. An AC–DC LED Driver with an Additional Active Rectifier and a Unidirectional Auxiliary Circuit for AC Power Ripple Isolation

105. Loss Analysis for Efficiency Improvement of the Integrated Buck-Flyback LED Driver

106. A PFC Single-Coupled-Inductor Multiple-Output LED Driver without Electrolytic Capacitor

107. A Single-Stage Integrated Boost-LLC AC-DC Converter with Quasi-Constant Bus Voltage for Multi-channel LED Street-Lighting Applications

POWER SYSTEM

108. Grid-Connected Symmetrical Cascaded Multilevel Converter for Power Quality Improvement

109. DC Capacitor Voltage Balancing Control for Delta-Connected Cascaded H-Bridge STATCOM Considering Unbalanced Grid and Load Conditions

110. Dynamic Voltage Conditioner: A New Concept for Smart Low-Voltage Distribution Systems

111. Single-Phase to Three-Phase Unified Power Quality Conditioner Applied in Single-Wire Earth Return Electric Power Distribution Grids

112. Grid-Voltage-Oriented Sliding Mode Control for DFIG Under Balanced and Unbalanced Grid Faults

113. Analysis, Control, and Design of a Hybrid Grid-Connected Inverter for Renewable Energy Generation With Power Quality Conditioning

114. An Effective Voltage Controller for Quasi-Z-Source Inverter-Based STATCOM With Constant DC-Link Voltage

115. Synchronization and Reactive Current Support of PMSG based Wind Farm during Severe Grid Fault

116. Detailed Investigation and Performance Improvement of the Dynamic Behavior of Grid-Connected DFIG Based Wind Turbines under LVRT Conditions
117. New Insights Into Coupled Frequency Dynamics of AC Grids in Rectifier and Inverter Sides of LCC-HVDC Interfacing DFIG-Based Wind Farms
118. Operation of Three-Level Inverter-Based Shunt Active Power Filter Under Non ideal Grid Voltage Conditions With Dual Fundamental Component Extraction
119. A Novel DVR-ESS-Embedded Wind-Energy Conversion System
120. Power Quality Improvement and PV Power Injection by DSTATCOM with Variable DC Link Voltage Control from RSC-MLC
121. Selective Harmonic Elimination Technique With Control of Capacitive DC-Link Voltages in an Asymmetric Cascaded H-Bridge Inverter for STATCOM Application
122. Advanced Voltage Support and Active Power Flow Control in Grid-Connected Converters Under Unbalanced Conditions
123. Voltage Limit Control of Modular Multilevel Converter Based Unified Power Flow Controller Under Unbalanced Grid Conditions
124. Design and Control of Microgrid Fed by Renewable Energy Generating Sources
125. A Transformer-Less Unified Power Quality Conditioner with Fast Dynamic Control
126. Flexible Compensation Strategy for Voltage Source Converter Under Unbalanced and Harmonic Condition Based on a Hybrid Virtual Impedance Method
127. Three-Phase Transformerless Shunt Active Power Filter With Reduced Switch Count for Harmonic Compensation in Grid-Connected Applications
128. A Multiple Improved Notch Filter Based Control for Single Stage PV System Tied to Weak Grid
129. Design and Performance Analysis of Three-Phase Solar PV Integrated UPQC
130. Sub- and Super-Synchronous Interactions Between STATCOMs and Weak
131. AC/DC Transmissions With Series Compensations PV-STATCOM: A New Smart Inverter for Voltage Control in Distribution Systems
132. Dynamic Analysis and Improved LVRT Performance of Multiple DG Units Equipped With Grid-Support Functions Under Unbalanced Faults and WeakGrid Conditions
133. Multi-Objective Dynamic Voltage Restorer with Modified EPLL Control and Optimized PI Controller Gains
134. Dynamic Power Decoupling Strategy for Three-Phase PV Power Systems under Unbalanced Grid Voltages

135. Performance Evaluation of a MW-Class SMES-BES DVR System for Mitigation of Voltage Quality Disturbances